पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़)

पाठ्यक्रम

बी.ए.-1 (कोड-101) B. A.-1 (Code-101)

बी.ए. क्लासिक्स-1 (कोड-061) B.A. CLASSICS-1 (Code-061)

परीक्षा : 2016-17

कुलसचिव पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़) की ओर से

INDEX

REVISED ORDINANCE NO.11

(As per State U.G.C. Scheme)

BACHELOR OF ARTS

1. The three year course have been broken up in to three Parts.

   Part-I Examination : at the end of the first year.

   Part-II Examination : at the end of the second year and

   Part-III Examination : at the end of the third year.

2. A candidate who after passing (10+2) or intermediate exami-nation of C.G. Board of Secondary Education, C.G. or any other examination recognised by the University or C.G. Board of Secondary Education as equivalent thereto, has attended a regular course of study in an affiliated college or in the Teaching Department of the University for one academic year shall be eligible for appearing at the B.A. Part-I examination.

3. A candidate who after passing B.A. Part-I examination of the University or any other examination recognised by the University as equivalent thereto has attended a regular course of study for one academic year in an affiliated college or in the Teaching Department of the University shall be eligible for appearing at the B.A. Part II Examination.

4. A candidate who after passing B.A. Part II examination of the University has completed a regular course of study for one academic year in an affiliated college or in the Teaching Department of the University shall be eligible for appearing at the B.A. Part-III examination.

5. Besides regular students, subject to their compliance with this ordinance, ex-students and non-collegiate candidates shall be eligible for admission to the examination as per provisions of Ordinance N. 6 relating to Examinations (General). Provided that non-collegiate candidates shall be permitted to offer only such subjects/papers as are taught to the regular students at any of the University Teaching Department or College.

6. Every candidate for the Bachelor of arts examination shall be examined in :

   A. Foundation Course :

      i) Group A - Hindi Language

      ii) Group B - English Language

   B. Three course subjects : One subject from any three group out of the followings six groups :

      1. Sociology / Ancient Indian Histroy / Anthropology

      2. Political Science/Home Science / Drawing & Painting / Vocational Course.

      3. Hindi Literature/ Sanskrit Literature/Urdu Literature/ Mathematics.

      4. Economics/Music/ Defence Studies/ Linguistics / नृत्य.

5. Philosophy/Psychology/ Geography/ Education/ Management.

6. History/English Literature/ Statistics.

7. Practicals (If Nece ssary) for each core subject.

7. Any candidate who has passed the B.A. examination of the University shall be allowed to present himself for examination in any of additional subjects prescribed for the B.A. exami-nation and not taken by him at the degree examination. Such candidate will have to first appear and pass the B.A. Part I examination in the subject which he proposes to offer and then the B.A. Part II and Part III examination in the same subject. Successfull candidate will be given a certificate to that effect.

8. In order to pass at any part of the three year degree course examination, an examinee must obtain not less than 33% of the total makrs in each subject/group of subjects. In subject/group of subjects, where both theory and practical examination are provided, an examinee must pass in both theory and practical parts of the examination separately.

9. Candidate will have to pass separately at the Part-I, Part II and part-III examination. No division shall be assigned on the result of the Part-I and Part-II examination. In determining the divison of the Final examination, total marks obtained by the examinees, in their Part-I, Part-II and Part-III examination in the aggregate shall be taken into account. Candidate will not be allowed to change subjects after passing Part I Examination.

Provided in case of candidate who has passed the examination through the supplementary examination having failed in one subject only the total aggregate marks being carried over for determining the division shall include the actual marks obtained in the subject in which he appeared at the supplementary examination.

10. Successful exminees at the Part-III examination obtaining 60% or more marks shall be placed in the First division, those obtaining less than 60% but not less than 45% marks in the Second division and other successful examinees in the third division.

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SCHEME OF EXAMINATION

	Subject	Paper	Max. Marks	Min. Marks
	(i) Environmental Studies		75	33
	Fild Work		25	
A.	Foundation Course			
	(i) Hindi Language - I		75	26
	(ii) English Language - II		75	26
B.	Three Core Subject :			
	1. Hindi Literature	I	75	50
		I	75	
	2. Sanskrit Literature	I	75	50
		I	75	
	3. English Literature	I	75	50
		I	75	
	4. Philosophy	I	75	50
		I	75	
	5. Economics	I	75	50
		I	75	
	6. Political Science	I	75	50
		I	75	
	7. History	I	75	50
		I	75	
	8. Ancient Indian History	I	75	50
	Culture & Archaeology	I	75	
	9. Sociology	I	75	50
		I	75	
	10. Geography	I	50	33
		I	50	
		Practical	50	17
	11. Mathematics	I	50	
		I	50	50
		III	50	
	12. Statistics	I	50	33
		I	50	
		Practical	50	17

	Subject	Paper	Max. Marks	Min. Marks
13.	Anthropology	I	50	33
		I	50	
		Practical	50	17
14.	Linguistics	I	75	50
		I	75	
15.	Music	I	50	33
		I	50	
		Practical	50	17
16.	Home Science	I	50	33
		I	50	
		Practical	50	17
17.	Education	I	75	50
		I	75	
18.	Psychology	I	50	33
		I	50	
		Practical	50	17
19.	Management	I	75	50
		I	75	
20.	Defence Studies	I	50	33
		I	50	
		Practical	50	17
21.	Urdu	I	75	50
		I	75	
22.	Dance	I	50	33
		I	50	
		Practical	50	17

USE OF CALCULATORS

The Students of Degree/P.G. Classes will be permitted to use of Calculators in the examination hall from annual 1986 examnination on the following conditions as per decision of the standing committee of the Academic Council at its meeting held on 31-1-1986-

1. Student will bring their own Calculators.
2. Calculators will not be provided either by the university or examination centres.
3. Calculators with, memory and following variables be permitted +, -, x, ¸ square, reciprocal, expotentials log, square root, trignometric functions, wize, sine, cosine, tangent etc. factiorial summation, xy, yx and in the light of objective approval of merits and demerits of the viva only will be allowed.

Part - I

SYLLABUS FOR ENVIRONMENTAL STUDIES AND HUMAN RIGHTS

(Paper code-0828)

MM. 75

इन्वारमेंटल साईंसेस के पाठ्यक्रम को स्नातक स्तर भाग–एक की कक्षाओं में विश्वविद्यालय अनुदान आयोग के निर्देशानुसार अनिवार्य रूप से शिक्षा सत्र 2003–2004 (परीक्षा 2004) से प्रभावशील किया गया है। स्वशासी महाविद्यालयों द्वारा भी अनिवार्य रूप से अंगीकृत किया जाएगा।

भाग 1, 2 एवं 3 में से किसी भी वर्ष में पर्यावरण प्रश्न–पत्र उत्तीर्ण करना अनिवार्य है। तभी उपाधि प्रदाय योग्य होगी।

पाठ्यक्रम 100 अंकों का होगा, जिसमें से 75 अंक सैद्धांतिक प्रश्नों पर होंगे एवं 25 अंक क्षेत्रीय कार्य (Field Work) पर्यावरण पर होंगे।

सैद्धांतिक प्रश्नों पर अंक – 75 (सभी प्रश्न इकाई आधार पर रहेंगे जिसमें विकल्प रहेगा)

(अ) लघु प्रश्नोंत्तर – 25 अंक

(ब) निबंधात्मक – 50 अंक

Field Work – 25 अंकों का मूल्यांकन आंतरिक मूल्यांकन पद्धति से कर विश्वविद्यालय को प्रेषित किया जावेगा। अभिलेखों की प्रायोगिक उत्तर पुस्तिकाओं के समान संबंधित महाविद्यालयों द्वारा सुरक्षित रखेंगे।

उपरोक्त पाठ्यक्रम से संबंधित परीक्षा का आयोजन वार्षिक परीक्षा के साथ किया जाएगा।

पर्यावरण विज्ञान विषय अनिवार्य विषय है, जिसमें अनुत्तीर्ण होने पर स्नातक स्तर भाग–एक के छात्र/छात्राओं को एक अन्य विषय के साथ पूरक की पात्रता होगी। पर्यावरण विज्ञान के

सैद्धांतिक एवं फील्ड वर्क के संयुक्त रूप से 33% (तैंतीस प्रतिशत) अंक उत्तीर्ण होने के लिए अनिवार्य होंगे।

स्नातक स्तर भाग–एक के समस्त नियमित/भूतपूर्व/अमहाविद्यालयीन छात्र/छात्राओं को अपना फील्ड वर्क सैद्धांतिक परीक्षा की समाप्ति के पश्चात् 10 (दस) दिनों के भीतर संबंधित महाविद्यालय/परीक्षा केन्द्र में जमा करेंगे एवं महाविद्यालय के प्राचार्य/केन्द्र अधिक्षक, परीक्षकों की नियुक्ति के लिए अधिकृत रहेंगे तथा फील्ड वर्क जमा होने के सात दिनों के भीतर प्राप्त अंक विश्वविद्यालय को भेजेंगे।

UNIT-I THE MULTI DISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES

Definition, Scope and Importance

Natural Resources:

Renewable and Nonrenewable Resources

(a) Forest resources: Use and over-exploitation, deforestation, Timber extraction, mining, dams and their effects on forests and tribal people and relevant forest Act.

(b) Water resources: Use and over-utilization of surface and ground water, floods drought, conflicts over water, dams benefits and problems and relevant Act.

(c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.

(d) food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging , salinity.

(e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources.

(f) Land resources: Land as a resource, land degradation, man induced landslides soil erosion and desertification.

(12 Lecture)

UNIT-II ECOSYSTEM

(a) Concept, Structure and Function of and ecosystem

- Producers, consumers and decomposers.
- Energy flow in the ecosystem

- Ecological succession
- Food chains, food webs and ecological pyramids.
- Introduction, Types, Characteristics Features, Structure and Function of Forest, Grass, Desert and Aquatic Ecosystem.

(b) Biodiversity and its Conservation

- Introduction - Definition: genetic. species and ecosystem diversity
- Bio-geographical classification of India.
- Value of biodiversity: Consumptive use. productive use, social ethics, aesthetic and option values.
- Biodiversity at global, National and local levels.
- India as mega-diversity nation.
- Hot spots of biodiversity.
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wild life conflict.
- Endangered and endemic species of India.
- Conservation of biodiversity: In situ and Ex-situ conservation of biodiversity.

(12 Lecture)

UNIT- III

(a) Causes, effect and control measures of

- Air water, soil, marine, noise, nuclear pollution and Human population.
- Solid waste management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Disaster Management : floods, earthquake, cyclone and landslides.

(12 Lecture)

(b) Environmental Management

- From Unsustainable to sustainable development.
- Urban problems related to energy.

- Water conservation, rain water harvesting, watershed management.
- Resettlement and rehabilitation of people, its problems and concerns.
- Environmental ethics: Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.
- Wasteland reclamation
- Environment protection Act: Issues involved in enforcement of environmental legislation.
- Role of Information Technology in Environment and Human Health.

UNIT- IV

General background and historical perspective- Historical development and concept of Human Rights, Meaning and definition of Human Rights, Kind and Classification of Human Rights.

Protection of Human Rights under the UNO Charter, protection of Human Rights under the Universal Declaration of Human Rights, 1948.

Convention on the Elimination of all forms of Discrimination against women.

Convention on the Rights of the Child, 1989.

UNIT- V

Impact of Human Rights norms in India, Human Rights under the Constitution of India, Fundamental Rights under the Constitution of India, Directive Principles of State policy under the Constitution of India, Enforcement of Human Rights in India.

Protection of Human Rights under the Human Rights Act, 1993- National Human Rights Commission, State Human Rights Commission and Human Rights court in India.

Fundamental Duties under the Constitution of India.

Reference/ Books Recommended

1. SK Kapoor- Human rights under International Law and Indian Law.
2. HO Agrawal- Internation Law and Human Rights
3. एस.के. कपूर – मानव अधिकार
4. जे.एन. पान्डेय – भारत का संविधान
5. एम.डी. चतुर्वेदी – भारत का संविधान
6. J.N.Pandey - Constitutional Law of India
7. Agarwal K.C. 2001 Environmental Biology, Nidi pub. Ltd. Bikaner

8. Bharucha Erach, the Biodiversity of India, Mapin pub. Ltd. Ahmedabad 380013, India, Email: mapin@icenet.net(R)
9. Bruinner R.C. 1989, Hazardous Waste Incineration. McGraw Hill Inc.480p
10. Clark R.S. Marine pollution, Clanderson press Oxford (TB)
11. Cuningham, W.P.Cooper. T.H.Gorhani, E & Hepworth. M.T,200
12. Dr. A.K.- Environmental Chemistry. Wiley Eastern Ltd.
13. Down to Earth, Center for Science and Environment (R)
14. Gloick, H.P. 1993 Water in crisis. pacific institute for studies in Deve. Environment & Security. Stockholm Eng. Institute. Oxford University, Press. m 473p.
15. Hawkins R.E. Encyclopedia of Indian Natural History, Bombay Natural History Society, Mumbai (R)
16. Heywood, V.H. & Watson, T.T.1995 Global Biodiversity Assessment, Cambridge Univ. Press 1140p
17. Jadhav H. & Bhosale, V.H. 1995 Environmental Protection and Law. Himalaya pub. House, Delhi 284p
18. Mckinney M.L.& School R.M.1996, environmental Science systems & solutions, web enhanced edition, 639p
19. Mhadkar A.K. Matter Hazardous, Techno-Science publication(TB)
20. Miller T.G.Jr. Environment Science, Wadsworth publication co. (TB)
21. Odum E.P.1971, Fundamentals of Ecology, W.B. Saunders Co. USA,574p
22. Rao M.N. & Datta, A.K. 1987, Waste water treatment. Oxford & IBH pub.co.pvt. Ltd 345p
23. Sharma B.K. 2001, Environmental chemistry, Goel pub. House, Meerut
24. Survey of the Environment, The Hidu(M)
25. Townsend C. Harper J. And Michael Begon, Essentials of Ecology, Blackwell Science(TB)
26. Trivedi R.K.Handbook of Environment Laws, Rules, Guidlines, Compliances and Standards, Vol land II, Environment Media(R)
27. Trivedi R.K. and P.K. Goel, Introduction to air pollution, Techno-Science publication (TB)
28. Wanger K.D.1998, Environmental Management. W.B. Saunders Co. Philadelphia, USA 499p

आधार पाठ्यक्रम

प्रश्न पत्र - प्रथम

हिन्दी भाषा (पेपर कोड-0101)

पूर्णांक - 75

नोट :

1. प्रश्न पत्र 75 अंक का होगा ।
2. प्रश्न पत्र अनिवार्य होगा ।
4. इसके अंक श्रेणी निर्धारण के लिए जोड़े जावेंगे ।
5. प्रत्येक इकाई के अंक समान होंगे ।

पाठ्य विषय -

इकाई-1 पल्लवन, पत्राचार तथा अनुवाद एवं पारिभाषिक शब्दावली ।

इकाई-2 मुहावरे-लोकोक्तियाँ, शब्दशुद्धि, वाक्य शुद्धि, शब्द ज्ञान-पर्यायवाची, विलोम, अनेकार्थी, समश्रुत (समानोचरित) अनेक शब्दों के लिए एक शब्द ।

इकाई-3 देवनागरी लिपि की विशेषता, देवनागरी लिपि एवं वर्तनी का मानक रूप ।

इकाई-4 कम्प्यूटर में हिन्दी का अनुप्रयोग, हिन्दी में पदनाम ।

इकाई-5 हिन्दी अपठित, संक्षेपण, हिन्दी में संक्षिप्तीकरण ।

पाठ्य क्रम के लिए पुस्तकें -

1. भारतीयता के स्वर साधन धनंजय वर्मा - म. प्र. ग्रंथ अकादमी ।
2. नागरी लिपि और हिन्दी - अनंत चौधरी - ग्रंथ अकादमी पटना ।
3. कम्प्यूटर और हिन्दी - हरिमोहन - तक्षशिला प्रकाशन, दिल्ली ।

FOUNDATION COURSE

PAPER - II

ENGLISH LANGUAGE (Paper Code-0102)

M.M. 75

UNIT-1 **Basic Language skills : Grammar and Usage.**

Grammar and Vocabulary based on the prescribed text.
To be assessed by objective / multiple choice tests.

(Grammar - 20 Marks
Vocabulary - 15 Marks)

UNIT-2 **Comprehension of an unseen passage.** 05

This should imply not only (a) an understanding of the passage in question, but also (b) a grasp of general language skills and issues with reference to words and usage within the passage and (c) the Power of short independent composition based on themes and issues raised in the passage.

To be assessed by both objective multiple choice and short answer type tests.

UNIT-3 **Composition** : Paragraph writing 10

UNIT-4 **Letter writing** (The formal and one Informal) 10

Two letters to be attempted of 5 marks each. One formal and one informal.

UNIT-5 Texts : 15

Short prose pieces (Fiction and not fiction) short poems, the pieces should cover a range of authors, subjects and contexts. With poetry if may sometimes be advisable to include pieces from earlier periods, which are often simpler than modern examples. In all cases, the language should be accessible (with a minimum of explanation and reference to standard dictionaries) to the general body of students schooled in the medium of an Indian language.

Students should be able to grasp the contents of each plece; explain specific words, phrases and allusions; and comment on general points of narrative or argument. Formal Principles of Literary criticism should not be taken up at this stage.

To be assessed by five short answers of three marks each.

BOOKS PRESCRIBED -

English Language and Indian Culture - Published by M.P. Hindi Granth Academy Bhopal.

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हिन्दी साहित्य

प्रथम - प्रश्न पत्र

(प्राचीन हिन्दी काव्य) अंक 75

(पेपर कोड-0103)

उद्देश्य एवं प्रस्तावना-

प्राचीन से तात्पर्य है - आधुनिक काल से पूर्व का काल । सही अर्थ में हिन्दी भाषा और साहित्य का विकास आदिकाल से शुरू होता है । इसमें धार्मिक तथा ऐतिहासिक दो प्रकार का साहित्य मिलता है, जो प्रबंध, मुक्तक, रासो, फागु, चरित, सुभाषित आदि विविध । काव्यरूपों में अभिव्यंजित है । मध्यकालीन साहित्य की पृष्ठभूमि के रूप में इसे प्रतिष्ठापित किया जाता है ।

मध्यकालीन काव्य में भक्तिकाव्य, जहां लोक जागरण को स्वर देने वाला है, वहीं रीतिकाल अपने लौकिक-श्रृंगारिका, परिदृश्य में तत्कालीन सामाजिक, सांस्कृतिक, राजनीतिक स्थितियों को बेलौस अभिव्यंजित करता है । अत: भाषा, संस्कृति, विचार, मानवता, काव्यत्व, काव्यरूपता, लौकिकता-पारलौकिकता, आदि दृष्टियों से इसका अध्ययन अत्यावश्यक है ।

पाठ्य विषय -

1. कबीर (कबीर - कांतिकुमार जैन) प्रारंभिक 50 साखियाँ)
2. जायसी-संक्षिप्त पद्मावत-श्यामसुंदर दास) नागमती वियोग वर्णन
3. सूर (भ्रमर गीत सार - सं. आचार्य रामचन्द्र शुक्ल) प्रारंभिक 25 पद
4. तुलसी - ''रामचरित मानस'' के अयोध्याकाण्ड से प्रारंभिक 25 दोहे चौपाई, छंद सहित ।
5. घनानन्द (घनानन्द - सं. विश्वनाथ प्रसाद मिश्र) प्रारंभिक 25 छन्द द्रुत पाठ हेतु निम्नांकित तीन कवियों का अध्ययन किया जावेगा - जिसमें से किन्हीं दो पर लघूत्तरीय प्रश्न पूछे जायेंगे -

   1. विद्यापति
   2. रहीम
   3. रसखान

अंक विभाजन-

1.	3 व्याख्याएँ	30 प्रतिशत
2.	आलोचनात्मक प्रश्न	30 प्रतिशत
3.	लघूत्तरीय प्रश्न	20 प्रतिशत
4.	वस्तुनिष्ठ प्रश्न	20 प्रतिशत

हिन्दी साहित्य

द्वितीय - प्रश्न पत्र

हिन्दी कथा साहित्य

पूर्णांक 75

(पेपर कोड-0104)

उद्देश्य एवं प्रस्तावना-

गद्य की प्रमुख विधाओं का इतना द्रुत विकास इनकी लोकप्रियता का प्रमाण प्रस्तुत करता है । इसमें आधुनिक जीवन, अपनी विविध कवियों के साथ यथार्थ रूप में अभिव्यंजित हुआ है । जीवन की अनुभूतियाँ, संवेदनाओं तथा विविध परिस्थितियों के साक्षात्कार के लिए इनका अध्ययन सर्वथा अपेक्षित है ।

पाठ्य विषय -

व्याख्या एवं आलोचनात्मक प्रश्नों के लिए एक उपन्यास एवं आठ कहानीकारों की एक-एक प्रतिनिधि कहानी का अध्ययन आवश्यक है ।

उपन्यास	1.	गबन	-	प्रेमचंद
कहानी	1.	प्रेमचंद	-	कफन
	2.	जयशंकर प्रसाद	-	आकाश दीप
	3.	यशपाल	-	परदा
	4.	फणीश्वरनाथ रेणु	-	ठेस
	5.	मोहन राकेश	-	मलवे का मालिक
	6.	भीष्म साहनी	-	चीफ की दावत
	7.	राजेन्द्र यादव	-	बिरादरी बाहर
	8.	रागेय राघव	-	गदल

द्रुत पाठ के लिए निम्नांकित तीन कथाकारों का अध्ययन अपेक्षित है, जिनमें से किन्हीं दो पर लघूत्तरीय प्रश्न पूछे जावेंगे -

1. उपेन्द्रनाथ अश्क, 2. बाल शौरि रेड्डी 3. शिवानी

अंक विभाजन -3/ व्याख्याएँ 30 प्रतिशत

2/ आलोचनात्मक प्रश्न	30 प्रतिशत
5/ लघुत्तरीय प्रश्न	20 प्रतिशत
20/ वस्तुनिष्ठ प्रश्न	20 प्रतिशत

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B. A. Part-I

ENGLISH LITERATURE

There will be two literatures in English - 1550-1750 Papers, each carrying maximum marks - 75. Nine questions are to be attempted in each peper. Each question carries the marks according to the scheme mentloned in each paper.

ENGLISH LITERATURE

PAPER - I

LITERATURE IN ENGLISH - 1550-1750 (Paper Code-0105) M.M. 75

(i) Unit-1 of annotation is compulsery, and passages to be set from Units (II to V), atleast one from each unit, 3 to be attempted. 3x5 = 15

(ii) Multiple choice/objective type questions to be set unit vii, 15 to be set 10 be attempted. 1x1 = 10

(iii) From Unit-II to VI-8 questions to be setatleast one from each unit-5 to be attempted. 10x5 = 50

Word Limit for each answer 300 to 400 words.

UNIT-1 ANNOTATIONS.

UNIT-2 POETRY

(a) Shakespeare - Sonnet No. 1 From Fairest Creatures, Sonnet No. 154., The little Love God.

(b) Milton - How Soon Hath Time the Subtle Theif of Youth ...

(c) John Donne - Sweetest Love I Don't go, This is my play's Last Scene.

UNIT-3 POETRY

(a) John Dryden - Portrait of Shadwell.

(b) Alexander - Pope- From An Essy on Criticism (True case in writing ....) and the world's Victor Stood subdned by sound.

UNIT-4 PROSE

(a) Bacon Of Studies, Of Health, Of Friendship

(b) Addison-Sir Roger at Home

(c) Steele Of the Club.

UNIT-5 DRAMA

Shake spear - The Merchant of Venice

UNIT-6 Fiction - Swift - The Battle of the Books.

UNIT-7 Historical and Literary Topics

(i) The Renaissance.

(ii) Humanism.

(iii) Reformation.

(iv) The Restoration.

(v) The Earlier Drama

(vi) Petrachism and the Sonnet Cycle.

(vii) The Influence of Seneca and Classical Dramatic Theory

(viii) The Elizabethan and Jacobean stage.

(ix) Restoration Drama

(x) The Rise of Periodcal Essay

BOOKS RECOMMENDED for Unit VII in Papers I and II

1. Edward Albert - A History of English Literature.
2. Ifor Evans - A short History of English Literature.
3. Hudson - An Outline History of English Literature.

Both the papers of B. A. Part-I are included in the anthologies prescribed in the previous syllabus for B. A. Part-I and B. A. Part - II

ENGLISH LITERATURE

PAPER - II

LITERATURE IN ENGLISH FROM 1750-1900 (Paper Code-0106)

Note- (i) Unit-1. of annotation is compulsory, 6 passages be set from Units (II to IV) atleast one from each unit, 3 to be attempted. 3x5 = 15

(ii) Multiple Choice/objective type questions to be set from unit-VII, 25 to be set 10 to be attempted. 1x10 = 10

(iii) From Units 11 to VI-8 questions to be set atleast one from each Unit - 5 to be attempted. 10x5 = 50

Word Limit for each answer 300 to 400 words.

UNIT-1 ANNOTATIONS

UNIT-2 POETRY -

(a) Blake - Tiger, Tiger Burning Bright.
(b) Wordsworth - Daffodils and Solitary Reaper.
(c) Coleridge - Frost at Midnight.

UNIT-3 POETRY-

(a) Shelley - Ode to a skylark.
(b) Keats - Ode to Autumn.
(c) Tennyson - Crossing the Bar.
(d) Browing - Prospice.

UNIT-4 PROSE

(a) Lamb - Dream Children : A Reverie
(b) Hazlit - On Actors and Acting

UNIT-5 Fiction Jane Austen - Pride and prejudice.

UNIT-6 Fiction Charles Dickens - David Copperfield

UNIT-7 Historical and Literary Topics.

(1) The Reform Acts.
(2) The Impact of Industrial ization.
(3) Colonialism And Imperialism.
(4) Scientific the ughts and discoveries.
(5) Faith and Doubt.
(6) Classical and Romantic Concepts of Imagination.
(7) Varieties of Romantic and Victorian Poetry.
(8) The Victorian Novel.
(9) Realism and the Novel.
(10) Aestlheticism.

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PSYCHOLOGY

Paper	Name of the Paper	Max. Marks	Duration
I	Basic Psychological Processes	50	3 hrs.
II.	Psychopathology	50	3 hrs.
III.	Practical	50	4 Hrs.

PAPER - I

BASIC PSYCHOLOGICAL PROCESSES (Paper Code-0119) M.M. 50

This Paper consists of 5 units.

From each unit a minimum of two questions would be set and condidates would be required to attempt one from each unit.

UNIT-1 Introduction - Definition and goals of psychology; behaviouristic, cognitive and humanistic; cross-cultural prespective; Methods : Experimental, observation, interview, questionnaire and case study.

UNIT-2 Biological bases of Bchaviours : Genes and Behavour, the nervous System : C.N.S., A.N.S. and peripheral Nervous system; Glands and Harmones, Emotions : Expression and control.

UNIT-3 Sensory Perceptual Processes - Nature and types of sensation and Percoptron; Attentional Processes : Definition, types and determinants; Principles of Percoptual organisation; Thinking process : Nature and types.

UNIT-4 Learning and Memory : Classical and Operant conditioning - Basic Processes ; verbal and observational learning; memory : Sensory, S-T.M., L.T.M. Forgetting : Process and theories.

UNIT-5 Cognitive and non cognitive processes : Intelligence : Nature and types; motivation : Biogenic and Sociogenic motives; Personality : nature and determinants, Approaches to study personality : trait and types, Assessment of Personality.

BASIC BOOKS :

1. सामान्य मनोविज्ञान – अरूण कुमार सिंह, बनारसीदास प्रकाशन
2. प्रीति वर्मा – आधुनिक सामान्य मनोविज्ञान
3. Balon R.A., Barne D.A. - Understanding behaviour Tokyo Halt Sounders
4. Zimbardo P.G. & Walser AL 1997 - Psychology New York Haper Collings college publishers
5. Lefton, L. A. 1985 - Psychology Bosten-Allyn & Baron

PAPER II

PSYCHOPATHOLOGY (Paper Code-0120) M.M. 50

This paper consists of 5 units.

From each unit a minimum of two questions would be set and condidates would be required to attempt one from each unit.

UNIT-1 Introduction : The concept of normality and abnormality; Models of Psychopathology : Psychodynanamic, Behavioral and cognitive.

UNIT-2 Assessment of Psychopathology :- Diagnostic tests, Rating scales, clinical interview, projective tests.

UNIT-3 Anxiety Disorders : Panic disorder, Phobias, obsessive complusive disorder, anxiety disorder, Dissociative disorder.

UNIT-4 Mood and personality disorders - Manice - depressive episode, paranoid, schizoid, Dependent Personality, Dysthymia, obesity.

UNIT-5 Management of Psychopathology : Stress management; Medico and Psychosocial Therapy : Shock therapy, Psychoanalysis, Group therapy and Behaviour therapy.

BOOKS -

1. Lamm, A. (1997) - Lamm, A (1997) Introduction to psychopathology, Sage, N.Y.
2. Buss, A. H. (1999) - Psychopathology N. Y. John Wilcy
3- ykHk fl;g rFkk frokjh & vlkekU; eukfoKku & vkxjk foukn iLrd Hk.Mkj
4- dfiy ,p-d- & vlkekU; eukfoKku & gji;lkn Hkkx;o] vkxjk

PAPER - III
PRACTICALS

M.M. 50

Note : This paper consists of two parts :

(a) Comprises of laboratory Experiments.

(b) Comprises of Psychological testing and understanding of self and others.

(a) **Experiments -** (any five of the following) :-

(i) Effect of set on perception
(ii) Effect of frustration on performance.
(iii) Division of Attention.
(iv) Learning curve/Serial position curve.
(v) Retroactive inhibition.
(vi) S.T.M.
(vii) Concept formation.
(viii) Judgement of emotious through facial expressions.

(b) Psychological testing and understanding of self and others (any four of the following tests and maintenance of anecdotal records)

(i) Verbal/nonverbal intellegence test/performance tests.
(ii) E.P.I.
(iii) Anxiety test.
(iv) Depression Scale
(v) Adjustment inventory.
(vi) Achievement motivation.
(vii) Stress tolerance test.

Anecdotal record : Each Student will be required to observe behaviour of pupil in different selting and seleet an anecdote to understand, judge and narrate it as objectively as possible, so as to reveal his/her psychological insight existing in that anecdotal behaviour. This record constitutes a part of psychological assessment of the students. Introduction to measures of central tendency data in ungroted Graphical presentation of data.

DISTRIBUTION OF MARKS

A. Conduction of psychological experiment and reporting - 15 marks
B. Administration of one psychological test and reporting - 15 marks
C. Evalution of Practical notebook and Anecdotal record - 10 marks
D. Viva - Voce - 10 marks

Note : No condidate will be allowed to appear in the practical examination unless his/her day to day practical work and the report are found satisfactory.

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इतिहास

प्रश्न पत्र - प्रथम

(भारत का इतिहास प्रारम्भ से 1206 ई. तक)

HISTORY OF INDIA FROM THE BEGINNING TO 1206 A.D.

(पेपर कोड-0109)

उद्देश्य - इस पाठ्यक्रम का उद्देश्य विद्यार्थियों को प्राचीन भारत के इतिहास के प्रमुख राजनीतिक, सामाजिक, आर्थिक एवं सांस्कृतिक पक्षों से परिचित कराना है जो कि यू.जी.सी. मानदंडों के अनुरूप है ।

इकाई-1
1. भारतीय इतिहास के स्त्रोतों का सर्वेक्षण
2. भारत की भौगोलिक विशेषताएँ
3. प्रागैतिहासिक - पूर्व पाषाण से नवपाषाण युग तक सभ्यता एवं संस्कृति
4. हड़प्पा सभ्यता - निर्माता, प्रसार, नगर योजना, राजनीतिक, सामाजिक, आर्थिक संरचना

इकाई-2
1. ऋगवैदिक काल- राजनीतिक, आर्थिक, धार्मिक
2. उत्तर वैदिक काल - राजनीतिक, सामाजिक, आर्थिक, धार्मिक
3. महाकाव्य काल - सभ्यता एवं संस्कृति
4. ईसा पूर्व छठवी शताब्दी का भारत तथा बौद्ध एवं जैन धर्म

इकाई-3
1. मगध साम्राज्य का उदय
2. सिकन्दर का आक्रमण और उसका प्रभाव
3. मौर्य साम्राज्य की स्थापना - चन्द्रगुप्त मौर्य एवं अशोक - अशोक के धम्म
4. मौर्यकालीन प्रशासन अर्थव्यवस्था एवं कला तथा संस्कृति

इकाई-4
1. मौर्योत्तरकाल - शुंग, कुषाण एवं सातवाहन
2. संगमयुग - साहित्य, संस्कृति
3. चौल एवं पाण्डय
4. गुप्त साम्राज्य - प्रशासन, आर्थिक, सामाजिक, सांस्कृतिक दशा

इकाई-5
1. पल्लव, चालुक्य, वर्धन, वाकाटक, गुर्जर-प्रतिहार, पाल, सेन, राष्ट्रकूट
2. भारत का दक्षिण पूर्व एशिया एवं श्रीलंका से सम्बन्ध
3. मोहम्मद बिन कासिम, गजनवी एवं गोरी का आक्रमण
4. नारी की स्थिति - विवाह, सती प्रथा, परदा प्रथा, देवदासी प्रथा, जाति व्यवस्था, दास प्रथा

संदर्भ ग्रन्थ -

1. रतिभानु सिंह नाहर - प्राचीन भारतीय इतिहास एवं संस्कृति
2. शांता शुक्ला - भारत का राजनीतिक इतिहास (राजपूत कालीन भारत)
3. द्विजेन्द्र नारायण एवं श्रीमाली - प्राचीन भारत
4. ओम प्रकाश - प्राचीन भारत
5. बी.एन. लूनिया - प्राचीन भारतीय संस्कृति
6. एस.आर. शर्मा - प्राचीन भारत - प्रगैतिहासिक युग से 1200 ई. तक
7. K.L. Khurana - Ancient India from Earliest Time to 1206 A.D.
8. K.L. Khurana - History of India from Earliest Time to 1526 A.D.

9. Vincent Smith - Oxford History of India.
10. भार्गव – प्राचीन भारत
11. L. Prasad - Ancient India - Indius Volley Civilization to 1200 A.D.

इतिहास

प्रश्न पत्र - द्वितीय

विश्व का इतिहास (1453 से 1789 ई. तक)

(पेपर कोड-0110)

इकाई-1
1. सामन्तवाद का पतन एवं आधुनिक युग का प्रारम्भ
2. पुनर्जागरण
3. धर्म सुधार आन्दोलन
4. प्रति धर्म सुधार आन्दोलन

इकाई-2
1. तीस वर्षीय कारण, परिणाम तथा प्रभाव
2. राष्ट्रीय राज्यों का उदय स्पेन, फ्रांस
3. राष्ट्रीय राज्यों का उदय. इंग्लैण्ड, रूस
4. पोलैण्ड का विभाजन

इकाई-3
1. अधुनिक पाश्चात्य जगत के आर्थिक आधार
2. वाणिज्यवाद एवं व्यापारिक क्रान्ति
3. औद्योगिक क्रान्ति
4. उपनिवेशवाद का प्रारम्भ

इकाई-4
1. इग्लैण्ड में गृह युद्ध : घटनाएं
2. इग्लैण्ड में गृह युद्ध : कारण एवं परिणाम
3. गौरव पूर्ण क्रान्ति (1688)
4. क्रेमलीन का शासन

इकाई-5
1. लुई चतुर्दश - गृह नीति
2. लुई चतुर्दश - विदेश नीति
3. अमेरिका का स्वतंत्रता संग्राम
4. फ्रांस की क्रान्ति के कारण एवं नेशनल असेम्बली

संदर्भ ग्रंथ -

1. बी. एन. मेहता- अर्वाचीन यूरोपढ़
2. बी.आई. पाल – आधुनिक यूरोप
3. K.L. Khurana - History of Modern World.
4. Khurana And Sharma - Modern Europe 1453-1789 A.D.

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ECONOMICS

PAPER - I

MICRO ECONOMICS

(Paper Code-0111)

UNIT-1 Introduction - Definitions Nature and scope of Economics, Methodology in Economics. Utility - Cardinal and Ordinal approaches, Indifference curve, Consumer's equilibrium (Hicks and slutsky), Giffin goods, Compensated demand, Demand - Law of Demand, Elasticity of demand - Price, income and cross, elasticity Consumer's surplus, Engel curve.

UNIT-2 Theory of production and cost - Production decision, Production function, Iso-quant, Factor substitution, Law of variable proportions, Returns to scale, Economies of scale, Different concepts of cost and their interrelation, Equilibrium of the firm, expansion path.

UNIT-3 Market structure-perfect and imperfect markets, Equilibrium of a firm-Perfect competition, Monopoly and price discrimination, Measure of monopoly power, Monopolistic competition, Duopoly, Oligopoly, Taxation and equilibrium of a firm, Notion of controlled and administered prices.

UNIT-4 Factor pricing-Marginal productivity theory of distribution, Theories of wage determination, wages and collective bargaining, wage differentials, Rent - Scarcity Rent, differential rent, Quasi rent, Modern Rent Theroy, Interest Classical and Keynesian Theories, Modern Theory, Profits - Innovation, Risk bearing and Uncertainty theories.

UNIT-5 Wel fare economics - Problems in measuring welfare, Classical welfare economics, Pareto's criteria, value judgement, Concept of a social welfare function, Compensation principle - Kaldor, Hicks.

BASIC READING LIST -

1. Bach, G. L. (1977) Economics, Prentice Hall of India, New Delhi.
2. Gauld, J.P. and Edward P. L. (1996), Microeconomic Theory, Richard lrwin, Homewood.
3. Henderson J. and R. E. Quandt (1980), Microeconomic Theory : A Mathematical Approach, McGraw Hill, New Delhi.
4. Heathfield and Wibe (1987), An Introduction to Cost and Production Functions, Macmillan. London.
5. Koutsoyiannis, A. (1990), Modern Microeconomics, Macmillan.
6. Lipsey, R. G. and K. A. Chrystal (1999) Principles of Economics (9th Edition), Oxford University Press, Oxford.

PAPER - II

INDIAN ECONOMY

(Paper Code-0112)

UNIT-1 Towards a Market Economy - Changes in the land system. Commercialization of agriculture, Policy of discriminating protection and Industrial development, Monetary and currency developments, Central and Commercial Banking developments.

Indian Economy at the Time of Independence, Backward economy, Stagnant economy, Other salient features, planning exercises in India - National Planning Committee, Bombay Plan, People's Plan. Gandhian Plan, The Planning Commission.

UNIT-2 Structure of Indian Economy - Basic features, Natural resources - Land, water and forest resources, Broad demographic features - Population size and qrowth rates, Sex composition, Rural - urban migration, Occupational distribution, Problem of over population, Population policy, Infra - structure development, National income.

UNIT-3 Planning in India - Objectives, Strategy; Broad achievements and failures, Current Five Year Plan - Objectives, Allcation and targets, New Economic Reforms - Liberalization, Privatization and globalization. Agriculture - Nature and importance, Trends in agricultural production and productivity, Factors determining productivity, Land reforms, New agricultural strategies and green revolution, Rural credit, Agricultural marketing.

UNIT-4 Industry - Industrial development during the planning period, Industrial policy of 1948, 1956, 1977 and 1991. Industrial licencing policy - MRTP Act, FERA and FEMA, Growth and problems of small scale industries, Role of public sector enterprises in India's industrilization.

UNIT-5 External Sector - Role of foreign trade, trends in exports and imports, Composition and direction of India's foreign trade, Balance of payments crisis and the new economic reforms - Export promotion measures and the new trade policies. Important areas of concern - Poverty, inequality and unemployment, Rising Prices.

BASIC READING LIST -

1. Datt, R. and K. P. M. Sudharam (2001) Indian Economy S. Chand & Company Ltd. New Delhi.
2. Dhingra, I. C. (2001), The Indian Economy E..nment and Policy, Sultan Chand & Sons. New Delhi.
3. Dutt. R. C. (1950) The Economic History of India Under Early British Rule. Low Price Publications. Delhi.
4. Kumar, D. (Ed.) (1982), The Cambondge Economic History of India, Volume II. 1957-1970. Oricnt Longman Ltd. Hyderabad.
5. Misra, S. K. and v. K. Puri (2001), Indian Economy - Its Development Experience, Himalaya Publication House, Mumbai.

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दर्शन शास्त्र

बी ए. प्रथम वर्ष दर्शन शास्त्र में दो प्रश्न पत्र (75 अंक) होंगे -

1. भारतीय दर्शन की रूपरेखा
2. पाश्चात्य दर्शन का इतिहास

प्रत्येक प्रश्न पत्र पाँच इकाईयों में विभाजित है । प्रत्येक इकाई में से एक प्रश्न हल करना अनिवार्य होगा ।

प्रथम - प्रश्न पत्र

भारतीय दर्शन की रूपरेखा

(पेपर कोड-0127)

इकाई-1 1. भारतीय दर्शन - परिचय एवं मुख्य विशेषताएँ,
2. वेद एवं उपनिषद् - ब्रह्म, आत्मा, ऋत्,
3. चार्वाक दर्शन - तत्व मीमांसा

इकाई-2 1. जैन दर्शन - स्याद्वाद, जीव,
2. बौद्ध दर्शन - चार आर्य सत्य, अनात्मवाद

इकाई-3 1. न्याय दर्शन - प्रमाण (प्रत्यक्ष एवं अनुमान), ईश्वर,
2. वैशेषिक दर्शन - परमाणुवाद

इकाई-4 1. सांख्य दर्शन - प्रकृति, पुरुष, विकासवाद,
2. योग दर्शन - अष्टांग योग

इकाई-5 1. शंकराचार्य का अद्वैत दर्शन - ब्रह्म, आत्मा, माया,
2. रामानुज का विशिष्टाद्वैत - ब्रह्म, जीव, भक्ति एवं प्रपत्ति

ENGLISH VERSION

QUTLINES OF INDIAN PHILOSOPHY

(Paper Code-0127)

UNIT-1 1 Indian Philosophy - Introduction and main characterestics
2 Veda and Upnisada - Brahman, Atman, Rta.
3 Carvaka Darskan - Metaphysics

UNIT-2 1 Jainism - Syadvada, Jiva.
2 Buddhism - Four noble truths, theory of No - Soul.

UNIT-3 1 Nyaya Darsana - Praimanas (Pratysa and Anuman), God
2 Vairesika Darsana - Paramanuvada.

UNIT-4 1 Sankhya Darsan - Prakriti, Purusa, Evolutionism
2 Yoga Darsan - Eightfold path

UNIT-5 1 Advaita Darsana of Sankaracharya - Brahman, Atma, Maya
2 Visistadvait - Brahman, Jiva, Bhakti and Prapafti

SUGGERTED BOOKS -

1	M. Hiriyanna	:	Out lines of Indian Philosophy
2	C. D. Sharma	:	A Critical Survey of Indian Philosophy
3.	दत्त एवं चटर्जी	:	भारतीय दर्शन का परिचय
4.	श्रीमती शोभा निगम	:	भारतीय दर्शन
5.	संगमलाल पांडेय	:	भारतीय दर्शन

6. बी. एन. सिंह : भारतीय दर्शन
7. सिंह एवं सिंह : भारतीय दर्शन

द्वितीय प्रश्न पत्र
पाश्चात्य दर्शन का इतिहास
(पेपर कोड-0128)

इकाई-1 1. पाश्चात्य दर्शन - परिचय
2. प्लेटो - प्रत्ययों का सिद्धांत
3. अरस्तू - कारणता का सिद्धांत

इकाई-2 1. थामस एक्वीनास - ईश्वर के अस्तित्व के प्रमाण
2. डेकार्ट - संदेहवादी पद्धति, आत्मा का अस्तित्व, द्वैतवाद (मैं सोचता हूँ अत: मैं हूँ) ।

इकाई-3 1. स्पिनोजा - द्रव्य, गुण, पर्याय
2. लाइन्निज - चिद्बिन्दुवाद

इकाई-4 1. लॉक - सहज प्रत्ययों का खंडन, द्रव्य : प्राथमिक और द्वैतयिक गुण
2. वर्कले - प्राथमिक और द्वैतयिक गुणों का खंडन, दृष्टि ही सृष्टि हैं ।

इकाई-5 1. ह्यूम - संस्कार और प्रत्यय संदेहवाद, आत्मा का खंडन
2. कांट - समीक्षावाद

ENGLISH VERSION
HISTORY OF WESTERN PHILOSOPHY
(Paper Code-0128)

UNIT-1 1 Western Philosophy - Introduction
2 Plato - Theory of Ideas
3 Aristotle - Theory of Causation

UNIT-2 1 st. Thomas Aquinas - Proos for the Existence of God
2 Descartes - Method of Doubt, Existence of Soul (Cogito ergo sum) Dualism

UNIT-3 1 Spinoza - Substance, attributes and modes.
2 Leibnitz - Monadology

UNIT-4 1 Locke - Refutation of innate Ideas
- Substance : Primay and Secondary qualities
2 Berkeley - Rejection of the distinction between primary and Secondary qualities

UNIT-5 1 Hume - Impresion and Ideas, Scepticism, Rejection of Self
2 Kant - Criticism

SUGGESTED BOOKS -

1 W. T. Stace - A Crifical History of Greek Philosophy
2. श्रीमती शोभा निगम - ग्रीक एवं मध्ययुगीन दर्शन
3 A. K. Rogers - A student's History of Philosophy
4. बी. एन. सिंह - पाश्चात्य दर्शन
5. याकूब मसीह - पाश्चात्य दर्शन
6. श्रीमती शोभा निगम - आधुनिक पाश्चात्य दर्शन

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संस्कृत

प्रथम प्रश्न-पत्र

नाटक, व्याकरण और अनुवाद — पूर्णांक 75

(पेपर कोड-0125)

इकाई-1 स्वप्नवासवदत्तम् - व्याख्या - अंक 15

इकाई-2 समीक्षात्मक प्रश्न - अंक 15

इकाई-3 सुबन्त (शब्द) राम, गति, भानु, पितृ, करिन् भूभृत्, कर्तृ, चन्द्रमस्, भगवत्, आत्मन्, लता, मति, नदी, धेनु, वधु, मातृ, फल, वारि, मधु, वाच्, रात्रि, सर्व, तद्, एतद्, यद्, इदम्, जगत्, अस्मद् तथा युष्मद् एक, द्वि. त्रि. चतुर वचन तिङन्त (धातु रूप) भ्वादि, दिवादि, तुदादि, चुरादि, इन चार वर्णों के धातुओं के लट्, लोट्, लङ् और विधिलिंङ्लकारों के रूप एवं अस और कृ धातुओं के भी लकार के अंक 20

इकाई-4 प्रत्याहार, संज्ञा तथा सन्धि और विभक्तयर्थ - अंक 15

इकाई-5 हिन्दी से संस्कृत में 10 वाक्यों का अनुवाद - अंक 10

1. रचनानुवाद कौमुदी - डॉ. कपिल देव द्विवेदी
2. संस्कृतस्य व्यावहारिक स्वरूपम् - डॉ. नरेन्द्र, श्री अरविन्द आश्रम,
3. संस्कृत व्याकरण - श्री धर वसिष्ठ
4. शुकनासोपदेश - मोती लाल बनारसीदास
5. संस्कृत में अनुवाद कैसे करें - उमाकान्त मिश्र सास्त्री, भारती भवन पहना. 1971
6. साधुबोध व्याकरणरम् - डॉ. श्रीमती पुष्पा दीक्षित, यन्त्रस्थ - पाणिनीय शोध संस्थान तेलीपारा, बिलासपुर (छ. ग.)
7. लघु सिद्धान्त कौमुदी - श्री शारदा रञ्जन रॉय - 1954
8. संस्कृत निबन्ध रत्नाकर - डॉ. शिव प्रसाद भारद्वाज, अशोक प्रकाशन दिल्ली- 1977 द्वितीय संस्करण

संस्कृत

द्वितीय प्रश्न पत्र

गद्य, कथा एवं साहित्येतिहास — पूर्णांक 75

(पेपर कोड-0126)

इकाई-1 शुकनासोपदेश (व्याख्या) - अंक 20

इकाई-2 हितोपदेश (मित्रलाभ) (व्याख्या) - अंक 20

इकाई-3 शुकनासोपदेश व हितोपदेश के समीक्षात्मक प्रश्न - अंक 10

इकाई-4 संस्कृत, नाटक एवं कथा साहित्य का इतिहास -अंक 15

इकाई-5 प्रमुख कवियों का प्रमुख परियच : महाकवि कालीदास, महाकवि माघ, महाकवि भारवि, महाकवि श्रीहर्ष, महाकवि अंबिकादत्त व्यास - अंक 10

1. संस्कृत साहित्य का अभिनव इतिहास - डॉ. राधा वल्लभ, वि. वि. प्रकाशन, सागर
2. संस्कृत साहित्य का इतिहास - पं. बलदेव उपाध्याय
3. हितोपदेश मित्रलाभ - मोतीलाल बनारसीदास काशी अथवा चौखम्बा प्रकाशन, काशी

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GEOGPAPHY

1. The B.A. Part-I Exmination in geography will be of 150 marks. There will be two theory papers and one Practical each of 50 marks as follows :

   Paper - I Physical Geography-I (Elements of Geomorphology)

   Paper - II Introduction to Geography and Human Geography.

   Paper - III Practical Geography

2. Each theory paper shall be of three hours duration.

3. Candidates will be required to pass separately in theory and practical examinations.

4. Each thory paper is divided into five units.

5. (a) In the practical examination the following shall be the allotment of time and marks:

   (i) Lab. Work - 25 marks up to three hours.

   (ii) Field work (survey) - 15 marks two hours.

   (iii) Practical record and viva voce - 10 marks

   (b) The external and internal examiners shall jointly submit marks.

   (c) The candidates shall present at the time of the practical examination their practical record regularly, signed by the teachers concerned.

PHYSICAL GEOGRAPHY - I

PAPER - I

ELEMENTS OF GEOMORPHOLOGY M.M. : 50

(Paper Code-0117)

UNIT-1 The nature and scope of Physical Geography; Inter relation of Physical Geography with other branches of earth science. The place of Geomorphology in Physical Geography, Geological Time scale.

UNIT-2 Earth's interior, Wegner's theory of Continental Drift, Plate Tectonics. Earth movements:- orogenic and epeirogenic. Isostasy, Earthquakes and Volcanoes.

UNIT-3 Rocks - Origin and composition of rocks, weathering, formation of regolith and soils, rocks and relief. Geomorphic agents and processes-erosion, transportation and deposition, mass wasting.

UNIT-4 Evolution of Land scape, concept of cycle of erosion, interruption of cycle of erosion. Fluvial, Arid, Glacial, Karst and Coastal Landscapes.

UNIT-5 Application of Geomorphology to Hydrology, Mining, Engineering works, Hazard management and urbanisalion.

PAPER - II

INTRODUCTION TO GEOGRAPHY AND HUMAN GEOGRAPHY M.M. : 50

(Paper Code-0118)

UNIT-1 The Nalure of Geography, objectives and relevance, Place of Geography in the classification of Sciences, Geography and other disciplines.

UNIT-2 Geography as the study of environment, man - environment relationship; ecology and ecosystems. Environmental determinism possibilism Neo - determinism; Dualism in Geography - Systematic / Regional, Physical/Human, Complementarity.

UNIT-3 Delinition and scope of Human Geography.

Human Races - Their characteristics and distribution.

Human adaptation - To the environment; Eskimos, Bushman, Pigmy, Gond, Masai, and Naga.

UNIT-4 Growth of Population; Distribution of Population, world distribution patlern - physical, economic and social factors influencing spatial distribution, concept of over population under population and optimum population. Migration - internal and international

Settements - Types and patterns of setllements.

UNIT-5 A brief historical overview of Geography as a discipline, recent trends in geography with special reference to India, imperatives for the future, career opportunities for geographers.

PAPER - III

PRACTICAL GEOGRAPHY **M.M. : 50**

SECTION A - CARTOGRAPHY AND STATISTICAL METHODS **M.M. 25**

1. Scale - Plain, Time, Diagonal and Comparative.
2. Methods of showing relief - hachures, contours; Representation of different land forms by contours, Drawing of profiles - serial, superimposed, projected and composit.
3. Line graph & Bar graph (Simple & Compound)
4. Circle Diagram, Pie diagram, wind rose.
5. Population pyramid.
6. Mean, Median and Mode.

SECTION B - SURVEYING - **M.M. 15**

7. Chain and tape Survey.

PRACTICAL RECORD AND VIVA VOCE **M.M. 10**

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SOCIOLOGY

PAPER - I

INTRODUCTION TO SOCIOLOGY M.M. : 75

(Paper Code-0115)

UNIT-1 The Meaning of Sociology - The Sociological perspective - Sociology and social sciences - The Scientific and humanistic Orientations ot Sociological Study. Basic concepts - Society, Community, institution, association, groop social structure, status and role.

UNIT-2 Institution, Family and Kinship, religion, Eduction, Politics. The Individual and society - Society. Culture and socialisation - Relation between individual and society - Social control, norms, values.

UNIT-3 Social Stratification and mobility Meaning forms and theories.

UNIT-4 Social Change Meaning and type evolution and progress factors of social change.

UNIT-5 Introduction to appliecd Sociology and Social Policy and action - Sociology and development, Sociology and professions.

ESSENTIAL READINGS :-

1 Bottomore T. B., Sociology - A guide to Problems and Literature, Bombay. George Allen and unwin (India) 1972.

2 Inkeles, Alex, What is sociology ? New Delhi, Prentice Hall of India 1987.

3 Jayram, N., Intrcductory Sociology, Madras Macmillan India 1988.

4 Johnson Harry M., Sociology of systematic Introduction New Delhi Allied Publishers1995.

PAPER - II

FOUNDATIONS OF SOCIOLOGICAL THOUGHT M.M. : 75

(Paper Code-0116)

UNIT-1 The Pioneers : emergence of Sociology.
Comle : Positivism - Spencer - Social Drwinism, Superorganic evolution

UNIT-2 The Classical tradition Durkheim - Social Solidarity and Suicide. Weber authority and the protestant Ethic and the spirit of capitalism.

UNIT-3 Marx : Materialist Conception of history and class struggle.

UNIT-4 Pareto : Circulation of elites and logical and nonlogical action.

UNIT-5 Development of Sociological thought in India :-
Mahatma Gandhi Ahinsa, Satya Graha,
Radha Kamal Mukerjee - The Concept of value.

ESSENTIAL READINGS -

Barres H.E. : Introduction to the history of sociology chicago the university of chicago press 1959.

Coser Lewis A : Master of sociological thought New york Harcourt Brace Jovanovich 1979.

Singh, yogendra - Indian sociology - social conditioning and emerging frends. New Delhi vistaar 1986.

Zeitlin, Irving - (Indian edition) Rethinking sociology : A critigue of contemporary thoiry Jarpur Rawal 1998.

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राजनीति विज्ञान

प्रथम प्रश्न पत्र

राजनीति सिद्धांत

पूर्णांक 75

(पेपर कोड-0113)

इकाई-1 **राजनीति विज्ञान** - परिभाषा प्रकृति, क्षेत्र, अध्ययन पद्धतियाँ, परम्परागत और व्यवहार परक स्वरूप । राजनीतिक सिद्धांत, महत्व ।

सत्ता एवं प्राधिकार - अर्थ, परिभाषा, विशेषताएँ एवं संबंध ।

इकाई-2 **राज्य** - अर्थ, आवश्यक तत्व, राज्य की उत्पत्ति के विभिन्न सिद्धांत ।

राज्य - एक प्रभावी परिपेक्ष्य में ।

इकाई-3 सम्प्रभुता, अर्थ, विशेषताएँ, सिद्धांत, महत्व ।

नागरिकता, अधिकार, स्वतंत्रता - अर्थ, परिभाषा, विशेषताएँ एवं सिद्धांत ।

इकाई-4 **समानता एवं न्याय** - अर्थ, परिभाषा, विशेषताएँ, संबंध ।

लोकतंत्र - अर्थ, परिभाषा, विशेषताएँ, आवश्यक परिस्थितियाँ । लोकतंत्र को चुनौतियाँ ।

इकाई-5 **विकास एवं कल्याणकारी राज्य** - अवधारणा, विशेषताएँ, कार्य, उपलब्धियाँ, चुनौतियाँ ।

सामाजिक परिवर्तन के सिद्धांत -अर्थ, परिभाषा, विशेषताएँ

अनुगंसित पुस्तकें-

1. जी. एन. सिंह - फंडामे. प्लस ऑफ पोलिटिकल साइंस एन्ड आर्गेनाइजेशन ।
2. डी. हेल्ड - मॉडल्स आफ डेमोक्रेसी पोलिटिकल थ्योरी एवं मार्डन ट्रेड
3. आगी वाईम ई. - पोलिटिकल थ्योरी ।
4. डी. मिलर - सोशल जस्टिस, सिटीजनशिप एन्ड नेइनल आइडेन्टिटीज
5. एस. एम. ओकिन - जस्टिस जेंडर एन्ड दी फैमली
6. हरिहर राय एवं सिंह - राजनीति शास्त्र के नये आयाम
7. डॉ. बाबूलाल फाड़िया - राजनीति शास्त्र के सिद्धांत
8. डॉ. ओम नागपाल - राजनीति विज्ञान के मूल तत्व ।
9. डॉ. बी. आर पुरोहित - राजनीति शास्त्र के मूल सिद्धांत ।
10. एस. गया ग्वाली - पोलिटिकल थ्योरी आइडियाज एन्ड कांसेप्ट

द्वितीय प्रश्न पत्र

राज्य शासन एवं राजनीति

अंक 75

(पेपर कोड-0114)

इकाई-1 **भारतीय संविधान का निर्माण एवं इसके स्रोत** - भारतीय संविधान की आधार भूत विशेषताएँ, प्रस्तावना । मूल अधिकार, मौलिक कर्त्तव्य एवं राज्य के नीति निर्देशक तत्व

इकाई-2 केन्द्रीय शासन - राष्ट्रपति, संसद, मंत्री मंडल एवं प्रधान मंत्री, गठन, नियुक्ति, अधिकार, शक्तियाँ एवं वास्तविक स्थिति ।

इकाई-3 राज्य शासन - राज्यपाल, मंत्री परिषद् एवं मुख्य मंत्री नियुक्ति, गठन, अधिकार, शक्तियाँ एवं वास्तविक स्थिति

केन्द्र राज्य संबंध - प्रशासनिक, न्यायिक एवं आर्थिक

इकाई-4 सर्वोच्च न्यायालय एवं संवैधानिक प्रक्रिया ।

गठन, क्षेत्राधिकार वर्तमान परिपेक्ष्य में बदलता स्वरूप

राजनीतिक दल - राष्ट्रीय एवं क्षेत्रीय

अर्थ, परिभाषा, विशेषताएं एवं प्रकार

निर्वाचन आयोग एवं निर्वाचकीय सुधार

गठन, कार्य अधिकार एवं निर्वाचकीय सुधार एवं अध्ययन ।

इकाई-5 भारतीय राजनीति के प्रमुख मुद्दे -

जाति, धर्म, भाषा, क्षेत्र एवं गरीबी उन्मूलन ।

अनुशंसित पुस्तकें-

1. डी. डी. बसु - एन इंट्रोडक्शन दी कानस्टीट्यूशन आफ इंडियन
2. सी. पी. भांभरी - दी इंडियन स्टेट - 50 इयर्स
3. ग. चन्द्रा - फेडर्रज्मि इन इंडिया द स्टडी ऑफ यूनियन स्टेट रिलेशन ।
4. बी. गल. पाड्या - स्टेट पालिटिल्स इन इंडिया ।
5. एस. कश्यप - अवर पार्लियामेंट ।
6. रजनी कोठारी - राज्यों की राजनीति ।
7. डी. सी. जौहरी - भारतीय शासन एवं राजनीति ।
8. जैन फाड़िया - भारतीय शासन एवं राजनीति ।
9. वीरकेश्वर प्रसाद सिंह - भारतीय शासन ।
10. वी. कुप्पुग्याकी - सोशल चेंज इन इंडिया ।
11. इकबाल नारायण - स्टेट पॉलिटिक्स इन इंडिया ।

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MUSIC

Note : 1. B. A.(General) three year degree course with the relative wcight of pracicval and thcory being in the proportion 50 and 50 respectively (Model curriculum, page No.21A) courses. Hence the Central Board of Studies devide the ratio as :-

Ist paper 40 marks (written or Theory) Revised as 50

2ad paper 40 mars (written or Theory) Revised as 50

practical of 10 marks from which 10 marks are for the intcrnal sossional work.

B.A. General (as one of the optional objccts).

Hindustain Music (Vocal +Instrumental..)

THEORY

PAPER - I **M.M. : 50**

(Paper Code-0131)

1. Definition and Illustrations :- Naad, Shruti, Swara, Saptak, Purvang, Uttarang, Vadi, Samvadi, Vivadi, Anuvadi, Alankar, That, Mind, Soota, Bol, Alap, Tan, Tihai, pakad.
2. General knowledge of the Musical Styles:-

   Dhrupad, Dhamar, khyal, Thumari, Tarana, Tappa, Hori, Chaturang, Geet, bhaion, Ghazal,
3. General Kniowldege of the biographies and the contributions of the following Musi cians:-

   Ameer khusroi, Swami Haridas, Tansen, Nayak Baiju, Nayak Gopal, Tyagraja.
4. Merits and Demerits of Musicians according to the Shastras.
5. Study of the Theoritical details of prescribed Ragas for Practical Course as follows :- Yaman, Bhupali, Allhaiya Bilawal, Bhairav, Kafi, Khamaj, Brindavani - sarang, Durga (Bilawal That).

THEORY

PAPER - II **M.M. : 50**

(Paper Code-0132)

1. Hindustani Music and Karnataka Music, short history, similarities and Differences.
2. Study of Natation Systems - Pt. Bhatkhande and Pt. Paluskar.
3. Time Theory of the Ragas, Purva Raga, Utlar Raga, Sandhi Prakash Raga,
4. Formation of Ragas, Sampurna, Shadav, Audawa, Jati, That or Mel Theory.
5. Definition of Tala, Matra, Avartan, Bol, Vibhag, Khali, Bhari, Vilambit, Madhya and Drutlaya Writing of the Talas in Notation with Dugan

PRACTICAL

M.M. : 50

1. Alankar (Palta)
2. Study of the following Ragas :- Yaman, Bhupali, Alahaiya Bilawal, Bhairav, Kafi, Khamaj, Brindavani Sarang, Durga (Bilawal That)
3. Two Vilambit Khyalas or Masitkhani Gat in any two of the above mentioned Ragas.
4. Madhya Laya Khyalas or Razakhani Gat with Alap, Tan, Tora Jhala, in any five of the above Ragas.
5. Lakshan Geet, Saragam Geet in all the above Ragas.
6. Ability to demonstrate (orally by giving Tali and Khali of on hand) Talas Prescribed in course as follows :- Dadra, Kaharva, Teen Tal, Ektal, Chautal, Jhaptal.
7. One Dhrupad or Dhamar / one Gat other than teen Tal (Composition only)
8. One Bhajan, Ghazal, Geet, Patrioteec song and prayer.

INTERNAL SCSSIONAL WORK -

1. Ten Descriptions of Music Programmes (Radio and T. V. personally atlonded)

RECOMMENDED BOOK -

1. Kramik Pustak Malika (Part I to Part IV) By pt. V.N. Bhatkhande.
2. Sangitanjali Part I to VI By Pt. Onkar Nath Thakur.
3. Sangeet Visharad (Hathras) By Vasant
4. Sangeet Bodh, By Dr. Sarad Cahndra Paranjape
5. Dhawani aur Sangeet, by Prof. L. K. Sing
6. Tan Malika, by Raja Bhaiya Poocvale
7. Hamare Sangeet Ratna, by Lakshmi Narayan Garg.
8. Rag Parichaya Part I to IV By Harish Chandra Shrivastava
9. All Journals and Magazenes of Music
10. Sitar Malika, (Hathra)
11. Tabla Vigyan, by Dr. Lalmani Misra
12. Swar aur Ragon ke Vikas me Vadyon ka Yogdan, By Prof. Indrani Chakrawarty.
13. Sangeet Manjusha By Prof. Indrani Chakrawarty.
14. Music - its methods and technique and teaching in Higher Education.
    By Prof. Indrani Chakrawarty.
15. Sangeetanjali Part I to V By Pt. Ramashraya Jha.

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MANAGEMENT

Paper - I

PRINCIPLE OF MANAGEMENT

(Paper Code-0135)

Time : 3 Hours **Max. Marks : 75**

UNIT-I Evolution of Modern Industrial Organisation and Management Thought.

Industrial Revolation - Impact on society

Contribution - Frederic Winslow Taylor Eiton Moyo

- Douglas Mc. Gregor

The nature and scope of Management process definition of Management and Management process important characteristics of the process. The eight prepositions for effective organisation Philosophy, Urwick's Ten Principles, Different Schools of Thought.

UNIT-II Coordination - Definition and Meaning, Need and importance principles and Techni-ques.

Planning - Definition, Nature and purpose nature and process of forecasting.

Basic objective & Types of Plan - Objectives long and short range criteria of sound objectives.

- Types of Plans Decision making Meaning and basis for selecting alternatives.

- Strategies : Policies and Procedure.

- Qualities of Planning Process.

ORGANISATION

UNIT-III Nature, Importance, Components of Organisation,

Departmentation - Methods.

Span of Control - Wide and Narrow Spans.

Authority - Line and Staff, Decentralization, delegation, types of staff authority, factors determining the degree of decentralization.

Staffing : Nature and Importance.

Factors determining the selection of Managerial personnel.

Management Appraisals.

Development and Training of Managers.

UNIT-IV Deirection : Nature and importance of Communication.

Methods of building a communication net work.

Personal communication and use of orders.

Changing patterns of supervisory responsibility.

Factors of effective supervision

Selection and training of supervisors.

T.W.I. Programmes.

Nature and Importance of discipline.

Causes of Indiscipline.

Means of effective discipline.

UNIT-V Basic steeps in control process.

Importance of Control.

Requirements for an effective control.
Purpose of Budgeting.
Types of budgets.
Elements of costs and types of costing.
Role of cost accounting.

BOOKS RECOMMENDED :

1. Koontz, Harold : Principles of Management
2. Chatterjee, S. S. : An Introduction to Management
3. Kast, Fremont E. : Organisation Management
4. Asthena G. P. : The Ground Work of Management.
5. डॉ. गुप्ता : व्यवसाय प्रशासन एवं प्रबंध
6. डॉ. आर.सी. सक्सेना : व्यवसाय प्रशासन एवं प्रबंध
7. Dr. K. N. Dinesh : Structure of Medium Scale Industries.

Paper-II

COMMERCIAL ACCOUNTANCY

(Paper Code-0136)

Max. Marks : 75

UNIT-1 Definition and objects of book-keeping, principle ofDouble Entry, its objects and advatages.
Journal Simple journal enatries, compound journal entries rules for recording journ.

UNIT-2 Ledger & ledger account, positing of journal entries, types of ledger accounts Balancing of ledger accounts Cash book: Cash book with cash and discount columns three column or cash book, petty cash book.

UNIT-3 Bank reconciliation statement.
Bill Transaction.
Endorsement of Bill
Dishonourment of Bill
Accomodation Bill

UNIT-4
1. Trial Balance.
2. Rectification of errors
3. Capital andrevenue expenditure.

UNIT-5 Final Accounts :
1. Manufacturing accounts trading
2. Profit and loss account
3. Balance Sheet.

BOOKS RECOMMENDED :

1. M.M. Shah : Double entry Book keeping
2. R.R. Gupta : Book keeping & Accounts.
3. T.S. Grewal : Introduction to accountancy.
4. Juneja, Chawla & Saksena : Elementary Book-keeping.
5. Karim & Khanuja : Financial Accounting

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ANTHROPOLOGY

PAPER-I

FOUNDATION OF ANTHROPOLOGY M. M. 50

(Paper Code-0141)

UNIT-1 Meaning and scope of Anthropology, History of Anthropology Branches of Anthropology.

(a) Sociocultural Anthropology;

(b) Physical-Biological Anthropology;

(c) Archaeological Anthropology;

(d) Linguistic Anthropology.

UNIT-2 Relationship with other disciplines : Life sciences, Earth sciences, Medical Sciences, Social Sciences, Humanities, Environment Sciences.

UNIT-3 Foundation in Biological Anthropology.

(a) Human Evolution

(b) Human Variation

(c) Human Genetics

(d) Human Growth and Development.

UNIT-4 Fundamentals in Social-Cultural Anthropology.

(a) Culture, Society, Community, Group, Institution.

(b) Human Institution : Family, Marriage, Kinship Religion.

(c) Development and change.

(d) Research Methods : Tools and Techniques

UNIT-5 Fundamentals in Archaeological Anthropology.

(a) Tool typology & Technology.

(b) Cultural cvolution : Broad outlines of cultures.

(c) Chronology.

PAPER - II

INTRODUCTION TO PHYSICAL ANTHROPOLOGY

(Paper Code-0142)

UNIT-1 Theories of organic evolution, synthetic theory of evolution.

UNIT-2 Position of Man in animal kingdom : comparative anatomy of Man and Apes.

UNIT-3 Fossil evidence of human evolution, origin of tool making and their evolution.

UNIT-4 Concept of race, Genetic basis of Race, UNESCO Statement on RACE-Ethnic Group population, Racial classification of human populations.

UNIT-5 Human Genetics, Mendelian principles, Genetic markers, DNA.

PAPER - III

ANTHROPOLOGY PRACTICAL

I Identification of long bones and Girdles :

Sketching and labelling

II. Craniometry :

(i) Maximum Cranial length
(ii) Maximum Cranial breadth
(iii) Minimum frontal Breadth
(iv) Bizygomatic Breadth
(v) Nasal Height
(vi) Nasal Breadth
(vii) Basion Bregmatic Height
(viii) Bimaxillary Breadth
(ix) Biometrical Breadth
(x) Length of occipital foramen.

III. Somatometry :

(i) Max. Head Length
(ii) Max. Head Breadth
(iii) Minimum Frontal Breadth
(iv) Nasal Length
(v) Nasal Breadth
(vi) Height Vertex
(vii) Height Acromion
(viii) Morphological Facial length
(ix) Bigonial Breadth
(x) Bizygomatic Breadth.
(xi) Somatoscopic Observations :-

(i) Skin (ii) Eye (iii) Nose (iv) Forehead.

PRACTICAL SCHEME M.M. - 50

1. Algae / Fangi - matarial 06
2. Bayophyta / pteridophyla material 06
3. Diseare Symploms (path) / Gram's slaining 03
4. Cytology / Genelics 15
5. Spols - (1-5) 10
6. Viva voce 05
7. Sessional 05

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MATHEMATICS

NOTE : 1 The model curriculum proposed by UGC was discussed in the meeting and it was resolved that the proposed syllabus for B.Sc. Part I supplied by U.G.C. be recommended as syllabus for Exam 2003 of B.A./B.Sc. Part I in all the Universities/ Colleges of Chhattigarh.

2 The UGC syllabus has been divided in to 5 units...

MATHEMATICS

PAPER - I

ALGEBRA AND TRIGONOMETRY (Paper Code-0145) M.M. - 50

ALGEBRA :

UNIT-1 Mappings. Equivalence relations and partitions. Congruence modulor symmetric, Skew symmetric, Hermition and skew, Hermition matrices. Elementary Matsices Operations on inverse of a matrix. Linear indepenence of row and column matrices. Row rank, column rank and rank of a matrix. Equivalence of column and row ranks.

UNIT-2 Eigenvalues, eigenvectors and the characteristic equastion of a matrix. Cayley Hamilton theorem and its use in finding inverse of a matrix. Applications of matrices to a system of linear (both homogenous and non-homogeneous) equations. Theorems on consistency of a system of linear equations.

UNIT-3 Relations between the roots and coefficients of general polynomial equation in one variable. Transformation of equations. Descarte's rule of signs. Solution of cubic equations (Cardon method). Biquadratic equations.

UNIT-4 Definition of a group with examples and simple properties. Subgroups. Generation of groups. Cyclic groups. Coset decomposition. Lagrange's theorem and its consequences. Fermat's and Euler's theorems. Homomorphism and Isomorphism. Normal subgroups. Quotient groups. The fundamental theorem of homomorphism. Permutation groups. Even and odd permutations. The alternating groups An. Cayley's theorem. Introduction to rings, subrings, integral domains and fields. Characteristic of a ring.

TRIGONOMETRY :

UNIT-5 De Moivre's theorem and its applications. Direct, inverse circular and hyperbolic functions. Logarithm of a complex quanity. Expansion of trigonometrical functions. Gregory's series. Summation of series.

TEXT BOOKS :

1. I.N. Herstein, Topics in Algebra, Wiley Eastern Ltd., New Delhi, 1975.
2. K.B. Datta, Matrix and Linear Algebra, Prentice Hall of India pvt. Ltd. New Delhi, 2000.
3. Chandrika Prasad, Text-book on Algebra and Theory of Equations, Pothishala Private Ltd., Allahabad.
4. S.L. Loney, Plane Trigonometry Part-II, Macmillan and Company, London.

REFERENCES :

1. I.N. Herstein, Topics in Algebra, Wiley Eastern Ltd., New Delhi, 1975.
2. K.B. Datta, Matrix and Linear Algebra, Prentice Hall of India Pvt. Ltd. New Delhi, 2000.
3. P.B. Bhattacharya, S.K. Jain and S.R. Nagpaul, first course in Linear Algebra, Wiley Eastern, New Delhi, 1983.
4. P.B. Bhattacharya, S.K. Jain and S.R. Nagpaul, Baxic Abstract Algebra (2"" Edition), Cambridge University press, Indian Edition, 1997.

5 S.K. Jain, A. Gunawardena and P.B. Bhattachasrya, Basic Linear Algebra with MATLAB, Key college publishing (Springer-Verlag), 2001.
6 H.S. Hall and S.R. Knight, Higher Algebra, H.M. publications, 1994.
7 Chandrika Prasad, Text-Book on Algebra and Theory of Equations, Pothishala Private Ltd., Allahabad.
8 S.L. Loney, plane Trigonometry Part-II, Macmillan and Company, London.
9 R.S. Verma and K.S. Shukla, Text Book on Trigonometry, Pothishala Pvt. Ltd., Allahabad.

PAPER - II

CALCULUS (Paper Code-0146)

DIFFERENTIAL CALCULUS- **Max. Marks : 50**

UNIT-1 definition of the limit of a function. Basic properties of limits. Continuous functions and classification of discontinuities. Defferentiability. Successive differentiation. Leibnritz therem. Maclaurin and Taylor series expansions.

UNIT-2 Asymptoters. Curvature. Tests for concavity and convexity. Points of inflexion. Multiple points. Tracing of curves in Cartesian and polar coordinates.

INTEGRAL CALCULUS-

UNIT-3 Integration of irrational algebraic functions and transcendental functions. Reduction formulae. Definite integrals. Quadrature. Rectification. Volumes and surfaces of solids of revolution.

ORDINARY DIFFERENTIAL EQUATIONS-

UNIT-4 Degree and order of a differential equation. Equations of first order and first degree. Equations in which the variables are separable. Homogeneous equations. Linear equations and equations reducible to the linear form. Exact differential equations. First order higher degree equations solvable for x, y, p. Clairaut's form and singular solutions. Geometrical meaning of a differential equation. Orthogonal trajectories. Linear differential equations with constant coefficients. Homogeneous linear ordinary differential equations.

UNIT-5 Linear differential equations of second order. Transformation of the equation by changing the dependent variable / the independent variable. Method of variation of parameters. Ordinary simultaneous differential equations.

TEXT BOOKS :

1 Gorakh Prased, Differential Calculus, Pothishala Private Ltd. Allahabad.
2 Gorakh Prasad, Integral Calculus, Pothishala Private Ltd., Allahabad.
3 D. A. Murray, Introductory Course in Differential Equations, Orient Longman (India), 1967.

REFERENCES :

1 Gabriel Klambauer, Mathematical Analysis, Marcel Dekkar, Inc. New York, 1975.
2 Murray R. Spiegel, Theory and Problems of Advanced Calculus, Schaum's outline series, Schaum Publishing Co. New York.
3 N. Piskunov, Differential and Integral Calculus, Peace Publishers, Moscow.
4 P. K. Jain and S. K. Kaushik, An Introduction to Real Analysis, S. Chand & Co. New Delhi, 2000.
5 Gorakh Prasad, Differential Calculus, Pothishala Private Ltd. Allahabad.
6 Gorakh Prasad, Integral Calculus, Pothishala Private Ltd., Allahabad.
7 D. A. Murray, Introductory Course in Differential Equations, Orient Longman (India), 1967.
8 G. F. Simmons, Differential Equations, Tata McGraw Hill, 1972.

9. E. A. Codington, An Introduction to ordinary differential Equations, Prentice Hall of India, 1961.
10. H. T. H. Piaggio, Elementary Treatise on Differential Eidations and their Applications, C.B.S. Publisher & Distributors, Delhi, 1985.
11. W. E. Boyce and P.O. Diprima, Elementary Differential Equations and Boundary Value Problems, John Wiley, 1986.
12. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley and Sons, 1999.

PAPER III

VECTOR ANALYSIS AND GEOMETRY (Paper Code-0147)

VECTOR ANALYSIS- **M.M. - 50**

UNIT-1 Scalar and vector product of three vectors. Product of four vectors. Reciprocal Vectors. Vector differentiation. Gradient, divergence and curl.

UNIT-2 Vector integraton. Theorems of Gauss, Green, Stokes and problems based on these.

GEOMETRY-

UNIT-3 General equation of second degree. Tracing of conics. System of conics. Confocal conics. Polar equation of a conic.

UNIT-4 Plane. The Straight line and the plane. Sphere, Cone and Cylinder.

UNIT-5 Central conicoids. Paraboloids. Plane Sections of Conicoids. Generating lines. Confocal Conicoids. Reduction of Second degree equations.

TEXT BOOKS :

1. N. Saran and S. N. Nigam, Introduction to Vector Analysis, Pothishala Pvt. Ltd., Allahabad.
2. Gorakh Prasad and H. C. Gupta, Text Book on Coordinate Geometry, Pothishala Pvt. Ltd. Allahabad.
3. R.J.T. Bill, Elementary Treatise on Coordinate Geometry of Three Dimensions, Macmillan India Ltd., 1994.

REFERENCES :

1. Murray R. Spiegel, Theory and Problems of Advanced Calculus, Schaum Publishing Company, New York.
2. Murray R. Spiegel, Vector Analysis, Schaum Publishing Company, New York.
3. N. Saran and S. N. Nigam, Introduction to Vector Analysis, Pothishala Pvt. Ltd., Allahabad.
4. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons, 1999.
5. Shanti Narayan, A Text Book of Vector Calculus, S. Chand & Co., New Delhi.
6. S. L. Loney, The Elements of Coordinate Geometry, Macmillan and Company, London.
7. Gorakh Prased and H. C. Gupta, Text Book on Coordinate Geometry, Pothishala Pvt. Ltd., Allahabad.
8. R. J. T. Bill, Elementary Treatise on Coordinate Geometry of Three Dimensions, Macmillan India Ltd., 1994.
9. P. K. Jain and Khalil Ahmad, A Text Book of Analytical Geometry of Two Dimensions, Wiley Eastern Ltd. 1994.
10. P. K. Jain and Khalil Ahmad, A Text Book of Analytical Geometry of Three Dimensions, Wiley Eastern Ltd., 1999.
11. N. Saran and R. S. Gupta, Analytical Geometry of Three Dimensions, Pothishala Pvt. Ltd. Allahabad.

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भाषाविज्ञान

प्रथम प्रश्न-पत्र

भाषा की प्रकृति (पेपर कोड-0107)

1. भाषा – मानव एवं मानवेत्तर संप्रेषण,परिभाषा, विशेषताएँ, भाषा विज्ञान की उपयोगिता, भाषा विज्ञान की विभिन्न शाखाएँ, भाषाविज्ञान का अन्य विषयों के साथ संबंध ।
2. भाषा सीखने की प्रक्रिया – मौखिक एवं लिखित भाषा के विविध रूप, भाषा बोली में अंतर, बोली के भाषा बन जाने के कारण, भाषाई परिवर्तन के प्रकार एवं कारण ।
3. मनोभाषाविज्ञान – भाषा एवं मस्तिष्क, मस्तिष्क में भाषा के अवयव, स्थानीयकरण, भाषिक व्यतिक्रम अस्पष्टार्थकता, अनेकार्थकता ।
4. भाषा एवं विचार – भाषा – सामर्थ्य एवं भाषा–व्यवहार, सहजात परिकल्पना, निश्चयवाद – अनुभववाद ।
5. हिन्दी भाषा का उद्‌भव और विकास, हिन्दी की उपभाषाएँ तथा विविध बोलियाँ, छत्तीसगढ़ी की विशेषताएँ ।

निर्धारित पुस्तकें –

1.	सैद्धांतिक भाषाविज्ञान	–	जे. लियांस (अनवाद – सत्यकाम वर्मा)
2.	सामान्य भाषाविज्ञान	–	रॉबिंस
3.	सामान्य भाषाविज्ञान	–	बाबूराम सक्सेना
4.	भाषाविज्ञान	–	भोलानाथ तिवारी
5.	भाषा, विचार और वास्तविकता	–	बेंजामिन ली होर्फ
6.	भाषाविज्ञान	–	राजमल बोरा
7.	भाषा विज्ञान सैद्धांतिक चिंतन	–	रविन्द्रनाथ श्रीवास्तव
8	Philosophy of Language	-	S. Chopman, Routledge, London.
9	An Introduction to Language and Communication	-	A. Akmajian (etal.) Mit Press Massachusatts, 1990/1996 (Indian Repoint, Prentice Hall, 1996)

द्वितीय प्रश्न पत्र

ध्वनि और शब्द अभिरचना (पेपर कोड-0108)

1. ध्वनिविज्ञान – स्वरूप एवं शाखाएँ, वाग्यंत्र की संरचना एवं कार्य, स्वर तथा व्यंजन की परिभाषा एवं अंतर ।
2. स्वर – वर्गीकरण के विभिन्न आधार, मान स्वर – त्रिकोण, प्रधान एवं गौण मान स्वर संध्यक्षर (संयुक्त स्वर)
3. व्यंजन – वर्गीकरण के विभिन्न आधार, संयुक्त व्यंजन, अंतर्राष्ट्रीय ध्वन्मात्मक प्रतिलिपि चिह्न (आई.पी.ए.)
4. अक्षर एवं ध्वनिगुण – मात्रा, बलाघात, सुर अनुतान (सुर लहर), संगम, व्यतिरेकी वितरण, परिपूरक वितरण सह स्वनों का निर्धारण ।
5. शब्द परिभाषा, वर्गीकरण, हिन्दी में आगत शब्दावली, शब्द समूह में परिवर्तन – कारण एवं दिशाएँ (प्रकार) ।

निर्धारित पुस्तकें –

1.	ध्वनिविज्ञान	–	गोलोक बिहारी धल
2.	स्वनविज्ञान	–	चतुर्भुज सहाय
3.	भाषाविज्ञान	–	भोलानाथ तिवारी
4.	शब्दों का अध्ययन	–	भोलानाथ तिवारी
5.	हिन्दी का नवीनतम बीज–व्याकरण	–	रमेश चंद्र महरोत्रा एवं चित्तरंजन कर
6	Linguistics : An Introduction	-	A. Rad ford (et al.), Cambridge University Press, 1999.
7	A Course in Phonetics	-	P. Lodefoged, Hordcourt Brace Jovanovict New York, 1993.

विषय - नृत्य (भरत नाट्यम)

बी.ए. भाग (1) के लिये इस विषय में प्रायोगिक और सैद्धांतिक दो भाग होंगे । प्रायोगिक 50 अंक तथा सैद्धांतिक 100 अंक का होगा, जिस हेतु 50 अंक के दो प्रश्न पत्र होंगे । प्रत्येक वर्ष के पूर्णांक कुल मिलाकर 150 अंक के होंगे ।

क्र.	विवरण	पूर्णांक	उत्तीर्णांक
1.	सैद्धांतिक प्रश्न पत्र : प्रथम	50	17
2.	सैद्धांतिक प्रश्न पत्र : द्वितीय	50	17
3.	प्रायोगिक	50	17
	योग-	**150**	**51**

प्रथम प्रश्न पत्र
(पेपर कोड-0152)

1. नृत्य का इतिहास - सिन्धु सभ्यता, वैदिक काल, रामायण एवं महाभारत काल ।
2. पुराणों के आधार पर उमाशंकर की विभिन्न नृत्य संबंधी कथायें ।
3. नटवर श्री कृष्ण की नृत्य संबंधी कथायें ।
4. नाट्य की उत्पत्ति कथा (भरत नाट्य शास्त्र के प्रथम अध्याय में वर्णित)
5. लोकधर्मी नाट्य परम्परा - निम्नांकित लोकधर्मी नाट्य परम्पराओं में किन्हीं दो की संक्षिप्त जानकारी -
   (1) रामलीला (2) रासलीला (3) भवाई
   (4) राई (5) माच

द्वितीय प्रश्न पत्र
(पेपर कोड-0153)

1. ताल की प्रारंभिक जानकारी - (1) ताल की व्याख्या, (2) लय - विलंबित, मध्य, द्रुत ।
2. छत्तीसगढ़ के दो लोग नृत्यों का सामान्य परिचय - (पर्व एवं त्यौहारों के आधार पर)
   (1) करमा, (2) ददरिया, (3) सुवा, (4) रीना ।
3. संगीत की व्याख्या और नृत्य का उसमें स्थान ।
4. नृत्य के अभ्यास से शारीरिक एवं मानसिक लाभ ।
5. भारतीय नाट्य परम्परा में गुरूवंदना का महत्व ।

प्रायोगिक

1. मौखिक मुद्रा प्रदर्शन - (अभियण दर्पणम् के अनुसार)
   (1) शिवस्तुति (2) शिरोभेद (3) ग्रीवाभेद
   (3) नेत्र संचालन (5) असंयुक्त हस्तमुद्रा (6) संयुक्त हस्तमुद्रा
2. कार्यक्रम विभाग -
   (1) शारीरिक अभ्यास (2) अड़ऊ-05 अंग संचालन (पाद संचालन + हस्त संचालन) तीन काल में
   (3) पूजा नृत्य (4) अलारिपु (तिस्त्रजाति) ।

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सांख्यिकी

PAPER - I

PROBABILITY THEORY

(Paper Code-0148)

UNIT-I Important Concepts in Probability : Definition of probability - classical and relative frequency approach to probability, Richard Von Mises, Cramer and Kolmogorov's approaches to probability, merits and demerits of these approaches (only general ideas to be given).

UNIT-II Random Experiment : Trial, Sample point and sample space, definition of an event, operation of events, mutually exclusive and exhaustive events. Discrete sample space, properties of probability based on axiomatic approach, conditional probability, independence of events, Bayes' theorem and its applications.

UNIT-III Random Variables : Definition of discrete random variables, probability mass function, idea of continuous random variable, probability density function, illustrations of random variables and its properties, expectation of a random variable and its properties - moments, measures of location, dispersion, skewness and kurtosis, probability generating function (if it exists), their properties and uses.

UNIT-IV Standard univariate discrete distributions and their properties : Discrete Uniform, Binomial, Poisson, Hypergeometric and Negative Binomial distributions.

UNIT-V Continuous univariate distributions - uniform, normal, Cauchy, Laplace, Exponential, Chi-Square, Gamma and Beta distributions. Bivariate normal distribution (including marginal and conditional distributions).

Chebyshev's inequality and applications, statements and applications of weak law of large numbers and central limit theorems.

REFERENCES :

Bhat B. R, Srivenkatramana T and Rao Madhava K. S. (1997) : Statistics : A Beginner's Text, Vol. II, New Age lnternational (P) Ltd.

Edward P.J., Ford J. S. and Lin (1994) : Probability for Statistical Decision-Making, Prentice Hall.

Goon A. M., Gupta M. K., Das Gupta. B. (1999) : Fundamentals of Statistics, Vol. I, World Press, Calcutta.

Mood A. M, Graybill F. A. and Boes D.C. (1994) : Introduction to the Theory of Statistics, McGraw Hill.

ADDITIONAL REFERENCES :

Cooke, Cramer and Clarke () : Basic Statistical Computing, Chapman and Hall.

David S (1996) : Elementary Probability, Oxford Press

Hoel P.G. (1971) : Introduction to Mathematical Statistics, Asia Publishing House.

Meyer P.L. (1970) : Introductory Probability and Statistical applications. Addision Wesley.

PAPER - II

DESCRIPTIVE STATISTICS

(Paper Code-0149)

UNIT-I Types of Data : Concepts of a statistical population and sample from a population; qualitative and quantitative data; nominal and ordinal data; cross sectional and time series data; discrete and continuous data; frequency and non-frequency data. Different types of scales - nominal, ordinal, ratio and interval.

Collection and Scrutiny of Data : Primary data - designing a questionnaire and a schedule; checking their consistency. Secondary data - its major sources including some government publications. Complete enumeration, controlled experiments, observational studies and sample surveys. Scrutiny of data for internal consistency and detection of errors of recording. Ideas of cross-validation.

UNIT-II Presentation of Data : Construction of tables with one or more factors of classification. Diagrammatic and graphical representation of grouped data. Frequency distributions, cumulative frequency distributions and their graphical representation, histogram, frequency polygon and ogives. Stem and leaf chart. Box plot.

UNIT-III Analysis of Quantitative data : Univariate data, Concepts of central tendency or location, dispersion and relative dispersion, skewness and kurtosis, and their measures including those based on quantiles and moments. Sheppard's corrections for moments for grouped data (without derivation).

UNIT-IV Bivariate Data : Scatter diagram. Product moment correlation coefficient and its properties. Coefficient of determination. Correlation ratio. Concepts of error in regression. Principle of least squares. Fitting of linear regression and related results. Fitting of curves reducible to polynomials by transformation. Rank correlation — Spearman's and Kendall's measures.

UNIT-V Multivariate data : Multiple regression, multiple correlation and partial correlation in three variables. Their measures and related results.

Analysis of Categorical Data : Consistency of categorical data. Independence and association of attributes. Various measures of association for two way and three way classified data.

REFERENCES :

Bhat B. R. Srivenkairamana T and Rao Madhava K.S. (1996); Statistics : A Beginner's Text Vol. I, New Age Infernational (P) Ltd.

Croxtion F. R. Cowden D. J. and Kelin S (1973) : Applied General Statistics, Prentice Hall of India.

Goon A. M. Gupta M. K., Das Gupta. B. (1991) : Fundamentals of Statistics, Vol. I, World Press, Calcutta.

ADDITIONAL REFERENCES :

Anderson T. W and Sclove S. L (1978) An Introduction to the Statistical Analysis of Data, Houghton Miffin/Co.

Cooke, Cramer and Clarke () : Basic Statistical Computing, Chapman and Hall.

Mood A.M, Graybill F. A. And Boes D. C. (1974) : Introduction to the theory of Statistics, McGraw Hill.

Snedecor G. W. and Cochran W. G. (1967) : Statistical Methods. lowa State University Press.

Spiegel, M. R. (1967) : Theory & Problems of Statistics, Schaum's Publishing Series.

PRACTICAL

1. Presentation of data by Frequency tables, diagrams and graphs.
2. Calculation of Measures of central tendency, dispersion, skewness and kurtosis.
3. Product Moment Correlation and Correlation ratio.
4. Fitting of Curves by the least square method.
5. Regression of two variables.
6. Spearman's Rank correlation and Kendall's tau.
7. Multiple regression of three variables.
8. Multiple correlation and partial correlation.
9. Evaluation of Probabilities using Addition and Multiplication theorems, conditional probabilities, and Baye's theorems.
10. Exercises on mathematical expectations and finding measures of central tendency, dispersion, skewness and kurtosis of univariate probability distributions.
11. Fitting of standard univariate and continuous distributions.

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प्राचीन भारतीय इतिहास, संस्कृति तथा पुरातत्व

प्रथम : प्रश्न-पत्र

भारत का राजनीतिक इतिहास (पेपर कोड-0133)

(हड़प्पा संस्कृति से 319 ई. तक) **पूर्णांक : 75**

उद्देश्य : इस पाठ्यक्रम का उद्देश्य छात्रों को संबंधिक कालखण्ड के राजनीतिक इतिहास की समुचित जानकारी देना है।

इकाई-1 (1) प्राचीन भारतीय इतिहास के स्रोत
(2) हड़प्पा तथा समकालीन ताम्राश्म संस्कृतियाँ
(3) वैदिक यूग

इकाई-2 (1) महाजन पद युग
(2) मगध साम्राज्य का उत्कर्ष

इकाई-3 (1) सिकन्दर का आक्रमण और उसके प्रभाव
(2) मौर्य साम्राज्य का उत्थान और उसके प्रभाव

इकाई-4 (1) हिन्द-यूनानी
(2) शुंग
(3) सातवाहन
(4) शक-क्षत्रप, पार्थियन
(5) खारवेल

इकाई-5 (1) संगम युग
(2) कुषाण
(3) मालव, यौधेय, अर्जुनायन तथा औदुम्बर
(4) नागवंश

सहायक ग्रंथ :

1. एच. सी. रायचौधरी - प्राचीन भारत का राजनीतिक इतिहास
2. के. ए. नीलकंठ शास्त्री - दक्षिण भारत का इतिहास
3. कृष्णदत्त बाजपेयी तथा विमलचंद्र पांडेय - प्राचीन भारत का इतिहास
4. विमल चन्द्र पांडेय - प्राचीन भारत का राजनीति तथा सांस्कृतिक इतिहास-भाग एक
5. किरण कुमार थप्याल - सैंधव सभ्यता
6. गुलाम याजदानी (संपा.) - दकन का इतिहास
7. राजबली पाण्डेय - प्राचीन भारत
8. H.C. Roychoudhary - Political History of Ancient India
9. R.C. Majumdar (Ed) - The Age of Imperial Unity
10. Romlia Thaper - History of India
11. K.A. Nilkanta Shastry - History of South India.
12 व्ही.डी.झा, सुष्मिता पाण्डेय, डॉ ओम प्रकाश - Ashoka and the declaim of Mourya empire.

द्वितीय : प्रश्न-पत्र

प्राचीन भारतीय सामाजिक तथा अर्थिक संस्थाएं (पेपर कोड-0134) पूर्णांक : 75

उद्देश्य : इस पाठ्यक्रम का उद्देश्य प्राचीन भारत की सामाजिक तथा अर्थिक संस्थाओं का सामान्य ज्ञान कराना है ।

इकाई-1 (1) वर्ण एवं जाति
(2) आश्रम व्यवस्था
(3) पुरूषार्थ चतुष्टय
(4) पंचमहायज्ञ

इकाई-2 (1) संस्कार
(2) विवाह तथा उसके प्रकार
(3) परिवार की उत्पत्ति तथा महत्व, संयुक्त परिवार, पिता, माता तथा पुत्र की स्थिति, पुत्रों के प्रकार

इकाई-3 (1) नारियों की स्थिति
(2) शिक्षा-उद्देश्य, आदर्श, उपलब्धियाँ तथा प्रमुख शिक्षा केन्द्र

इकाई-4 (1) वैदिक काल से 600 ई.पू. तक की आर्थिक दशा
(2) श्रेणियों का संगठन और कार्य
(3) 600 ई. पू. से 319 इ. तक की आर्थिक दशा

इकाई- 5 (1) 319 ई. से 1200 ई. तक की आर्थिक दशा
(2) आंतरिक और बाह्य व्यापारिक मार्ग

सहायक ग्रंथ :

1. मनोरमा जौहरी – प्राचीन भारतीय वर्णाश्रम व्यवस्था
2. जयशंकर मिश्र – भारत का सामाजिक इतिहास
3. के. सी. जैन – प्राचीन भारतीय सामाजिक तथा आर्थिक संस्थाएं
4. राजबली पांडेय – हिन्दू संस्कार
5. हरिदत्त वेदालंकार – हिन्दू परिवार मीमांसा
6. ए. एस. अल्तेकर – प्राचीन भारत में नारियों की स्थिति
7. आर. एस. शर्मा – प्राचीन भारत में शुद्रों की स्थिति
8. ए. एस. अल्तेकर – प्राचीन भारतीय शिक्षण पद्धति
9. रमेशचन्द्र मजुमदार (अनु. कृष्णदत्त बाजपेयी) – प्राचीन भारत में संगठित जीवन
10. मोतीचन्द्र – सार्थवाह
11. कृष्णदत्त बाजपेयी – भारतीय व्यापार का इतिहास
12. कृष्णदत्त बाजपेयी – प्राचीन भारत का विदेशों में संबंध
13. आर. एस. शर्मा – पूर्व मध्यकालीन भारत में सामाजिक परिवर्तन
14. डॉ. चन्द्रदेव सिंह – प्राचीन भारतीय समाज और चिन्तन
15. सुस्मिता पाण्डेय – समाज, आर्थिक व्यवस्था एवम् धर्म
16. P.N. Prabhu - Hindu Social Organization
17. S.K. Maity - The Economic life of Northern India in the Gupta period
18. L. Gopal - Economic life of Northern India
19. D. R. Das - Economic History of the Decan
20. शिव स्वरूप सहसा – प्राचीन भारतीय सामाजिक, आर्थिक संस्थाएँ

DEFENCE - STUDIES

PAPER - I

INDIAN MILITARY HISRORY M.M. 50

(Paper Code-0143)

AIM : The main idea behind this paper is to give a conceptual background about the events and factors which infleenced course of history and helped in developing the art of war in India.

Note : Questions will be set from each unit, There will be only internal choice.

UNIT-1
1. The definition and scope of Defence Studies and its relationship with other subjects.
2. Art of war of Epic and Puranic period.
3. Comparative study of lndo-Greek art of war with special reference to the Battle of Hydaspus 326 B.C.
4. Mauryan Military system and art of war.

UNIT-2
1. Kautilya's Philosophy of war.
2. Gupta's military system and art of war.
3. Military system of Harshavardhan.
4. Dicline of Chariots and Importance of Elephant and Cavalory.

UNIT-3
1. Mughal military system.
2. Rajput and Turk pattern of warfare with specil of reference to Battle of Somnath and Battle of Tarain up to 12th century A.D.
3. Causes of the fall pf Rajput Military system.
4. Army organization during Sultanate period.
5. Battle of Panipat 1526 A.D. and Battle of Haldighati 1576 A.D.

UNIT-4
1. Maratha Military system.
2. Warfare of Shivaji.
3. Battle of Assaye 1803 A.D.
4. Sikh Military system.
5. Battle of Sobraon 1846 A.D

UNIT-5
1. 1857 Liberation Movement.
2. Reorganizations of Indian Army under the Crown.
3. Nationalization of, Indian Army after independence.
4. Military reforms of Lord Kitchner's.

READING LIST :

1.	Military System of Anciant India	:	B.K. Majumdar
2.	Generalship of Alexander the Great	:	J.F.C.Fuller
3.	Kautilya Arthashastra	:	K.P. Kanbley
4.	Military history of India	:	J.N. Sarkar

PAPER - II

DEFENCE MECHANISM OF THE MODERN STATE

(Paper Code-0144)

AIM : To enable students to appreciate the importance of higher political direction in the formulation of national defence policy and roles as political and military leadership in furthering national security.

Note : Question will be from each unit, there will be only internal choice.

UNIT-1
1. Evolution of National defence policy.
2. Inter dependence of Foreign, Defence and Economics policies.
3. Higher defence organization of U.S.A., U.K. and RUSSIA.
4. Higher defence organization of CHINA, PAKISTAN and NATO.

UNIT-2
1. Higher defence organization in India.
2. Powers of President and relation to Armed forces.
3. Parliament and the Armed forces.
4. Defence (Political affair) committee of the cabinet. Its composition, methods of working during war and peace.
5. National Defence Council and its Valiant.

UNIT-3
1. Organization of Ministry of Defence.
2. Organization of Army head quarter.
3. Organization of Naval head quarter.
4. Orgatiization of Air head quarter.

UNIT-4
1. Organization and role of Para-militaty forces - B.S.F., I.T.B.P., C.I.S.F. etc.
2. Organization and role of Intelligence Agencies - RAW, CBI, CID., IB etc.
3. Military Intelligence.
4. Role of N.C.C. in preparing youth for Defence services.

UNIT-5
1. Organization of Civil - defence.
2. Importance and role of civil defence during war and peace.
3. Air-Raid signal and precaution before and after bombardment.
3. Role of Indian armed forces in war and peace.

READING LIST :

1. Indian Army, A Sketch of its History & Organisation : E.H.E. Choen
2. Defence Organization in India : Venkateshwarm

PRACTICAL

M.M. : 50

There shall be practicall examination ot 3 hours duration and carying 50 marks. The distribution of marks shall be as follows -

1. Exercises based on Map reading : 20 Marks
2. Exercises based on models : 10 Marks

3. Sessional Work and Record : 10 marks

4. Viva-Voce : 10 marks,

PART - A

ELEMENTARY MAP READING

1. Maps- Difination, types, Marginal Information.
2. Conventional signs - Military and Geographical.
3. Direction and cardinal points.
4. Types of North, Angle of Convergence.
5. Study of Liquid compass, its parts, various tactical uses and preparation of Night navigation chart.
6. service Protractor and its uses.
7. To find North by Compass, Watch, Sun, Stars etc.
8. Bearing and interconversion of bearing.
9. Setting of Map.
10. Grid System.

PART - B

RECOGNITION & ELEMENTRY STUDY OF FOLLOWING MODELS

1. equivalent Rank and Badges of Indian Army, Navy and Air Force.
2. Famous Armoured vehicles used in war.
3. Weapons used in Infantry.
4. Various Ships of Indian Navy.
5. Famous Air-Crafts Used by Air-Force.

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पाठ्यक्रम उर्दू निसाब

नोट : इस इम्तेहान में दो पर्चे होंगे । हर पर्चे में 75 नम्बर पर मुशतमिल होगा ।
(1) नस्र (2) नज्म ।

पहला पर्चा

नस्र (पेपर कोड-0129)

(सवानेह, खाके, इन्शाईये)

निसाब

(1) सवानेह :

1. गालिब के सवानेही हालात : ''यादगारे गालिब'' के मुसन्निफ अल्ताफ हुसैन हाली
2. शिब्ली की बेनियाजी और खुद्दारी : ''हयाते शिब्ली'' से सैयद सुलेमान नदवी
3. नजीर अहमद की कहानी : ''कुछ मेरी, कुछ उनकी जबानी'' मुसन्निव फरहत उल्ला बेग

(2) खाके :

1. नामदेव माली : चन्द हम अस्र से मुसन्निव मौलवा अब्दुल हक
2. हकीम अजमल खाँ : ''खिमालिस्तान'' सज्जाद हदर यलद्रम
3. अकबर इलाहाबादी : इन्शाएँ माजिद हिस्सा-2, मुसन्निफ अब्दुल माजिद दरयावादी
4. जिगर साहब : ''साहब'' से मुसन्निफ मोहम्मद तुफैल
5. मौलाना अब्दुल कलाम आजाद : ''अब्दुल कलाम आजाद'' से मुसन्निफ मुलामुस्सयदेन

(3) इन्शाईये :

1. तास्सुब : ''मजामीने सर सैयद'' सर सैयद
2. मुझे मेरे दोस्तों से बचाओ : ''खिमालिस्तान'' सज्जाद हदर यलद्रम
3. शहजादे का बाजार में घिसटना : गदरे देहली के अफसाने सुसन्निफ ख्वाजा सहन निजामी
4. सबेरे जो कल ऑख मेरी खुली : ''मजामीने पितरस'' अज पितरस बुखारी
5. बरसात : निगारिस्तान अज नियाज फतहपुरी
6. शायर होना क्या माने रखता है : अज रशीद अहमद सिद्दीकी

पर्चा प्रथम

नोट : मुन्दरजा बाला पर्चा पाँच इकाईयों में तफसीम होगा ।

इकाई-1
1. सवाने, निगारी, खाका निगारी और इन्शाईया निगारी पर सवालात । 15 नम्बर
2. शामिले निसाब हसबाफ पर सवालात 15 नम्बर
3. शामिले निसाब खाकों पर सवालात 15 नम्बर
4. शामिले निसाब इन्शाईयों पर सवालात 15 नम्बर
5. शामिले निसाब असबाफ सवानेही और इन्शाईयों में इक्तेबासात की तशरीह 15 नम्बर

पर्चा द्वितीय (शायरी)

गजलियात (पेपर कोड-0130)

निसाब :

(1) बली :
1. याद करना हर घड़ी उस यार का
2. शराबे शौक से सरशार हैं हम

(2)	मीर तकी मीर	:	1. उल्टी हो गई सब तदवीरे
			2. मुँह तकाही करें है जिस तिस का
(3)	गालिब	:	1. दिल ही तो है न संगो खिश्त दर्द से भर न आए क्यो
			2. यह न थी हमारी किस्मत के विसाले यार होता
(4)	मौमिन	:	1. अगर उसकी जरा नहीं होता
			2. गैरो पे खुल न जाएँ कही राज देखना
(5)	आतिश	:	1. मगर उशको फरेबे नर्गिसे मस्ताना आता है
			2. हवाएँ दौरे गए खुशगवार राह में है
(6)	दाग देहलवी	:	1. खातिर से या खअयाल से मैं मान तो गया
			2. गाब किया तेरे बादे पे एतेवार किया
(7)	सिरज मीर खाँ सैंहर	:	1. सोने में दिल है दिल में दाग
			2. वक्ते जिबाह मुँह फिर फिर गया शमशीरे कातिल का
(8)	डॉ. इकबाल	:	1. कभी ऐ हकीकते मुसुन्तजिर नजर आ लिबासे गजाज में
			2. फिर चरागे लाबा से रोशन हुए कोहो दमन
(9)	हसरत मौहानी	:	1. रस्मे जफा कामयाब देखिये कब तक रहे
			2. हुस्ने बे परवा को कुद बीन खुद आरा कर दिया
(10)	फानी बदायूरी	:	1. खल्क कहती है जिसे दिल तेरे दीवाने का
			2. दुनियाँ मैरा बला जाने मेंहगी है के सस्ती है
(11)	जिगर मुरादाबादी	:	1. दिल गया रोनके हयात गई
			2. सेहले खिरद ने दिन यह दिखाएँ
(12)	फराक गौरखपुरी	:	1. निगारे नाज ने पर्दे उठाए है क्या-क्या
			2. बहुत पहले से उन कदमों की आहट जान लेते है
(13)	मजरूह सुल्तान पुरी	:	1. जला के मशअले जॉ हम जुन सिफात चले
			2. मुझे सहल हो गई मंन्जिले
(14)	ताज भोपाली	:	1. मै हूँ गदाए हुस्न न यूँ हॅस के टाल दे
			2. है अजब भीड़ भाड़ सड़कों पर
(15)	जॉ निसार अख्तर	:	1. हम से भागा न करो दूर गजालो की तरह
			2. न ख्वाब, खलिश न खुमार यह आदमी तो कोई सानेहा लगे है मुझे
(16)	खलील उर्रेहमान आजंमी	:	1. हम जिन्दगी के साज पे गाते रहे नगमा तेरा
			2. मै सूने मकान का दिया हूं
(17)	फजला ताबिशं	:	1. एक दो धोखे हो तो यारो दिल रखने को खा भी लो
			2. न कर शुमार के हर शै गिनी नहीं आती

इकाईयाँ : इकाई नं.

1.	गजल से मुताल्लिक सवालात	15 नम्बर
2.	कदीम शुअरा पर तन्कीदी सवालात	15 नम्बर
3.	जदीद गजल गो शुअरा पर सावालात	15 नम्बर
4.	कदीम गजल गो शुअरा के अशआर की तशरीह	15 नम्बर
5.	जदीद गजल गो शुअरा के अशआरकी तशरीह	15 नम्बर

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HOME SCIENCE

PAPER - I

ANATOMY PHYSIOLOGY & HYGIENE M.M. : 50

(Paper Code-0121)

UNIT-1 Structure & functions of cell general introduction of Tissue and their functions skeletal system - Types of bones, classification general structure & functions of bones. Muscular system - General structure, types and function.

UNIT-2 Circulatory system - General structure of organs and functions. composition of blood & function. Respiratory system - General structure of organs and functions.

UNIT-3 Digestive system - General introduction of Nutrients, Liver and spleen organs of digestion their general structure and function. Excretory system- organs of excretion.

Kidney & skin - structure & function.

UNIT-4 Nervous system - Central nervous system structure and function.

Senses and Sensory organs - ear and eye structure & function.

UNIT-5 Hygiene - Personal Hygiene

social Hygiene

Enviromental and Industrial Hygiene

Water - its importance and purification.

Air - its importance and purification.

First aid home nursing - Principles, qualities of nurse, Responsibilities, selection of sick room. care of the patient. Some common accidents and their aid, poision, bleeding, Burns and scalds, fracture sprain, dislocation.

प्रायोगिक

कुल समय 3 घंटे **कुल अंक- 50**

अंको का विभाजन

1.	सेशनल	10
2.	प्राथमिक उपचार	10
3.	गृह परिचर्या	15
4.	शरीर रचना एवं स्वास्थ्य विज्ञान	15

सेशनल : (परीक्षा के समय छात्राऐं प्रायोगिक नेट बुक एवं प्राथमिक उपचार पेटी जमा करें) ।

प्रयोग क्रमांक-1 रिपोर्ट : कालेज की कक्षाओं का प्रतिदिन की सफाई एवं वायुविजन संबंधित निरीक्षण ।

प्रयोग क्रमाक-2 स्वयं के परिवार में पीने के पानी के प्रति के साधन, संग्रह के प्रकार एवं साधन पानी की शुद्ध एवं स्वच्छता के लिये प्रयुक्त विधि ।

प्रयोग क्रमांक-3 रिपोर्ट : स्वयं के परिवार एवं अन्य दो पड़ोसी परिवार के घर में अगस्त से दिसम्बर (अनुमानत: पांच महीने) के दौरान हुई बीमारियों के संबंध में जानकारी ।

1. रोग का नाम ।
2. प्राथमिक उपचार - जो दिया गया ।
3. आहार (जो उपयोग में लाया गया) ।

प्रयोग क्रमांक-4 प्राथमिक उपचार पेटी (आवश्यक सामान)

1. घाव धोने एवं बांधने का सामान ।
2. दर्द कम करने की दवाईयाँ ।
3. अपाचन - में प्रयुक्त दवाईयाँ ।

प्राथमिक उपचार पेटी छात्राएँ परीक्षा के समय अपना नाम एवं परिवार के सदस्यों की संख्या लिखकर प्रस्तुत करें ।

प्रयोग क्रमांक-5 रोगी के लिये उपचारात्मक व्यंजनों का अध्यापक द्वारा करके बताना ।

1. सब्जियों का सूप ।
2. दाल का सूप ।
3. उबला अंडा ।
4. फटे दूध का पानी (व्हे वाटर) ।
5. सब्जी एवं फलों का स्टू (फल्श्रल्लीड्यल्लीछश्र श्रड्डुट्टरू क्ल्ज्ञ).

इन व्यंजनों की विधि एवं उपयोगिता नोट बुक में अंकित की जावेगी ।

प्रयोग क्रमांक-6 प्राथमिक उपचार

1. विभिन्न प्रकार की पट्टियाँ (तिकोनी, गोल) ।
2. घाव की देखभाल ।
3. कृत्रिम श्वसन ।

प्रयोग क्रमांक-7 गृह परिचर्चा

1. शरीर के तापमान का चार्ट
2. गरम एवं ठंडे पानी की थैली तैयार करना ।
3. बिस्तर लगाना / चद्दर बदलना ।

प्रयोग क्रमांक-8 दृष्य श्रव्य यंत्र का बनाना ।

महत्वपूर्ण निर्देश- प्रयोग क्रमांक 1, 2, 3, तथा 5 की रिपोर्ट छात्राओं द्वारा प्रायोगिक नोट बुक में लिखकर एवं अध्यापक द्वारा प्रति हस्ताक्षरित / प्रमाणित करवाकर परीक्षा के समय प्रस्तुत की जावेगी ।

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HOME SCIENCE

Paper - II

HOME SCIENCE - EXTENSION EDUCATION

(Paper Code-0122)

UNIT-1 Introduction of Home Science Extension Education :

(A) Home Scince - Concepts, goals and Areas of Home Science & their inter relationship with extension.

(b) Principles and methods of home science extension education general concepts of extension work.

(c) Objectives of extension educatuoin qualities of extension workers, extension education process.

UNIT-2 Community Development problems and Role of Home Scientists :

(A) Principles of community development organization and function of community development.

(B) Role of home scientists in community development, programmes of extension education for community. programmes of community development at central, state, district, block and village level.

Family plalnning programme.

Community problems, child marriage, Dowery system, parda pratha, rural indibtendness unemployment.

UNIT-3 Teaching methods & aids :

Methods of learning - Discussion, demonstration, observation and their applecation to home science teaching.

Extension Methods - their scope advantages and application.scope and use in Home Science teaching

Extension Methods - their scope advantages and application.

UNIT-4 Attitude towards Home Science :

Attitudes towards Home Science, Motivation towards Home Science. Applecation of Home Science towards improvement in family living. Job opportunities in Home Science National and International agencies and their collaboration with Home Science, Official organization Home Science Association of India, W.H.O. FAG, CARE, ICAR, ICDS, ICSSR, ICMR, IRDP, Adult education.

UNIT-5 Curriculum Planning in Home Science :

Basic concept of curriculum planning components of curriculum planning imple mentation evoluation and improvement required in the existing system of H.Sc. education policy and its relevance to H.Sc. Programme planning-concept, prin ciples objectives and steps in programme planning.

REFERENCE :

1. Extension education and community development by Dhama O. P.
2. Co-operative Extension Work by Kelsey, L.D. and Heame C. R.
3. Extension education, Shri Lakshmi press by Reddy A. A.
4. An Introduction to programme evaluation John Wiley
- Fracklin, J. K. & Thrashe / J.H.

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INSURANCE PRINCIPAL & PRACTICE (Paper Code-0139)

PAPER - I

LIFE INSURANCE : **M.M. : 50**

UNIT-1 **Introduction :**

Need for security against economic difficulties, Risk and uncertinty, Individual value system, Individual, Life Insurance Nature and uses of Life Insurance, Life Insurance as a collateral, as a measure of financing business continuation, as a protection to property, as a measure of investment.

UNIT-2 **Life Insurance Contract :**

Distinguishing characteristics, Utmost Good Faith, Insurable Interest, Caveat Emptor, Unilateral and alleatory nature of contract, proposal and application form, Warranties Medical examination, policy construction and delivery, policy provision, lapse revival, surrender value, paid-up policies, maturity, nomination and assignment. Suicide and payment of insured amount, Loan, to policy holders.

UNIT-3 **Life Insurance Risk :**

Factors governing sum assured, Methods of calculating economic risk in life insurance proposal. Measurement of risk and mortality table, Calculation of Premium, Treatment of sub-standard risks. Life Insurance Fund, valuation and investment of surplus, Payment of bonus.

UNIT-4 **Life Insurance Policies :**

Types and their applicability to different. Situations, Important life Insurance Policies issued by the life Insurance Corporation of India. Life Insurance annuities. Important legal provisions and judicial pronouncements in India.

UNIT-5 **Life Insurance Salesmanship :**

Rules of agancy Essential qualities of an ideal insurance salesman, Rules to canvass business from prospective customers, After-sale service to policy holders.

GENERAL INSURANCE (Paper Code-0140)

PAPER - II **M.M. : 50**

UNIT-1 1. Introduction to risk and insurance.

(A) Risk (B) The treatment of Risk

2. The structure and operation of the insurance business.

UNIT-2 (a) Insurance contract fundamentals.

(b) Insurance marketing.

(c) Insurance loss payment.

(d) Underwriting, rating, reinsurance, and other functions.

UNIT-3 General Insurance corporation and other Insurance institutions.

Working of GIC in India; Types of risks assumed and specific policies issued by ECGC.

UNIT-4 **Health Insurance :**

(a) Individual health insurance.

(b) Group health insurance.

UNIT-5 (a) Motor Insurance.

(b) Multiple line and all lines Insurance such as rural Insu-rance - Hull Insurance- etc.

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FUNTIONAL ENGLISH

(Paper Code-0137)

PAPER - I **M.M. : 50**

UNIT-1 (a) Linguastics and Phonetics.
(b) Phonology.

UNIT-2 (a) The Organs of Speech
(b) Speech Sounds - Vovels and Consonants

UNIT-3 Consonant Clusters in English

UNIT-4 Phonetic symbols

UNIT-5 Transcriptions

Based on a text of English Phonetics for Indian students by Bal-sybramanium.

FUNTIONAL ENGLISH

(Paper Code-0138)

PAPER - II **M.M. : 50**

UNIT-1 Articles, Parts of Speech, Linking Verbs Nagative sentences.

UNIT-2 Questions, Agreement of verb and subject, Transitive and Intrasitive regular and in-regular verbs.

UNIT-3 Tenses

UNIT-4 Question Tags, Transformetin Active and Passive Voice, Direct and Indirects Speech.

UNIt-5 Common Errors in English.

Based on F.T. words Grammer

VIVA - VOCE **M.M. 50**

SYALLABUS FOR THEORY AND PRACTICAL

(Drawing and painting)

B.A. (Drawing and painting) course is divided into three parts : B.A. 1st year, B.A. IInd year, B.A. III Year, all Examination is conducted by University for all class Maximum marks will be 150 the three parts details are as under :-

THEORY FUNDAMENTAL OF PAINTING (ART)

The time of theory paper is three hours **M.M. : 50**

1. Defination of Art
2. Classificaction of Art
3. Elements of painting - Line, Form, Colour, Tone, Texture, Space.
4. Shadang - Rupa Veda, Pramanani, Bhava, Labanya, Yojan, Sadrusya, Varnika Bhang.

BOOK RECOMMENDED :

1. Still life Painting - Richmend.
2. Akar Kalpna - Ranbir Saxana
3. Chirta Sayanjan - P. N. Choyal
4. Kala ke mull Tatya - Dr. C. L. Jha

PRACTICAL

There will be Two Practical Paper Evalution will be made by the external and the internal examiners. Together, and Sessional Marking is made by the class Teacher.

* The time of each paper is four hour's and there will be a half hour's recess in between.

STILL LIFE

(Paper Code-0150)

PAPER - I

Scheme of Examination — Total Mark - 50
Time - 4 Hours — Exmination - 40
Paper - 1/4 Imp Size — Sessional - 10
Meldium - Water Colour
Sessional - Mark 10
Class Work - Minimum work to be Submitted. Five Paining Size 1/4 IMP
Any type of still object will be dreown books, flower pot's Frouts etc.

BASIC DESING

(Paper Code-0150 A)

PAPER - II

Scheme of Examination — Total Mark - 50
Time - 4 Hours — Exmination - 40
Paper - 1/4 Imp Size — Sessional - 10
Meldium - Water Colour or Poster Colour
Sessional - Mark 10
Class Work - Minimum work to be Submitted. Five Paining Size 1/4 IMP
Form of netural element and object will be decoreted and repeated. Form like Flower, leaf, fruits, pot. Boll and Geometrial desing will be drown and painted with water colour and poster colour.

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B.A. EDUCATION PART - I

PAPER - I

EDUCATION AND SOCIETY **M.M. 75**

(Paper Code-0123)

COURSE OBJECTIVES

To enable the students to understand -

1. The general aims of Education alongwith Nature types and Scope of educations.
2. Meaning of Major Philosophies of education and function of education.
3. Meaning of curriculum and its Planning and Construction.
4. The Importance of Play and activity oriented education and Modern Methods of Teaching.
5. Specific aims of education as per the present day needs.

UNIT-1
- Nature and Scope of Education, Education as a Science, Education as a Social Process, Factors of Education.
- Aims of Education-Individual, Social, Vocational and Democratic.
- Formal, informal and non formal agencies of education, Relation between School and Society.

UNIT-2
- School a Miniature Society.

- Education and State-To talitarian and Democratic concepts, State Control over Education, Nature.
- Centralization and Decentralization.

UNIT-3
- Curriculum definition, Types of Curricula. Principles of Curriculum Construction, Child Centred and Life Centred Curricula.
- Co-Curricular activities.
- Education and Craft, Principle of Basic Education.

UNIT-4
- Freedom and Discipline, Need of discipline in and out of school, discipline and Order, Free discipline.
- Value Education, MEaning of Human Values. Their development, Some Transactional Strategies.

UNIT-5
- Education for National Integration, I nternational understanding and education for Human resource development, Education for Licture.
- Secularism and Education.

Shiksha Sidhant - Pathak and Tyagi - Vinod Pustak Mandir, Agra.

PAPER - II

PROBLEMS OF EDUCATION

M.M. 75

(Paper Code-0124)

UNIT-1
- Problems and suggestions for improvement in Primary Educn.
- Problems and suggestions for improvement in Secondary Educn.

UNIT-2
- Problems and Suggestions for improvement in Higher Educn.
- Problems and Suggestions for improvement in Teacher Educn.

UNIT-3
- Problems and Suggestions for improvement in Women Educn.
- Problems and Suggestions for improvement in Adult Educn.

UNIT-4
- Problems and Suggestions for improvement in Technical Education.
- Problems and Suggestions for improvement in Distance Education.

UNIT-5
- Problems and Suggestions for improvement in Population Education.
- Problems and Suggestions for improvement in Environmental Education.

BOOK RECOMMENDED :

1. A. Mishra - The Financing of Indian Education.
2. Nurullah and Naik - A History of Education in India.
3. S. N. Mukherjee - Education in India Today and Tomorrow.
4. K.G. Saiyad - Problems of Education Reconstruction.
5. Mahatma Gandhi - Our Language Problems.
6. S.R. Dongerkerry - University and their Problems.
7. R.V. Parulacker - Literacy in India.
8. G. Ghaurasia - New Era in Teacher Education.
9. J.P. Naik - Education Planning in India.
10. J.C. Agrawal - Progress of Education in India.

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ORDINANCE NO. - 12

BACHELOR OF ARTS - CLASSICS

1. The three year course has been broken up into three Parts, Part-I known as B.A.Classics Part-I Examination at the and of the First year, Part-II known as B.A. Classics Part-II examination at the end of the Second year and Part-III known as B.A. Classics Part-III examination at the end of the Third year.
2. A candidate who, after passing (10+2) or Intermediate Examination of C.G. Board of Secondary Education, Raipur or any other Examination recongnised by the University or C.G. Board of Secondary Education as equivalent there to has attended a regular course of study in an affiliated College or in the teaching department of the University for one academic year, shall be eligible for appearing at B.A. Classics Part-I examination.
3. A candidate who, after passing B.A. Classics Part I examination of the University, has attended a regular course of study for one academic year in an affiliated college or in the teaching department of the University, shall be eligible for appearing at the B.A. Classics Part-II Examination.
4. A candidate who, after passing the B.A. Classics Part-II examination of the University, has completed a regular course of study for one academic year in an affiliated college or in the Teaching department of the University, shall be eligible for appearing at the B.A. Classics Part-III examination.
5. Besides regular students and subject to their compliance with this Ordinance, ex-students and non-collegiate candidates shall be eligible for admission to the examination as per provisions of Ordinance No. 6 relating to Examinations (General). Provided that non-collegiate candidate shall be permitted to offer only those subjects/papers as are taught to the regular students at any of the University Teaching Department or College.
6. Every candidate for the Bachelor of Arts classics Examination shall be examined in:
   - A- Language Components :
     - (1) Hindi Language
     - (2) Sanskrit Language or English Language.
   - B- Compulsory- 1. Vyakaran, 2. Sahityam.
   - C- Any one of the following branches of studies-

1. Veda	2. Vyakaranam	3. Sahityam
4. Darshanam	5. Puranam	6. Jyotisham
7. Dharmashastram	8. Niruktam	

   - D- Any one of the following branches of studies :

1. English Literature	2. Hindi Literature	3. Economics
4. History	5. Political Science	

   - E- Practical (if necessary) for each core subject.
   - F- Viva voce in Sanskrit subject at the final examination (i.e. Part-III)

NOTE : Syllabus (E) will be common as prescribed by UGC (Part I, II, III)

7. Any candidate who has passed B.A. Classics Examination of the University shall be allowed to present himself for examination in any of the additional subjects prescribed for B.A. Classics examination and not taken at the Degree examination. Such candidate will have to first appear and pass B.A. Classics Part I & Part-II examination in the subject which he proposes to offer and then the B.A. Classics Part-III examination in the same subject. Successful candidates will be given a certificate to that effect.

8. In order to pass at any part of the three year degree course examination an examinee must obtain not less than 33% of the total marks in each subject/group of subjcets. In groups where both theory and practical examinations are provided an examinee must pass in both theory and practical part of the examination separately.

9. Candidates will have to pass separately to the B.A. Classics Part-I, Part-II and Part-III examinations. No division shall be assigned on the result of Part-I and II examinations. The division in which a candidate is placed at the Part-III examination shall be determined on the basis of the aggregate of total marks obtained in the part I, II and III examinations. Provided in case a candidate who has passed the B.A. Classics Part I &II examination through the Supplementary Examination having failed in one subject only, the total aggregate marks for being carried over for determining the division shall include actual marks obtained in the subject in which he appeared at Supplementary examination.

10. Successful examinees at the Part-III examination obtaining 60% or more marks shall be placed in the First Division. Those obtaining less than 60% but not less than 45% marks in the Second Division and other successful examinees in the Third Division.

बी.ए. क्लासिक्स भाग - 1

अंक विभाजनम्

विषया (1)	पत्रम (2)	पूर्णांक (3)	आवश्यक (4)	प्राप्तांक (5)
(अ) अनिवार्य विषय: (आधार पाठ्यक्रम:)				
1. हिन्दी भाषा		75	150	50
2. अंग्रेजी भाषा / संस्कृत भाषा		75		
नोट : प्रत्येक खंड में से 2 (दो) प्रश्न हल करने होंगे । सभी प्रश्न समान अंक के होंगे ।				
(अ) अनिवार्य विषय द्वितीय :				
1. व्याकरण मनुवादश्च	पत्रम् - 1	75	150	50
2. साहित्यम्	पत्रम् - 2	75		
(इ) वैकल्पिक विषय : प्रथम (एक एव ग्राह्य:)				
1. वेद:	पत्रम् - 1	75	150	50
वेद:	पत्रम् - 2	75		
2. व्याकरणम्	पत्रम् - 1	75	150	50
व्याकरणम्	पत्रम् - 2	75		
3. साहित्यम्	पत्रम् - 1	75	150	50
साहित्यम्	पत्रम् - 2	75		
4. दर्शनम्	पत्रम् - 1	75	150	50
दर्शनम्	पत्रम् - 2	75		
5. ज्योतिषम्	पत्रम् - 1	75	150	50
ज्योतिषम्	पत्रम् - 2	75		
6. पुराणेतिहास:	पत्रम् - 1	75	150	50
पुराणेतिहास:	पत्रम् - 2	75		

विषया (1)	पत्रम (2)	पूर्णांक (3)	आवश्यक (4)	प्राप्तांक (5)
7. धर्मशास्त्रम्	पत्रम् - 1	75	150	50
धर्मशास्त्रम्	पत्रम् - 2	75		
8. निरुक्तम्	पत्रम् - 1	75	150	50
निरुक्तम्	पत्रम् - 2	75		
(ई) वैकल्पिक विषय (एक एव ग्राह्य:)				
1. हिन्दी साहित्यम्	पत्रम् - 1	75	150	50
हिन्दी साहित्यम्	पत्रम् - 2	75		
2. अंग्रेजी साहित्यम्	पत्रम् - 1	75	150	50
अंग्रेजी साहित्यम्	पत्रम् - 2	75		
3. अर्थ शास्त्रम्	पत्रम् - 1	75	150	50
अर्थशास्त्रम्	पत्रम् - 2	75		
4. इतिहास:	पत्रम् - 1	75	150	50
इतिहास:	पत्रम् - 2	75		
5. राजनीतिशास्त्रम्	पत्रम् - 1	75	150	50
राजनीतिशास्त्रम्	पत्रम् - 2	75		

(क) अत्र परीक्षाया: चत्वारो विषया: अष्ट प्रश्न पत्राणि च भविष्यन्ति ।

(ख) द्वौ विषयौ अनिवार्यौ भविष्यत: अपरौ बैकल्पिकौ भविष्यत: ।

(ग) प्रथमे अनिवार्य-विषये प्रथमं पत्रं साहित्यस्य द्वितीयं च व्याकरणानुवादयो: भविष्यति ।

(ड) प्रथमे वैकल्पिके विषय-वेद-व्याकरण-साहित्य-दर्शन-ज्योतिष-पुराणेतिहास:-धर्मशास्त्र-निरूक्त विषयेषु एक एव ग्राह्य: तस्य द्वे प्रश्न-पत्रे भविष्यत: ।

(च) द्वितीय वैकल्पिक विषय हिन्दी साहित्य, अंग्रेजी साहित्य, अर्थ शास्त्र, राजनीतिशास्त्र विषयेषु एक एव विषय: ग्राह्य: तत्रद्वे प्रश्न-पत्रे भविष्यत: ।

(छ) प्रति पत्रम् अंक: पंचसप्तति (आधार पाठ्यक्रम: प्रतिपत्रम्) समयो होरा त्रयम् ।
निर्देशाभावे च उत्तरयितुं संस्कृतभाषा एव प्रयोक्तव्या ।

USE OF CALCULATORS

The Students of Degree/P.G. Classes will be permitted to use of Calculators in the examination hall from annual 1986 examination on the following conditions as per decision of the standing committee of the Academic Council at its meeting held on 31-1-1986 -

1. Student will bring their own Calculators.
2. Calculators will not be provided either by the University or examination centres.
3. Calculators with, memoty and following variables be permitted +, -, x, ¸ square, reciprocal, expotentials log, square root, trignometric functions, wize, sine, cosine, tangent etc. factiorial summation, xy, yx and in the light of objective approval of merits and demerits of the viva only will be allowed.

बी.ए. क्लासिक्स (प्राच्यपद्धति) भाग - एक (कोड-061)

(अनिर्वाय विषयः)

1. हिन्दी भाषा
2. संस्कृत भाषा / अंग्रेजी भाषा

संस्कृत भाषा **(पेपर कोड-0691)** **अंकाः 75**

(1) नीतिशतकम् (भर्तृहरिविरचितम्) अंकाः 50

(2) व्युत्पत्तिः (अनुवादः, वाक्यशुद्धिः, पर्यायाः) अंकाः 25

सहायक ग्रन्थाः

प्रारंभिक रचनानुवाद कौमुदी (1-10 पर्यन्तम्)

लेखक - कपिल देव द्विवेदी, प्रकाशक - विश्वविद्यालय प्रकाशन, वाराणसी ।

अनिवार्य विषयः

प्रथमं : प्रश्न-पत्रम्

साहित्यम् (पेपर कोड-0692) **अंकाः 75**

(1) स्वप्नवासवदत्तम् - महाकविभास रचितम् अंकाः 30

(2) पंचतन्त्रम् (अपरीक्षित, कारके प्रथम कथा पंचकम्) अंकाः 30

(पं. विष्णु शर्मा रचितम्) प्रकाशक राम नारायण लाल बेनी प्रसाद कटरा, इलाहाबाद

(3) संस्कृत साहित्य-इतिहासः (महाकाव्यनां - गद्य काव्यानांचसंक्षिप्तम ज्ञानम् अपेक्षितम्) अंकः - 15

सहायक ग्रन्थाः

(1) संस्कृत साहित्य का इतिहास- पं. बलदेव उपाध्याय, प्रकाशक- शारदा प्रकाशन, वाराणसी ।

(2) संस्कृत साहित्य का इतिहास- रामजी उपाध्याय, प्रकाशक- रामनारायण बेनी माधव, कटरा-इलाहाबाद।

द्वितीयं : प्रश्न-पत्रम्

व्याकरणम् (पेपर कोड-0693) **अंकः 75**

(1) मध्य सिद्धान्त कौमुदी (वरदराज रचित) अंकः - 60

आदितः अव्यय प्रकरणान्तम्

प्रकाशक - मोतीलाल बनारसीदास, नई दिल्ली ।

(2) रचनानुवाद कौमुदी (पाठ : 1-20 पर्यन्तम्) अंकः - 15

लेखक - डॉ. कपिल देव द्विवेदी, प्रकाशक - विश्वविद्यालय प्रकाशन, वाराणसी ।

वैकल्पिक विषय

(1) वेद :

प्रथमं : प्रश्न-पत्रम् (पेपर कोड-0694) **अंकः 75**

(1) ऋग्वेदतः पाठ्यक्रमांक - (1) मण्डलम् 01, सूक्तम् 89

- (2) मण्डलम् 09, सूक्तम् 12
- (3) मण्डलम् 10, सूक्तम् 121
- (4) मण्डलम् 10, सूक्तम् 191

यजुर्वेदत: पाठ्यक्रमांक: - अध्याय: 31मं. 1 से 16 पर्यन्तम् अपिच शिवसङ्कल्प सूक्तमात्रम् - अध्याय: 22 मं. 22
अर्थवेद: पाठ्यक्रमांक: - प्रथम काण्डस्य - प्रथम - तृतीय सूक्तौ अंका: 40

(2) चरणव्यूह सूत्रम् आचार्य महिधरा कृत (सम्पूर्णम्) अंका: 35

द्वितीयं प्रश्न-पत्रम् (पेपर कोड-0695) **अंका: 75**

(1) निरुक्तम् - (यास्काचार्य प्रणीतम्) प्रथम-द्वितीयौ अध्यायौ अंका: 40

(2) याज्ञवल्क्य शिक्षा (सम्पूर्णम्) अंका: 35

सहायक ग्रंथा: (1) वैदिक वाङ्मय का इतिहास (पं. भगवत दत्त)

(2) व्याकरणम्

प्रथमं : प्रश्न पत्रम् (पेपर कोड-0696) **अंका: 75**

(1) वैयाकरण सिद्धान्त कौमुदी - भट्टोजि दीक्षित प्रणीता
संज्ञा - परिभाषा - च सन्धि: प्रकृतिभाव: हल् सन्धि:
विसर्ग सन्धि:, स्वादि सन्धिश्च ।

सहायक ग्रंथा: (1) संधि - विषय : अजमेर मुद्रणालय : मुद्रित
(2) व्याकरण चंद्रोदय : पं. चारूदेव शास्त्री : पंचम : खण्ड

द्वितीयं : प्रश्न-पत्रम् (पेपर कोड-0697) **अंका: 75**

(1) वैयाकरण सिद्धांत कौमुदी, भट्टोजि दीक्षित प्रणीता
अजन्त पुल्लिंग-स्त्रीलिंग-नपुंसकलिंग
हलन्त-पुल्लिंग स्त्रीलिंग-नपुंसक लिंग
अव्यय प्रकरणानि ।
(सूत्रार्थशब्द साधन-प्रक्रिया स्वरूप : विशेषाध्येयम्)

सहायक ग्रंथा: (1) नामिक : अजमेर मुद्रणालय मुद्रित: ।
(2) अव्ययार्थ निबंधनम् : स्वामी ब्रह्ममुनि परिव्राजम: ।
(3) व्याकरण चंद्रोदय : पं. चारूदेव शास्त्री (चतुर्थ खण्ड)

(3) साहित्यम्

प्रथमं : प्रश्न-पत्रम् (पेपर कोड-0698) **अंका: 75**

(1) चन्द्रलोक (जयदेव प्रणीता) (प्रथम मयूखत: चतुर्थमयूखत पर्यन्तम्) अंका: 40

(2) शिवराज विजय: (प्रथम द्वितीयौ, निश्वासौ) अंका: 35

सहायक ग्रंथा: (1) कवि कण्ठाभरणम् : (क्षेमेन्द्र विरचितम्)
(2) सार्हित्य दर्पणम् : (विश्वनाथ कविराज रचितम्)

द्वितीयं : प्रश्न-पत्रम् (पेपर कोड-0699) **अंका: 75**

(1) रघुवंशम् (कालिदास प्रणीत्) (प्रथम, द्वितीय, तृतीय सर्गा) अंका: 45

(2) छंदासि-आर्या-अनुष्टुप-इंद्रवज्रा अंका: 30
उपजाति-मालिनी-मन्दाकान्ता स्रग्धरा
शिरखरणी शार्दूल-विकिडितम्-द्रुत विलम्बितम् ।

(4) ज्योतिषम्

प्रथमं : प्रश्न-पत्रम् (पेपर कोड-0700) **अंका: 75**

(1) कुण्डलीनिर्माणविषयकं गणितम् - इष्टकालसाधनम्, स्पष्टग्रहसाधनम्, लग्नानयनम्, अंका: 45
भयात-भभोगसाधनम्, विंशोत्तरी दशा - अंतर्दशा-साधनम्, द्वादशभाव-चलित
चक्रसाधनम्, नवमांश-द्रेष्काण साधनं च ।

(2) भारतीय ज्योतिषशास्त्रस्येतिहास:। अंका: 30

सहायक ग्रंथा: (1) भारतीय कुण्डली विज्ञान : पं. मीठालाल ओझा ।
(2) भारतीय ज्योतिष का इतिहास : डॉ. गोरख प्रसाद ।

द्वितीयं : प्रश्न-पत्रम् (पेपर कोड-0701) **अंका: 75**

(1) लघुपाराशरी अंका : 45

(2) गोलपरिभाषा - पं. सीताराम झा अंका: 30

(5) निरुक्तम्

प्रथमं : प्रश्न-पत्रम् **अंका: 75**

(1) निरुक्तम् : यास्कप्रणीणतम् ।
(2) साहित्यदर्पणम् : विश्वनाथ कविराज रचितम् ।
(3) अलंकार सार मन्जरी : म. म. नारायण शास्त्री ।

सहायक ग्रंथा: (1) छन्दोमन्जरी : गंगादास: प्रणीता ।
(2) वृत्ता रत्नाकर : केदार भट्ट: प्रणीता अध्याय 1, 2 ।
1. सम्बद्ध निघण्टुयुक्तम् । 2. ऋक-प्रातिशख्यम् प्रथम: पटल: ।

द्वितीयं : प्रश्न-पत्रम् **अंका: 75**

(1) निरुक्तम् यास्काप्रणीतम्
अध्याय 3, 4 (सम्बद्ध निघण्टुयुक्तम्)
(2) वेदाङ्गानां सामान्यं ज्ञानम् निरुक्तस्य निशेषत: ।

(6) पुराणेतिहास

प्रथमं : प्रश्न-पत्रम्

(1) वाल्मीकि रामायणम् बालकाण्डम् अध्याया: - 10
(2) विटुलोपाख्यानम्

द्वितीयं : प्रश्न-पत्रम्

(1) विष्णु पुराणम् (प्रथमोऽध्यायः)

(2) महाभारत - आदि पर्व 65-74

(7) धर्मशास्त्रम्

प्रथम : प्रश्न-पत्रम्

(1) मनुस्मृतिः (प्रथमोऽध्यायः) ।

(2) पारस्कर - गृह्य सूत्रम् (कण्डिका, 1-10)

द्वितीयं : प्रश्न-पत्रम्

(1) याज्ञवल्क्यस्मृतिः (दायभागः मिताक्षरा संहिता) ।

(2) निर्णय - सिंधुः संवत्सर प्रकरणम्, द्वितीय परिच्छेदस्य पूर्वार्धः ।

(8) कर्मकाण्डम्

प्रथमं : प्रश्न-पत्रम्

(1) ग्रह शांति प्रयोगः - वायुनन्दन मिश्र कृतः

(2) सत्यनारायण व्रतकथा ।

द्वितीयं : प्रश्न-पत्रम्

(1) पारस्कर - गृहयसूत्रम् (हरिहर भाष्यम्)

(2) ग्रहशान्ति प्रयोगः वायु नन्दन मिश्र कृतः
अधिवेवतास्यपिनातः (तिलकाशीर्वाद पर्यंत)

- - - - - - - -

पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़)

पाठ्यक्रम

बी.ए.-2 (कोड-102) B. A.-2 (Code-102)

बी.ए. क्लासिक्स-2 (कोड-062) B.A. CLASSICS-2 (Code-062)

परीक्षा : 2016-17

कुलसचिव पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़) की ओर से

INDEX

REVISED ORDINANCE NO.11

(As per State U.G.C. Scheme)

BACHELOR OF ARTS

1. The three year course have been broken up into three Parts.

   Part-I Examination : at the end of the first year.

   Part-II Examination : at the end of the second year and

   Part-III Examination : at the end of the third year.

2. A candidate who after passing (10+2) or Intermediate Examination of C.G. Board of Secondary Education, Raipur or any other examination recognised by the University or C.G. Board of Secondary Education as equivalent thereto, has attended a regular course of study in an affiliated college or in the Teaching Department of the University for one academic year shall be eligible for appearing at the B.A. Part-I examination.

3. A candidate who after passing B.A. Part-I examination of the University or any other examination recognised by the University as equivalent thereto has attended a regular course of study for one academic year in an affiliated college or in the Teaching Department of the University shall be eligible for appearing at the B.A. Part II Examination.

4. A candidate who after passing B.A. Part II examination of the University has completed a regular course of study for one academic year in an affiliated college or in the Teaching Department of the University shall be eligible for appearing at the B.A. Part-III examination.

5. Besides regular students, subject to their compliance with this ordinance, ex-students and non-collegiate candidates shall be eligible for admission to the examination as per provisions of Ordinance N. 6 relating to Examinations (General). Provided that non-collegiate candidates shall be permitted to offer only such subjects/papers as are taught to the regular students at any of the University Teaching Department or College.

6. Every candidate for the Bachelor of arts examination shall be examined in :

   A. Foundation Course :

      I - Group - Hindi Language

      II - Group - English Language

   B. Three Course subjects : One subject from any three

      groups out of the following six groups :

      1. Sociology/Ancient Indian History Culture and Anthropology.

      2. Political Science/Home Science / Drawing & Painting / Vocational Course.

3. Hindi Literature/Sanskrit Literature /Urdu Literature/Mathematics

4. Economics/Music/Defence studies / Linguistics / ष्ठढधश.

5. Philosophy/Psychology/Geography/Education/Management.

6. History/English Literature/Statistics.

7. Practicals (if necessary) for each core subject.

7. Any candidate who has passed the B.A. examination of the University shall be allowed to present himself for examination in any of additional subjects prescribed for the B.A. examination and not taken by him at the degree examination. Such candidate will have to first appear and pass the B.A. Part I examination in the subject which he proposes to offer and then the B.A. Part II and Part III examination in the same subject. Successfull candidate will be given a certificate to that effect.

8. In order to pass at any part of the three year degree course examination, an examinee must obtain not less than 33% of the total makrs in each subject/group of subjects. In subject/group of subjects, where both theory and practical examination are provided, an examinee must pass in both theory and practical parts of the examination separately.

9. Candidate will have to pass separately at the Part-I, Part II and part-III examination. No division shall be assigned on the result of the Part-I and Part-II examination. In determining the divison of the Final examination, total marks obtained by the examinees, in their Part-I, Part-II and Part-III examination in the aggregate shall be taken into account. Candidate will not be allowed to change subjects after passing Part I Examination.

Provided in case of candidate who has passed the examination through the supplementary examination having failed in one subject only the total aggregate marks being carried over for determining the division shall include the actual marks obtained in the subject in which he appeared at the supplementary examination.

10. Successful exminees at the Part-III examination obtaining 60% or more marks shall be placed in the First division, those obtaining less than 60% but not less than 45% marks in the Second division and other successful examinees in the third division.

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SCHEME OF EXAMINATION

	Subject	Paper	Max. Marks	Min. Marks
	i) Environmental Studies		75	33
	Fild Work		25	
A.	Foundation Course			
	i) Hindi Language - I		75	26
	ii) English Language - II		75	26
B.	Three Core Subject :			
	1. Hindi Literature	I	75	50
		II	75	
	2. Sanskrit Literature	I	75	50
		II	75	
	3. English Literature	I	75	50
		II	75	
	4. Philosophy	I	75	50
		II	75	
	5. Economics	I	75	50
		II	75	
	6. Political Science	I	75	50
		II	75	
	7. History	I	75	50
		II	75	
	8. Ancient Indian History	I	75	
	Culture & Archaeology	II	75	50
	9. Sociology	I	75	50
		II	75	
	10. Geography	I	50	33
		II	50	
		Practical	50	17
	11. Mathematics	I	50	
		II	50	50
		III	50	
	12. Statistics	I	50	33
		II	50	
		Practical	50	17
	13. Anthropology	I	50	33
		II	50	
		Practical	50	17

Subject	Paper	Max. Marks	Min. Marks
14. Linguistics	I	75	50
	II	75	
15. Indian Music	I	50	33
	II	50	
	Practical	50	17
16. Home Science	I	50	33
	II	50	
	Practical	50	17
17. Education	I	75	50
	II	75	
18. Psychology	I	50	33
	II	50	
	Practical	50	17
19. Management	I	75	50
	II	75	
20. Defence Studies	I	50	33
	II	50	
	Practical	50	17
21. Urdu	I	75	50
	II	75	
22. Dance	I	50	33
	II	50	
	Practical	50	17
23. Vocational Course	I	50	33
	II	50	
	Practical	50	17

USE OF CALCULATORS

The Students of Degree/P.G. Classes will be permitted to use of Calculators in the examination hall from annual 1986 examnination on the following conditions as per decision of the standing committee of the Academic Council at its meeting held on 31-1-1986-

1. Student will bring their own Calculators.
2. Calculators will not be provided either by the university or examination centres.
3. Calculators with, memory and following variables be permitted +, -, x, ¸ square, reciprocal, expotentials log, square root, trignometric functions, wize, sine, cosine, tangent etc. factiorial summation, xy, yx and in the light of objective approval of merits and demerits of the viva only will be allowed.

बी.ए./बी.एस-सी./बी.काम./बी.एच.एच-सी.

भाग - दो, आधार पाठ्यक्रम

प्रश्न पत्र - प्रथम (हिन्दी भाषा) (पेपर कोड-0171) **पूर्णांक - 75**

खण्ड-क निम्नलिखित 5 लेखकों के एक-एक निबंध पाठ्यक्रम में सम्मिलित होंगे - अंक-30

1. महात्मा गांधी - सत्य और अहिंसा
2. विनोबा भावे - ग्राम सेवा
3. आचार्य नरेन्द्र देव - युवकों का समाज में स्थान
4. वासुदेव शरण अग्रवाल - मातृ-भूमि
5. भगवतशरण उपाध्याय - हिमालय की व्युत्पत्ति
6. हरि ठाकुर - डॉ. खूबचंद बघेल

खण्ड-ख हिन्दी भाषा और उसके विविध रूप अंक-20

- कार्यालयीन भाषा
- मीडिया की भाषा
- वित्त एवं वाणिज्य की भाषा
- मशीनी भाषा

खण्ड-ग अनुवाद व्यवहार : अंग्रेजी से हिन्दी में अनुवाद अंक-25

हिन्दी की व्यवहारिक कोटियाँ-

रचनागत प्रयोगगत उदाहरण, संज्ञा, सर्वनाम, विशेषण, क्रिया विशेषण, समास, संधि एवं संक्षिप्तियां, रचना एवं प्रयोगगत विवेचन ।

PAPER - II

ENGLISH LANGUAGE (Paper Code-0172)

The question paper for B.A./B.Sc./B.Com./B.H.Sc., English Language and cultural valuers shall comprise the following units :

UNIT-I Short answer questions to be assed by (Five short answer questions of three marks each) 15 Marks

UNIT-II (a) Reading comprehension of an unseen passage 05 Marks
(b) Vocabulary

UNIT-III Report-Writing 10 Marks

UNIT-IV Expansion of an idea 10 Marks

UNIT-V Grammar and Vocabulary based on the prescribed text book. 20+15 Marks

Note : Question on all the units shall asked from the prescribed text which will comprise specimens of popular creative/writing and the following it any

(a) Matter & technology
  (i) State of matter and its structure
  (ii) Technology (Electronics Communication, Space Science)
(b) Our Scientists & Institutions
  (i) Life & work of our eminent scientist Arya Bhatt. Kaurd Charak Shusruta, Nagarjuna, J.C. Bose and C.V. Raman, S. Rmanujam, Homi J. Babha Birbal Sahani.
  (iii) Indian Scientific Institutions (Ancient & Modern)

Books Prescribed :

Foundation English for U.G. Second Yaer - Published by M.P. Hindi Granth Academy, Bhopal.

हिन्दी साहित्य

प्रथम प्रश्न पत्र

अर्वाचीन हिन्दी काव्य (पेपर कोड-0173) अंक - 75

प्रस्तावना- आधुनिक काव्य आधुनिकता की समस्त विशेषताओं को समेटे हुए हैं । स्वतंत्रता प्राप्ति के पूर्व की भाव-भाषा, शिल्प, अन्तर्वस्तु संबंधी समस्त विकास धारा यहां सजीव रूप में देखी जा सकती है । इसे अनदेखा करना मनुष्य की विकास यात्रा को नजर अंदाज करना है । इस यात्रा के साक्षात्कार के लिए आधुनिक काव्य का अध्ययन अपेक्षित ही नहीं अपितु अनिवार्य है ।

पाठ्य विषय -

1. मैथिलीशरण गुप्त - भारत-भारती की कविताएँ
2. सूर्यकान्त त्रिपाठी निराला -
   (1) सखि बसन्त आया ।
   (2) वर दे, वीणा वादिनी वर दे ।
   (3) हिन्दी के सुमनों के प्रति पत्र ।
   (4) तोड़ती - पत्थर ।
   (5) राजे ने अपनी रखवाली की ।
3. सुमित्रानंदन पंत -
   (1) बादल ।
   (2) परिवर्तन 2 पद
   (1. खोलता इधर जन्मलोचन 2. आज का दुख कल का आल्हाद)
   (3) ताज ।
   (4) झंझा में नीम ।
   (5) भारत माता ।
4. माखन लाल चतुर्वेदी -
   (1) बलि पंथी से ।
   (2) साँझ और ढोलक की थापें ।
   (3) मैं बेच रही हूँ, दही ।
   (4) उलाहना ।
   (5) नि:शस्त्र सेनानी ।
5. स.ही. वात्स्यायन अज्ञेय -
   (1) सबेरे उठा तो धूप खिली थी ।
   (2) साम्राज्ञी का नैवेद्य दान ।
   (3) घर ।
   (4) चांदनी जी लो ।
   (5) दूर्वांचल ।

द्रुतपाठ हेतु कवियों का अध्ययन किया जाएगा, जिन पर लघूत्तरी प्रश्न पूछे जायेंगे -

1. अयोध्या सिंह उपाध्याय ''हरिऔध'' ।
2. सुभद्रा कुमारी चौहान ।
3. श्रीकांत वर्मा ।

अंक विभाजन-

3 व्याख्याएं	-	21 अंक
2 आलोचनात्मक प्रश्न	-	24 अंक
5 लघुत्तरीय प्रश्न पत्र	-	15 अंक
15 वस्तुनिष्ठ / अति लघुत्तरीय प्रश्न	-	15 अंक
कुल अंक	-	**75 अंक**

इकाई विभाजन -

इकाई-1 व्याख्या

इकाई-2 गुप्त, निराला

इकाई-3 पंत, चतुर्वेदी, अज्ञेय

इकाई-4 द्रुतपाठ के कवि एवं आधुनिक काव्य धारा का इतिहास
(राष्ट्रीय काव्य धारा, छायावाद, प्रगतिवाद, प्रयोगवाद, नई कविता)

इकाई-5 वस्तुनिष्ठ/लघूत्तरीय प्रश्न (सम्पूर्ण पाठ्यक्रम से)

हिन्दी साहित्य

द्वितीय प्रश्न पत्र

हिन्दी निबंध तथा अन्य गद्य विधाएँ (पेपर कोड-0174) अंक - 75

पाठ्य विषय-

व्याख्या एवं आलोचनात्मक प्रश्नों के लिए एक नाटक, पांच प्रतिनिधि निबंध और पाँच एकांकी का निर्धारण किया गया है ।

नाटक- अंधेरी नगरी-भारतेन्दु हरिश्चन्द्र

निबंध-

1.	क्रोध	-	आचार्य रामचन्द्र शुक्ल ।
2.	बसन्त	-	डॉ. हजारी प्रसाद द्विवेदी ।
3.	उस अमराई ने राम-राम कही है	-	डॉ. विद्यानिवास मिश्र ।
4.	काव्येषु नाट्यम रम्यम्	-	बाबू गुलाब राय ।
5.	बेईमानी की परत	-	हरिशंकर परसाई

एकांकी-

1.	औरंगजेब की आखिरी रात	-	डॉ. रामकुमार वर्मा
2.	स्ट्राईक	-	भुवनेश्वर
3.	एक दिन	-	लक्ष्मीनारायण मिश्र
4.	दस हजार	-	उदयशंकर भट्ट
5.	मम्मी ठकुराईन	-	डॉ. लक्ष्मीनारायण लाल

द्रुतपाठ के लिए तीन गद्यकारों का अध्ययन किया जायेगा, जिन पर लघुत्तरीय प्रश्न पूछे जायेंगे ।

1. राहुल सांकृत्यायन 2. महादेवी वर्मा 3. हबीब तनवीर

अंक विभाजन-

3 व्याख्याएं		-	21 अंक
2 आलोचनात्मक प्रश्न		-	24 अंक
5 लघूत्तरीय प्रश्न		-	15 अंक
15 वस्तुनिष्ठ / अति लघुत्तरीय प्रश्न		-	15 अंक
	कुल	-	**75 अंक**

इकाई विभाजन-

इकाई-1 व्याख्या

इकाई-2 अंधेरी नगरी एवं क्रोध, वसन्त, उस अमराई ने राम-राम कही है ।

इकाई-3 औरंगजेब की आखिरी रात, स्ट्राईक, एक दिन, दस हजार, मम्मी ठकुराईन

इकाई-4 द्रुतपाठ के गद्यकार-राहुल सांकृत्यायन, महादेवी वर्मा, हबीब तनवीर ।

इकाई-5 वस्तुनिष्ठ/अति लघूउत्तरीय प्रश्न (समग्र पाठ्य विषय से)

ENGLISH LITERATURE

PAPER-I

MODERN ENGLISH LITERATURES (Paper Code-0175)

M.M. 75

All Questions are compulsory.

Note : 1. Unit-I is compulsory. Two passages from each of the units I to V to be set and three to be attempted. (3 x 5 = 15)

2. Short answer questions from unit VII, seven to be set and five to be attempted. (5 x 2 = 10)

3. Long answer questions from unit II to VI. Five questions from each unit with internal choice to be set. (5 x 2 = 10)

(Words limit for each answer is 300-400 words)

UNIT-I Annotations

UNIT-II (Poetry)

W.B. Yeats - 'A Prayer for My Daughter, The Second Coming

T.S. Eliot - 'Love Song of J. Alfred Prufrock'

UNIT-III (Poetry)

Dylan Thomas - 'Lament, 'A Refusal to Mourn the Death

Larkin - 'Toads', At Grass'

UNIT-IV (Prose)

Bertrand Russell - On the Value of Scepticism

Oscar Wilde - Happy Prince

UNIT-V (Drama)

G.B. Shaw - Pygmalion

UNIT-VI (Fiction and short-stories)

Rudyard Kipling-Kim

Short-Stories

Katherine mansfield - A Cup of Tea

UNIT-VII

1. Elegy,
2. Sonnet,
3. Ode,
4. Morality & Miracle Play,
5. One Act Play,
6. Interlude

BOOKS RECOMMENDED :

1. An Introduction to the study of English Lit. B. prasad
2. A Glossart of Literary Terms - M.H. Abrahamas
3. Prose of Today - M. Millan Pub
4. Short stories of Yesterday and To day - M. Millan

PAPER - II

MODERN ENGLISH LITERATURS (Paper Code-0176)

M.M. 75

All question are complusory.

Note : 1. Unit I is complusory. Two passages from each of the units II to V to be set and three to be attempted. (3x5 = 15)

2. Short answer questions from unit VII, seven to be set and five to be attempted. (5x2 = 10)

3. Long-answer questions from unit II to VI. Five questions from each unit with internal choice to be set. (5x2 = 10)

(Words limit for each answer is 300-400 words)

UNIT-I Annotation

UNIT-II (Poetry)

Sasson - At the Grove of Henry Vaughan.

Owen, W.H. - Strange Meeting

UNIT-III (Poetry)

Auden - Seascape

Ted Hughes - The Howling of Wolves

UINT-IV (Prose)

Robert Lynd - Forgetting

H. Belloc - A conversation with A Reader

UNIT-V (Drama)

John Galsworthy - Strife

OR J.M. Synge - Riders of the Sea

UNIT-VI William Golding - Lord of the Flies (Fiction)

UNIT-VII 1. Simile 2. Metaphor 3. Alliteration 4. Onomaetopoea 5. Ballad 6. Epic 7. Dramatic Monologuc.

BOOK RECOMMENDED -

1. Golden Treasury - Palgrave
2. A Glossary of Literary Terms - M.H. Abrams
3. An Introduction to the study of English literature - B.Prasad

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दर्शन शास्त्र

बी.ए. भाग–दो, दर्शनशास्त्र में कुल दो प्रश्न पत्र होंगे । प्रत्येक प्रश्नपत्र 5 इकाइयों में विभाजित है ।

1. नीतिशास्त्र – भारतीय एवं पाश्चात्य
2. धर्मदर्शन

प्रत्येक में 75 अंक होंगे ।

दर्शनशास्त्र

प्रश्न पत्र – प्रथम

नीतिशास्त्र – भारतीय एवं पाश्चात्य (पेपर कोड–0197) कुल अंक – 75

इकाई–1
1. नीतिशास्त्र : परिभाषा, स्वरूप एवं उपयोगिता
2. मूल्य :नैतिक मूल्य एवं अन्य मूल्यों में अंतर
3. कर्म का सिद्धांत

इकाई–2
1. पुरूषार्थो : पुरुषार्थ का आपस में सम्बन्ध, पुरूषार्थ–साधना
2. बौद्ध नीति : चार आर्य–सत्य एवं अष्टांग–पथ
3. जैन नीति : अणुव्रत एवं महाव्रत

इकाई–3
1. स्वतंत्रता एवं उत्तरदायित्व
2. सद्‌गुण : सुकरात, प्लेटो एवं अरस्तू के अनुसार
3. दंड के सिद्धांत

इकाई–4
1. सुखवाद : बेंथम और मिल
2. चार्वाक का सुखवाद
3. कठोरतावाद : कांट

इकाई–5
1. अंत: प्रज्ञावाद
2. पूर्णतावाद
3. गीता का निष्काम कर्मयोग

अनुशंसित पुस्तकें –

1.	हृदय नारायण मिश्र	:	नीतिशास्त्र
2.	बी.एन. सिंह	:	नीतिदर्शन
3.	शोभा निगम	:	नीतिदर्शन
4.	छाया राय	:	कांट का नीतिदर्शन
5.	रत्ना देव	:	नीतिदर्शन
6.	लक्ष्मी सक्सेना	:	नीतिशास्त्र के मूल सिद्धांत
7.	दिवाकर पाठक	:	भारतीय नीतिशास्त्र
8.	वेदप्रकाश वर्मा	:	नीतिशास्त्र के मूल सिद्धांत

दर्शनशास्त्र

प्रश्न पत्र - द्वितीय

धर्म दर्शन (पेपर कोड-0198)

कुल अंक - 75

इकाई-1
1. धर्म : धर्म एवं रिलिजन में अंतर
2. धर्म-दर्शन : अर्थ, स्वरूप
3. धर्म एवं धर्म-दर्शन में अंतर
4. धर्म : उत्पत्ति एवं प्रकार

इकाई-2
1. धार्मिक अनुभव : ब्रह्ममानुभव एवं रहस्यवाद
2. बुद्धि, विश्वास एवं अंत:प्रज्ञा
3. धार्मिक विश्वास एवं अन्य विश्वास

इकाई-3
1. ईश्वर : ईश्वर के गुण
2. ईश्वर के अस्तित्व के प्रमाण : भारतीय एवं पाश्चात्य
3. प्रार्थना एवं भक्ति

इकाई-4
1. अनीश्वरवाद
2. ईश्वर के बिना धर्म
3. धर्म-निरपेक्षता

इकाई-5
1. आत्मा की अमरता
2. पुनर्जन्म एवं कर्म का सिद्धांत
3. अशुभ की समस्या

अनुशंसित पुस्तकें -

1. डॉ. लक्ष्मीनीधि शर्मा : धर्म दर्शन
2. डॉ. दुर्गादत्त पांडे : धर्म दर्शन का अनुशीलन
3. डॉ. एच.एन. मिश्र : धर्म दर्शन
4. डॉ. राजेन्द्र प्रसाद पांडेय (संपा.) : धर्म दर्शन
5. डॉ. जय प्रकाश शाक्य : धर्म दर्शन

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राजनीतिक

प्रथम प्रश्न पत्र

पाश्चात्य राजनीतिक चिंतन (पेपर कोड-0183)

पूर्णांक - 75

इकाई-1

1. Plato प्लेटो - आदर्श राज्य की अवधारणा के विशेष संदर्भ में, शिक्षा, साम्यवाद, दार्शनिक शासक।
2. Aristotle अरस्तू - राज्य, संविधानों का वर्गीकरण, दासता, क्रांति संबंधी विचार ।

इकाई-2

3. Machiavelli मेम्याविली- मेम्याविली का राज्य एवं शासन, धर्म, नैतिकता संबंधी विचार एवं राजदर्शन को देन ।

Hobbes

4. हाब्स - सामाजिक समझौता संबंधी विचार

Locke

5. लांक - का सामाजिक समझौता संबंधी विचार

Rousseau

6. रूसो - रूसो का समाजिक समझौता संबंधी विचार, सामान्य इच्छा का सिद्धांत

इकाई-3

Bentham

7. बेंथम का उपयोगितावाद

J.S. Mill

8. जे.एस.मिल. - राज्य, स्वतंत्रता, अधिकार एवं प्रतिनिधि शासन संबंधी विचार

इकाई-4

Hegel

9. हीगल - हीगल के राज्य संबंधी विचार, द्वंद्ववाद

T.H. Green

10. टी.एच. ग्रीन - राज्य एवं शासन संबंधी विचार, स्वतंत्रता, राजदर्शन को देन

इकाई-5

Kari Mark

11. मार्म्स - का द्वंद्वात्मक भौतिकवाद, वर्ग संघर्ष का सिद्धांत, अतिरिक्त मूल्य का सिद्धांत, इतिहास की आर्थिक व्याख्या, मार्क्स की देन ।

संदर्भ ग्रंथ -

1. के.एन. वर्मा - राजदर्शन
2. प्रभुदत्त शर्मा - पाश्चात्य एवं आधुनिक राजनीतिक चिंतन का इतिहास
3. जीवन मेहता - राजनीतिक चिंतन का इतिहास
4. बाबूलाल फाडिया - राजनीतिक चिंतन का इतिहास
5. गेटल - हिस्ट्री ऑफ पॉलिटिकल प्वाइंट
6. फोस्टर एण्ड जोन्स - मास्टर ऑफ पॉलिटिकल प्वाइंट, पार्ट 1 : 2
7. कोकर - रिसेन्ट पॉलिटिकल प्वाइंट
8. एस. मुकर्जी एवं एस. रामास्वामी - ए हिस्ट्री ऑफ पॉलिटिकल प्वाइंट, प्लेटो टू मार्म्स
9. बार्कर - ग्रीक पॉलिटिकल ब्यौरी
10. सेबाइन - हिस्ट्री ऑफ पॉलिटिकल ब्यौरी ।

राजनीति शास्त्र

प्रश्न पत्र - द्वितीय

तुलनात्मक शासन एवं राजनीति (पेपर कोड-0184)

(ब्रिटेन, अमेरिका, चीन, स्विटरजैंड के विशेष संदर्भ में)

पूर्णांक - 75

इकाई-1 तुलनात्मक राजनीति का अर्थ, प्रकृति, क्षेत्र एवं समस्याये ।

तुलनात्मक राजनीति के अध्ययन के उपागम : राजनीतिक व्यवस्था का उपागम-डेविड ईस्टन एवं आमण्ड एवं पावेल के अनुसार ।

संवैधानिक परम्परायें एवं संविधान की विशेषतायें ।

इकाई-2 संवैधानिक संरचना-कार्यपालिका का अर्थ, प्रकार, कार्य शक्तियों का केन्द्रण, तुलनात्मक विवेचन ।

इकाई-3 संवैधानिक संरचना-विधायिका- संगठन, कार्य, द्विसदनीय व्यवस्थापिका का पक्ष विपक्ष, तुलनात्मक अध्ययन ।

इकाई-4 संवैधानिक संरचना-न्यायपालिका संगठन, कार्य, स्वतंत्रता, महत्व, विधि का शासन एवं न्यायिक पुनराविलोकन।

इकाई-5 राजनीतिक, संस्कृति एवं राजनैतिक ।

समाजीकरण की अवधारणा, राजनीतिक दल-विशेषताएँ एवं महत्व, दबाव समूह, अर्थ, प्रकार, परिभाषा एवं महत्व।

राजनीतिक प्रक्रिया में नारी की भूमिका ।

संदर्भ ग्रंथ -

1.	जैन एवं फाडिया	-	तुलनात्मक शासन एवं राजनीति
2.	प्रभुदत्त शर्मा	-	तुलनात्मक राजनीति
3.	एस.सूरी	-	तुलनात्मक राजनीति के सिद्धांत
4.	आशा गुप्ता	-	तुलनात्मक शासन एवं राजनीति
5.	जे.सी. जौहरी	-	तुलनात्मक राजनीति
6.	सी.बी. ग्रेना	-	तुलनात्मक राजनीति एवं राजनैतिक संस्थाएं
7.	राय एवं सिंह	-	तुलनात्मक राजनीति
8.	एस.आर. माहेश्वरी	-	तुलनात्मक राजनीति
9.	आर.बी.एस. जैन	-	तुलनात्मक राजनीति
10.	जे.सी. जौहरी	-	कम्परेटिव्ह पॉलिटिक्स
11.	विद्या भूषण	-	कम्परेटिव्ह पॉलिटिक्स
12.	डि. डियोन	-	कम्परेटिव्ह- गवर्नमेंट एण्ड पॉलिटिक्स
13.	एस.ई. फाइनर	-	कम्परेटिव्ह गवर्नमेंट
14.	एच. फाइनर	-	व्योरी एण्ड प्रेक्टिस ऑफ माडर्न गवर्नमेंट

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SOCIOLOGY

PAPER - I

SOCIETY IN INDIA (Paper Code-0185)

UNIT-I View about Indian Society.

The Classical views : Verna, Ashram Karma and Dharma

Field views : M.N. Shrinivas and S.C. dubey

Significance and ineterface of classical and field views

UNIT-II The Structure and Composition of Indian Society

Structure : Villages, Towns, Cities and Rural - urban,

Linkage composition : Tribes, Dalits, Women and Minorities

UNIT-III Basic Institutions of Indian Society

Caste system, kinship, family, family marriage class, changing dimensions.

UNIT-IV Familial Problems

Dowry, domestic violence, divorce, intra-interenerational conflict problem of elderly

UNIT-V Social Problems

Casteism, Regionalism, Communalism, corruption, youth unrest.

SOCIOLOGY

PAPER - II

CRIME AND SOCIETY (Paper Code-0186)

UNIT-I Conception and types of crime

Early Explanation - Classical, Positives, psychological.

UNIT-II Social structure and Anomie

criminality - suicide

Organized crime, white collar crime

Causes, consequences and remedies of Terrorism.

UNIT-III Indian Social Problems

Nature of Social change and crime in India Social Diso-Denization. Alcoholize. Drug Addiction, beggary.

UNIT-IV Punishment - Objectives and forms.

Major theories of punishment

Modern correctional concepts probation, parole open prison.

UNIT-V Correctional process-

Role of police and Judiciary in India Development of Jail reforms in India Sociology of Prison.

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ECONOMICS

PAPER - I

MACRO ECONOMICS

(Paper Code-0181)

UNIT-I National Income & Social Accounts Concept and Measurement of National Income; National Income identities with government and international trade; Sectors of National Accounts; Green accounting Say's Law of Markets and the classical theory of employment; Keyne's objection to the classical theory; Aggregate demand and aggregate supply functions; The principle of effective demand.

UNIT-II Consumption function - Average and marginal propensity to consume; Factors influencing consumption spending; The investments multiplier and its effectiveness in LDCs; Theory of investment - Autonomous and induced investment; Marginal efficiency of capital; Rate of interest classical savings theory & Investment - ex-post and ex-ante, Equality & Equilibrium.

UNIT-III Nature and characteristics of trade cycle; Hawtrey's monetary theory; Hayek's over investment theory; Keynes' view on trade cycle; The concept of accelerator; Samuelson and Hicks multiplier, accelerator model, Control of trade cycles.

UNIT-IV International Trade - Inter-regional and international trade, Comparative advantage and opportunity Cost, Heckser Ohlim Theory its main feature assumptions & limitations. Term of Trade. Tariffs & Quotas concept of optimum tariff.

Balance of trade & Balance of Payment- Concept & Components of BOP, Equilibrium & disequilibrium in BOP Varius measures to correct deficit in BOP, Relative merits & demerits of devalautaion. Foreign Trade Multiplier.

UNIT-V Functions of IMF, World Bank and WTO, Reform of the international monetory system with special reference to India.

Foreign Trade in India recent Changes in the Composition and direction of foreign trade. Causes & affects of persistent deficit in Bop the Measures adopted by the government to correct the deficit after 1991 Partial & Full Convertibility of Rupee, Instruments of export promotion & Recent Export & Import Policies of India & Role of Maltinational Corporations in India.

BASIC READING LIST -

- Ackley, G. (1976) - Macro Economics; Theory and Policy, Mcmillan Publishing Company, Newyork.
- Day, A.C.L. (1960) - Outline of Monetary Economics, Oxford University Press Oxford.
- Gupta, S.B. (1994)- Monetary Economics, S. Chand and Co., Delhi
- Heijdra, B.J. and F.V. Ploeg (2001) - Foundations of Modern Macro-economics, Oxford University Press, Oxford.
- Lewis, M.K. and P.D. Mizan (2000) - Monetary Economics, Oxford University Press, New Delhi.
- Shapiro, E. (1996) - Macroeconomic Analysis, Galgotia Publications, New Delhi .

READING LIST -

- Ackley, G. (1976), Macroeconomics : Theory and Policy, Macmillan publishing Company, New York.
- Day, A.C.L. (1960) - Outline of Monetary Economics, Oxford University Press Oxford.
- Gupta, S.B. (1994)- Monetary Economics, S. Chand and Co., Delhi
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- Dillard, D. (1960)- The Economics of John Mayanand Keynes, Crossby Lockwood and Sons, London.
- Hanson, A.H. (1953), A Guide to Keynes, McGraw Hill, New York.
- Higgins, B. (1963), Economic Development; Principles, Problems and Policies, Central Book Depot, Allahbad.
- Keynes, J.M. (1936), the General Theory of Employment, Interest and Money, Macmillan, London.
- Kindleberger, C.P. (1958), economics Development, McGraw Hill Book company, New York.
- Lucas, R. (1981), Studies in Business Cycle Theory, MIT Press, Cambridge, Massachusetts.
- Mier, G.M. and R.E. Baldwin (1957), Economic Development; Theory, History and Policy Wiley & Sons Inc. ; New York.
- Powelson, J.P.C. (1960), National Income and Flow of Funds Analysis, McGraw Hill, New York.

ECONOMICS

PAPER - II

MONEY, BANKING AND PUBLIC FINANCE

(Paper Code-0182)

UNIT-I Basic concepts : Money - meaning and functions, Gresham's law; Role of money in Capitalist, Socialist and Mixed econonics; Quantity theory of money- Cash transaction and cash balance approaches; Value of Money, Inflation, deflation and reflation defination, types, causes and effects of inflation on different sectors of the economy; Demand pull and cost push inflation; Measures to control inflation. Trade off between inflation & unemployment.

UNIT-II Commercial banking- meaning and types; Functions of commercial banks The process of credit creation prupose and limitations; Liabilities and assets of banks; Evolution of commercial banking in India after independence; A critical appraisal of the progerss of commercial banking after Nationalization; Recent reforms in banking sector in India. Functions of a central bank; Quantitative and qualitative methods

of credit control; Bank rate policy; Open market operations; Variable researve ratio and selective methods. Role and functions of the Reserve bank of India; Objectives and limitations of monetary policy with special reference to India.

UNIT-III Meaning and scope of public finance; Distinction between private and public finance; public goods v/s private goods; The principle of maximum social advantage; Market failure; Role of the government; Public expenditure - Meaning, classification and principles of public expenditure; Trends in public expenditure and causes of growth of public expenditure in India.

UNIT-IV Sources of Public revenue; taxation - Meaning, Canons and classification of taxes; Diveision of tax burden. The benefit and ability to pay approaches; Impact and incidence of taxes; Taxable capacity; Effects of taxation; Characheristics of a good tax system; Major trends in tax revenue of the Central and State Governmenst in India.

UNIT-V Public debt and financial administration : Sources of public borrowing effects of public debt. Methods of debt redemption. The public budget- Kinds of budget, Economic and functional classificational of the budget; Preparation and passing of budget in India.

READING LIST -

- Ackley G. (1978), Macroeconomics : Theory and Policy, Macmillan Publishing Co., New York.
- Bhargavas B.H. (1981), The Theory and Working of Union Finance in India, chaitanya Publishing House Allaybad.
- Gupta, S.B. (1994), Monetary Economics S. Chand & Company, New Delhi.
- Houghton. E.W. (Ed.) (1988), Public Finance. Pengum, Battinore
- Jha R. (1998), Modorn Public Economics. Routledge, London.
- Mithani, D.M. (1981), Modern Public Finance, Himalaya Publishing House, Mumbai.
- Musgrave, R.A. and P.B. Musgrave (1976), Public Finance in Theory and Practice McGraw Hill, Kogakusha, Tokyo.
- Shapiro, E. (1996), Macroeconomics Analysis, Galgotia Publications, New Delhi.

ADDITIONAL READING LIST-

- Day, A.C.L. (1960), Outline of Monetary Economics, Oxford University Press, Oxford.
- De Kock, M.H. (1960), Central Banking. Staples Press, London.
- Due, J.E. (1963), Government Finance, Irwin, Homewood.
- Government of India, Economimc Survey (Annual), New Delhi
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इतिहास

प्रश्न पत्र - प्रथम

(भारत का इतिहास सन् 1206 से 1761 ई. तक)

(पेपर कोड-0179)

उद्देश्य - इस पाठ्यक्रम का उद्देश्य विद्यार्थियों को मध्यकालीन भारत के इतिहास के प्रमुख राजनीतिक, सामाजिक, आर्थिक एवं सांस्कृतिक पक्षों से परिचित कराना है जो कि यू.जी.सी. मानदंडों के अनुरूप है ।

इकाई-1
1. सल्तनत कालीन एवं मुगलकालीन इतिहास के स्त्रोत
2. दास वंश - ऐबक, इल्तुतमिश, रजिया, बलबन
3. खिलजी वंश - अलाउद्दीन खिलजी
   तुगलक वंश - मोहम्मद बिन तुगलक, फिरोजशाह तुगलक
4. तैमूर का भारत आक्रमण

इकाई-2
1. मुगल साम्राज्य की स्थापना - बाबर
   शेरशाह सूरी की प्रशासन व्यवस्था
2. अकबर की राजपूत नीति
3. मुगल शासकों की धार्मिक नीति - अकबर से औरंगजेब तक
4. राजनीतिक संस्थाएं एवं प्रशासन

इकाई-3
1. सल्तनत कालीन सामाजिक, आर्थिक दशा
2. मुगल कालीन सामाजिक, आर्थिक दशा
3. धार्मिक एवं सांस्कृतिक दशा - भक्ति आन्दोलन
4. सूफीवाद

इकाई-4
1. सल्तनत कालीन कला एवं स्थापत्य
2. मुगलकालीन कला एवं स्थापत्य
3. सल्तनतकालीन शिक्षा एवं साहित्य
4. मुगलकालीन शिक्षा एवं साहित्य

इकाई-5
1. विजय नगर राज्य - कृष्णदेव राय
2. बहमनी राज्य
3. शिवाजी प्रशासन
4. तृतीय पानीपत युद्ध - कारण एवं परिणाम

अनुशंसित ग्रन्थ -

1. श्रीवास्तव ए.एल. - भारत का इतिहास (अंग्रेजी अनुवाद)
2. श्रीवास्तव ए.एल. - दिल्ली सल्तनत (अंग्रेजी अनुवाद)
3. श्रीवास्तव ए.एल. - मुगलकालीन भारत (अंग्रेजी अनुवाद)
4. हबीबुल्लाह - भारत में मुस्लिम शासन की बुनियाद
5. मजूमदार, राय चौधरी एवं दत्त - भारत का वृहत इतिहास खंड - 2

6.	पंजाबी बी. के.	–	भारत का इतिहास (1206–1761) (म.प्र. हिन्दी ग्रंथ अकादमी, भोपाल)
7.	हबीब एवं निजामी	–	दिल्ली सल्तनत
8.	वर्मा हरिशचन्द	–	मध्यकालीन भारत (750–1540)
9.	शर्मा कालूराम एवं व्यास प्रकाश	–	मध्य कालीन भारतीय संस्कृति
10.	सक्सेना आर.के.	–	दिल्ली सल्तनत
11.	राधेशरण	–	भारत की सामाजिक एवं आर्थिक संरचना और संस्कृति के मूल तत्व (आदिकाल से 1950 ईस्वी तक) (म.प्र. हिन्दी ग्रंथ अकादमी भोपाल)
12.	पाण्डेय ए.बी.	–	पूर्व मध्यकालीन भारत
13.	पांडेय ए.बी.	–	उत्तर मध्यकालीन भारत
14.	ईश्वरी प्रसाद	–	मुगलकालीन भारत
15.	श्रीवास्तव एच.एस.	–	मुगलकालीन शासन व्यवस्था
16.	सरदेसाई जी.एस.	–	मराठों का नवीन इतिहास खंड – 2
17.	सरकार जे.एन.	–	शिवाजी और उनका युग
18.	त्रिपाठी आर.पी.	–	मुगल साम्राज्य का इतिहास और पतन
19.	मित्तल ए.के.	–	यूनीफाइड इतिहास (प्रारंभ से 1761 ई. तक)
20.	मित्तल ए.के.	–	यूनीफाइड इतिहास प्राचीन काल से 1950 ईस्वी तक
21.	Dey, U.N.	-	Mughal Government
22.	Habibulla, A.D.M.	-	Foundation of Muslim Rule in India
23.	Habib & Nizami	-	Comprehensive History of India
24.	Majumdar, Roy Choudhary & Dutt	-	An Advanced History of India VoI-II
25.	Mehta	-	Advanced study in the Medival History of India
26.	Pandey A.B.	-	Early Medieval India
27.	Pandey A.B.	-	Medieval India
28.	Prasad Ishwari	-	Medieval India
29.	Sarkar, J.N.	-	Shivaji and his Time

इतिहास

प्रश्न पत्र – द्वितीय

(विश्व का इतिहास, सन् 1789 से 1871 ई. तक)

(पेपर कोड-0180)

उद्देश्य – इस पाठ्यक्रम का उद्देश्य विद्यार्थियों को विश्व इतिहास की प्रमुख घटनाओं के अवगत कराना है ।

इकाई–1 1. फ्रांस की क्रांति – नेशनल कन्वेन्शन से आतंक का राज्य तक

2. डायरेक्टरी शासन

3. नेपोलियन बोनापार्ट का उत्थान एवं उपलब्धियां
4. नेपोलियन बोनापार्ट का पतन

इकाई-2 1. वियना कांग्रेस, यूरोप की संयुक्त व्यवस्था
2. अनुदारवाद - मैटरनिक
3. 1830 की क्रांति - कारण एवं परिणाम
4. 1848 की क्रांति - कारण एवं परिणाम

इकाई-3 1. औद्योगिक क्रांति
2. इंग्लैण्ड में उदारवाद - 1832 के सुधार
3. 1867 के सुधार
4. चार्टिस्ट आंदोलन

इकाई-4 1. नेपोलियन तृतीय की उपलब्धियां
2. पूर्वी समस्या - उदय के कारण
3. यूनान का स्वतंत्रता संग्राम
4. क्रीमिया युद्ध

इकाई-5 1. रूस - जार अलेक्जेन्डर द्वितीय
2. इटली का एकीकरण
3. जर्मनी का एकीकरण
4. मेईनी पुनर्स्थापना - 1868

संदर्भ ग्रंथ -

1. हेजन - आधुनिक यूरोप का इतिहास
2. बी.आई. पाल - आधुनिक यूरोप का इतिहास
3. HAL Fisher - A History of Europe
4. Christopher - From Reformation to Industrial Revolution
5. A.J.P. Taylor - The origins of the second war
6. David Thompson - Europe, Nepolean
7. पी.एन. मेहता - आधुनिक यूरोप (1789-1871)
8. दीनानाथ वर्मा - आधुनिक यूरोप का इतिहास
9. मथुरालाल वर्मा - आधुनिक यूरोप का इतिहास
10. Fisher - A History of Europe
11. दीनानाथ वर्मा एवं शिवकुमार सिंह - विश्व इतिहास का सर्वेक्षण

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GEOGRAPHY

1. The B.A. Part-II examination in Geography will be of 150 marks. There will be two theory papers and one practical each of 50 marks as follows :

   Paper-I Phsical Geography-II
   (Climatology and Oceanography)

   Paper-II Regional Gejography with special reference to North America

   Paper-III Practical Geography

2. Each theory paper shall be of three hours duration.
3. Candidates will be required to pass separately in theory and practical examinations.
4. Each theory paper is divided into five units.
5. (a) In the practical examination, the following shall be the allotment of time and marks.

(i)	Lab work	- 25 marks	upto three hours.
(ii)	Field work (survey)	- 15 marks	Two hours
(iii)	Practical Record and viva-voce	- 10 marks	

   (b) The external and internal examiners shall jointly submit marks.

   (c) The candidates shall present at the time of the practical examination their practical records, regularly signed by the teachers concerned.

PAPER - I

PHYSICAL GEOGRAPHY - II

(CLIMATOLOGY AND OCEANOGRAPHY) (Paper Code-0187)

A. CLIMATOLOGY

UNIT-I Weathers and climate; definition and significance of climatology. Elements of weather and climate; their causes. Composition and structure of the atmosphere.
Atmospheric Temperature : Insolation and Global enery budget, vertical, horizontal and seasonal distribution of temperature.
Atmospheric pressure and winds : Vertical and horizontal distribution of pressure; planetary, periodic and local winds.

UNIT-II Atmoshperic moisture : humidity, evaporation; and condensation; hydrological cycle; types of percipitation, world patterns of rainfall : regional and seasonal distribution.
Atmospheric disturbances : tropical and temperate cyclones; thun derstorms and tornadoes.

UNIT-III Climatic classification, basis of koppen's classification and types-distribution, charactristics and related plant and animal life.
Role of climate in human life; Atmospheric pollution and global warning general causes, consequences and measures of control.

B. OCEANOGRAPHY

UNIT-IV Relevance of oceanography in earth and atmospheric science. Definition of oceanography, Surface configuration of the ocean floor, continental shelf, continental slope, abyssal plain, mid-oceanic ridges and oceanic trenches. Relief of atlantic, pacific and Indian oceans. Distribution of temperature and salinity of oceans and seas.

UNIT-V Circulation of oceanic waters ; Waves, tides and currents, currents of the Atlantic, Pacific and Indian ocean as storehouse of resources for the future.

READINGS-

CLIMATOLOGY

1. Barry, R.G. & Chorley, R.J. Atmosphere, Weather and Climate, Routledge, 1998.
2. Critchfield, H. : General Climatology, Prontice-Hall, New York 1975.
3. Das, P.K. The Monsoons, National Book Trust, New Delhi 1968
4. Lydolph, Paul, E. : The climate of the Earth, Rowman and Allanheld, Totowa 1985
5. Mather, J.R. : Climatology, McGraw-Hill, New York, 1974.
6. Patterson, S. Introduction of Meteorology, McGraw-Hill Book Co., London, 1969.
7. Stringer, E.T. : Foundation of Climatology, Surjeet Publications, Delhi, 1982.
8. Trewartha, G.t. : An Introduction to Climate : Inernational Students edition, cGraw Hill, New York, 1980.

OCEANOGRAPHY

1. Anikouchine, W.A. and Sternberg, R.W. : The World Oceans - An Introduction to Oceanography Englewood Cliffs : N.J. 1973.
2. Grald, S. : General Oceanography- An Introduction, John Wiley & Sons, New York, 1980.
3. Garrison, T. Oceanography : Wardsworth. com., U.S.a. 1998.
4. King C.A.M. Benches and Coasts, E. Arnold, London, 1972.
5. King C.A.M. : Oceanography for Geographers E. Arnold, London, 1976.
6. Sharma, R.C. Vatel M., Oceanography for Geographers : Chetnya Publishing House, Allahabad, 1970.
7. Shepard, F.P. : Submarine Geology, Harper & Sons, New York, 1948.
8. Thurman, H.B. Introductory Oceanography, Charlos Webber E. Marril Publishing Co., 1984.
9. Weisberg, J. and Howard : Introductory Oceanography, McGraw-Hill Book Co., New York, 1976.

PAPER-II (Paper Code-0188)

REGIONAL GEOGRAPHY WITH SPECIAL REFERENCE TO NORTH AMERICA

UNIT-I Regional concept ; Bases of regionalization ; North America-structure, relief, climate and soils.

UNIT-II Forests, Distribution and Production of Mineral and Energy Resources (Iron ore, Manganese, Copper, Coal, Petroleum and Hydro-electricity) of North America.

UNIT-III Major Crops ; Agricultural belts, Live stock and Dairy Farming in North America.

UNIT-IV Industries of North America - Localization, development & production (Iron & Steel, Cotton textile, Heavy Engineering Industries), Industrial Regions, Population ; Trade and Transport.

UNIT-V Detailed study of the following regions of North America : California valley, New England Region, Lake Region, Alaska, Prairie Region and St. Lawrance valley.

PAPER-III

PRACTICAL GEOGRAPHY

UNIT-I Distribution Maps : Dot, Choropleth & Isopleth

UNIT-II Map Projections : Definition and classification, Cylindrical projections-simple, equal area, Gall's, Marcator's.

UNIT-III Interpretation of weather maps : Use of mateorological instruments.

UNIT-IV Statistical Methods : Quartile : Mean deviation, standard deviation and Quartile deviation ; Relative variability and co-efficient of variation.

UNIT-V Surveying-Prismatic Compass Survey : open and closed traverse, correction of bearing, calculation of interior angles.

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PSYCHOLOGY

PAPER - I

SOCIAL PSYCHOLOGY (Paper Code-0189) M.M. 50

UNIT-I Nature, goal and scopo of social psychology, methods of social psychology : experimental, survey, interview, observation, sociometry. Approaches to study of social behaviour : psychoanalytic, cognitive, behavioural.

UNIT-II Social Perception : Perception of self and others, impression formation and its determinant, prosocial behaviour : co-operation and helping, personal, situational and socio-cultural determinants.

UNIT-III Stereotyps : Nature, determinants, prejudice : nature and determinants, Attitudes: nature and measurements, interpersonal attraction and its determinants.

UNIT-IV Group Structure and function, social facilitation, conformity, cohesiveness. Group Norms. Leadership : Nature types charatersitics and functions.

UNIT-V Social issues : Aggression, determinants, prevention and control.

Population Explosion : nature and consequences, socio, cultural pollution : corruption, mob behaviour, gender discrimination and child labour.

REFERENCES :

सिंह अरूण कुमार – समाज मनोविज्ञान की रूपरेखा, मोतीलाल बनारसोदा

मिश्रा, जी जैन – समान मनोविज्ञान के मूल आधार म.प्र. हिन्दी ग्रंथ अकादमी

त्रिपाठी लालबचन – समाज मनोविज्ञान की रूपरेखा हरप्रसाद भार्गव----

Boron R.A. & Byrne - Social psychology New Delhi : Prentice secord, P.F. & Backman, C.W. (1994) - social psychology Magraw-Hill.

PAPER - II

PSYCHOLOGICAL ASSESSMENT (Paper Code-0190) M.M. 50

UNIT-I Psychological Assessment : Concept, difference between physical and psychological assessment, levels of assessment, barriers to psychological assessment, Unidimensional and multidimensional assessment.

UNIT-II Psychological Test : Concept, characteristics, types, standardized and non-standardised, group, performance and verbal, uses of psychological tests.

UNIT-III Test Construction : Steps in test construction, Reliability : Test-retest, split-half, factors affecting reliability, validity : Content and predictive, factor affecting validity. Norms-age and grade.

UNIT-IV Cognitive and noncognitive tests : cognitive-introduction to intellegence, aptitude, achievement testing. Noncognitive : Introduction to personality, interest, value testing.

UNIT-V Psychological Testing in applied aspects of life : educaiton, occupation, social, health and organization, socio-cultural factors in psychological assessment.

REFERENCE -

Anastasi (1997) Psychological testing, New York : Mac Hill Ciminero, A.R. (1986) Hand book of Behavioural assessment, New York : John Wiley.

Gupta, S.P. (2001) : आधुनिक मापन एवं मूल्यांकन, शारदा पुस्तक भण्डार, वाराणसी

PAPER - III

PSYCHOLOGY PRACTICALS

This paper carries 50 Marks. It has two parts of equal marks. Part A Comprises of laboratory experiments and psychological testing, while part B is devoted to field work.

Part A : Note : Conduction of any 5 experiments and administration of any 4 psychological tests of the following is compulsory.

Experiments :

1. Effect of group on decision making
2. Social facilitation
3. Effect of social setting on sociometry
4. Sterio Types
5. Effect of order of information on person-perception
6. Effect of leadership on performance
7. Effect of cognitive dissonance on attitude change
8. Effect of communicator's credibility on suggestibility.

Tests :

(i) Aggression
(ii) Deprivation
(iii) Self-concept
(iv) Dependence proneness scale
(v) Value
(vi) Vocational interest
(vii) Attitude scale
(viii) Creativity

Part B. Field Work

Each student will be required to visit the hospital/Industrial organisation/educational institution etc. under departmental supervision and shall be preparing his/her observation report, revealing his/her psychological insight about group dynamics that is operation in the unit. This record constitutes a part of assessment of field visit. Measures of central tendency in group data correlation Rank order.

Distribution of Marks :

A.	Conduction of psychological experiment and reporting	15 marks.
B.	Administration of one sychological test and reporting	15 marks.
C.	Evaluation of Practical note book of field work	10 marks.
D.	Viva-Voce	10 marks.

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प्राचीन भारतीय इतिहास, संस्कृति एवं पुरातत्व

प्रथम प्रश्न पत्र (पेपर कोड-0203)

भारत का राजनीतिक इतिहास (319 ई. से 1300 ई. सन् तक) पूर्णांक : 75

उद्देश्य : पाठ्यक्रम का उद्देश्य विद्यार्थियों को संबंधित कालखण्ड के राजनीतिक इतिहास का समुचित ज्ञान प्रदान करना है ।

इकाई-1
1. गुप्तों की उत्पत्ति एवं प्रारंभिक इतिहास
2. चन्द्रगुप्त प्रथम, रामगुप्त, समुद्रगुप्त
3. कुमार गुप्त प्रथम, स्कन्दगुप्त
4. वाकाटक राजवंश, गुप्त-वाकाटक सम्बन्ध

इकाई-2
1. परवर्ती गुप्त राजवंश
2. मौखरी
3. वर्धन राजवंश और हर्ष का प्रशासन

इकाई-3
1. बादामी के चालुक्य
2. कांची के पल्लव
3. चोल तथा उनका प्रशासन

इकाई-4
1. गुर्जर प्रतिहार
2. राष्ट्रकूट
3. पाल
4. गाहड़वाल

इकाई-5
1. चन्देल
2. परमार
3. चाहमान
4. त्रिपुरी के कलचुरि
5. रतनपुर के कलचुरि

अनुशंसित पुस्तकें -

1.	उदयनारायण राय	:	गुप्त राजवंश तथा उसका इतिहास (नया संस्करण) 1988.
2.	श्री राम गोयल	:	भारत का राजनैतिक इतिहास भाग 2 एवं 3.
3.	श्री राम गोयल	:	गुप्त साम्राज्य का इतिहास
4.	Ashvini Agrawal	:	Rise and Fall of the imperial Gupta
5.	विशुद्धानंद पाठक	:	उत्तर भारत का राजनीतिक इतिहास
6.	अवध बिहारी लाल अवस्थी	:	राजपूत राजवंश
7.	डी.सी. गांगुली	:	परमार राजवंश
8.	भगवती प्रसाद पांथरी	:	मौखरी और पुष्यभूमि राजवंश
9.	डॉ. के.ए. नीलकंठ शास्त्री	:	दक्षिण भारत का इतिहास
10.	डॉ बैजनाथ शर्मा	:	हर्षवर्धन
11.	R.C. Majumdar & A.D. Pusalkar (Ed)	:	The Classical Age, "The age of Imperial Unity" The Struggle for Empire.
12.	Majumdar, Ray Choudhary	:	An Advanced History of India. Vol. I

13. H.C. Ray : Dynastic Hisotry of Narthern India, Vol. II
14. A.S. Altekar : Gupta-Vakataka Age, Gupta-Vakataka Yug (Hindi)
15. Yajdani G. : Early History of the Deccan
16. Devanuti : Harsha-A Political Study
17. K.A. Neelkantha Shastry : The History of South India the Cholas.
18. Dasaratha Sharma : Lectures on Rajput History

द्वितीय प्रश्न पत्र

(अ) प्राचीन भारतीय धर्म और दर्शन (पेपर कोड-0204)

(वैदिक काल से 1300 ई. तक) पूर्णांक : 75

उद्देश्य : पाठ्यक्रम में धार्मिक और दार्शनिक विचारों के विकास की प्रमुख प्रवृत्तियों का आधारभूत अध्ययन अपेक्षित है ।

इकाई-1
1. वैदिक धर्म का उद्भव एवं विकास
2. बौद्ध धर्म का उद्भव और विकास
3. जैन धर्म का उद्भव और प्रमुख सिद्धांत

इकाई-2
1. शैव धर्म-उद्भव और विकास
2. वैष्णव धर्म-उद्भव और विकास

इकाई-3
1. शाक्त धर्म-उद्भव और विकास
2. दक्षिण भारत में भक्ति आंदोलन-अलवार और नयनार

इकाई-4
1. औपनिषदिक दर्शन
2. गीता का दर्शन
3. चार्वाक दर्शन
4. सांख्य दर्शन

इकाई-5
1. योग दर्शन
2. न्याय दर्शन
3. वैशेषिक दर्शन
4. मीमांसा दर्शन

अनुशंसित पुस्तकें -

1. डॉ. गोविन्द चन्द्र पाण्डे : बौद्ध धर्म के विकास का इतिहास
2. आर.जी. भण्डारकर (अनुवाद) : वैष्णव शैव एवं अन्य धार्मिक मत
3. बलदेव उपाध्याय : भागवत सम्प्रदाय
4. यदुवंशी : शैवमत
5. एस.एन. राय : पौराणिक धर्म एवं समाज
6. सुस्मिता पाण्डेय : समाज आर्थिक व्यवस्था एवं धर्म
7. एम. हिरियन्ना : भारतीय दर्शन की रूपरेखा
8. बलदेव उपाध्याय : भारतीय दर्शन
9. एस. राधाकृष्णन : भारतीय दर्शन भाग-1 एवं 2
10. डॉ. उमेश मिश्रा : भारतीय दर्शन
11. R.K. Mission (Ed.) : Cultural Heritage of India, Vols. I and II

12.	A.B. Keith	:	Religion and Philosophy of the Vedas and the Upanishadas
13.	Dr. G.C. Pande	:	Foundation of Indian Culture, Vol-I Spiritual Vision & Symbolicforms in Ancient India
14.	S.R. Goyal	:	A. Religious Hisotry of India, Vols. I & II
15.	Suvira Jayaswal	:	Origin and Development of Vaisnavism
16.	S. Pande	:	Birth of Bhakti in Indian Religions & Art
17.	G.C. Pandey	:	Studies in the origin of Buddhism
18.	Trever Ling	:	Buddhism (Pelican)
19.	Lalman Joshi	:	Introduction to Indian Religions
20.	Sudhakar Chattopadhyaya	:	Hindu Religions, Sects
21.	S.N. Ray	:	Historical and cultural study of the Puranas
22.	A. Mac Donnel	:	Vedic Mythology
23.	S.N. Dasgupta	:	History of Indian Philosophy, 5 Vols.
24.	Maxmuller	:	Six systems of Indian Philosophy
25.	Mahadevan, T.M.P.	:	Invitation to Indian Philosophy
26.	S. Radhakrishnan	:	Indian Philosophy, 2 Vols.

अथवा

द्वितीय प्रश्न पत्र

(ब) प्राचीन भारतीय राजनय तथा प्रशासन (पेपर कोड-0205) पूर्णांक : 75

इकाई-1 राज्य की उत्पत्ति, प्रकार, स्वरूप तथा कार्य ।

इकाई-2 राजपद, मंत्रिपरिषद्-संगठन एवं कार्य, सप्तांग सिद्धांत ।

इकाई-3 गणराज्य : संगठन, शासन, पद्धति, गुण-दोष ।

इकाई-4 अंतर्राष्ट्रीय संबंध, मण्डल सिद्धांत, षाडगुण्य सिद्धांत, दूत व्यवस्था, गुप्तचर व्यवस्था ।

इकाई-5 विभिन्न राजवंशों की प्रशासन व्यवस्था :
मौर्य, गुप्त, रतनपुर कलचुरि वंश की प्रशासन व्यवस्था, राष्ट्रकूट एवं चोलवंश ।

अनुशंसित पुस्तकें -

1.	अनंत सदाशिव अल्तेकर	:	प्राचीन भारतीय शासन पद्धति
2.	काशी प्रसाद जायसवाल	:	हिन्दू राजतंत्र, भाग 1, 2
3.	डॉ. रवींद्रनाथ अग्रवाल	:	मध्यप्रदेश क्षेत्र के अंतर्राज्यीय संबंधों का अध्ययन
4.	सत्यकेतु विद्यालंकार	:	प्राचीन भारतीय शासन व्यवस्था एवं राज्य शास्त्र
5.	मनोरमा जौहरी	:	प्राचीन भारत में राज्य और शासन व्यवस्था
6.	हरिशचन्द्र शर्मा	:	प्राचीन भारतीय राजनीतिक विचारक एवं संस्थाएं
7.	राधाकृष्ण चौधरी	:	प्राचीन भारतीय राजनीति एवं शासन व्यवस्था

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संस्कृत

प्रथम प्रश्न पत्र

नाटक, व्याकरण तथा रचना

(पेपर कोड-0195)

पूर्णांक : 75

इकाई-1 नागानन्द नाटक (श्री हर्ष)

1. दो श्लोकों की ससंदर्भ व्याख्या 20
2. ससंदर्भ दो सूक्तियों की व्याख्या 10

इकाई-2 नागानन्द-समीक्षात्मक प्रश्न 10

इकाई-3 व्याकरण-लघुसिद्धान्त कौमुदी

कर्तृवाच्य, कर्मवाच्य, भाववाच्य 10

इकाई-4 व्याकरण-लघुसिद्धान्त कौमुदी

समास प्रकरण 15

इकाई-5 वाक्य रचना

व्याकरण के अधीत अंश पर आधारित पाँच संस्कृत शब्दों से वाक्य रचना 10

अनुशंसित ग्रंथ-

1.	शीघ्रबोधव्याकरणम्	-	डॉ. पुष्पा दीक्षित, पाणिनीय शोध संस्थान, तेलीपारा, बिलासपुर
2.	नागानन्द नाटक	-	श्री हर्ष
3.	लघुसिद्धान्त कौमुदी	-	श्री धरानन्द शास्त्री
4.	रचनानुवाद कौमुदी	-	डॉ. कपिलदेव द्विवेदी
5.	संस्कृत में अनुवाद कैसे करें	-	उमाकांत मिश्र शास्त्री, भारती भवन, पटना

संस्कृत

द्वितीय प्रश्न पत्र

पद्य तथा साहित्येतिहास

(पेपर कोड-0196)

पूर्णांक : 75

इकाई-1 रघुवंशमहाकाव्य-द्वितीय सर्ग

1. दो श्लोकों की संसदर्भ व्याख्या 15
2. एक श्लोक की अनुवाद 10

इकाई-2 रघुवंशमहाकाव्य-समीक्षात्मक प्रश्न 10

इकाई-3 नीतिशतक (भर्तृहरि) 20

दो श्लोकों का व्याख्या 10

इकाई-4 साहित्येतिहास

महाकाव्य तथा गद्य काव्य-

रघुवंश, कुमार संभव, बुद्ध चरित, सौन्दरनन्द, पद्य चूड़ामणि, सुग्रीव वध, किरातार्जुनीयम, भट्टिकाव्य, जानकीहरण, शिशुपालवध, नैषधीय चरित, हरविजय, नवसाहसांकचरित, विक्रमांकदेव चरित, राजतरंगिणी ।

वासवदत्ता, दशकुमार चरित, कादम्बरी, हर्षचरित, तिलकमंजरी, गद्य चिन्तामणी, शिवराज विजय ।

इकाई-5 साहित्येतिहास 10

गीतिकाव्य, मुक्तक तथा कथा साहित्य-

शतकत्रय (भर्तृहरि), ऋतुसंहार, मेघदूत, अमरूकशतक, गीतगोविन्द, भामिनीविलास, पंचलहरी, नलचम्पू, रामायणचम्पू, भारतचम्पू, वरदाम्बिका परिणय, पंचतन्त्र, हितोपदेश, बेताल पंचविंशति, शुकसप्तति, कथा सरित्सागर, वृहत्कथा मंजरी, कथामुक्ताबली, इक्षुगन्धा ।

उल्लेखित कृतियों के रचयिताओं का सामान्य परिचय अपेक्षित है ।

अनुशंसित पुस्तकें-

1. संस्कृत साहित्य का इतिहास - पं. बलदेव उपाध्याय
2. संस्कृत साहित्य का अभिनव इतिहास - डॉ. राधावल्लभ त्रिपाठी, विश्वविद्यालय प्रकाशन वाराणसी ।

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भाषाविज्ञान

प्रथम प्रश्न-पत्र

वाक्य-अभिरचनाएँ

(पेपर कोड-0177)

1. हिन्दी की व्याकरणिक कोटियाँ- शब्दवर्ग, पुरुष, लिंग, वचन, कारक, काल, वृत्ति-परिभाषा तथा सोदाहरण विवेचना।
2. भाषिक रूप- अर्थ-तत्व व संबंध-तत्व । संबंध-तत्व के प्रकार एवं कार्य । रूपिम के प्रकार, रूपिम-निर्धारण - व्यतिरेकी वितरण, परिपूरक वितरण ।
3. भाषिक संकेत - समाजभाषाविज्ञान के संदर्भ में, 'लांग' तथा 'पैरोल' । भाषा के अध्ययन के प्रकार - एककालिक, बहुकालिक, तुलनात्मक, व्यतिरेकी तथा अनुप्रयुक्त ।
4. पदबंध उपवाक्य तथा वाक्य- पदबंध का वर्गीकरण - संज्ञा-पदबंध, सर्वनाम-पदबंध, विशेषण-पदबंध, क्रिया-पदबंध, क्रियाविशेषण-पदबंध, आदि ।

   उपवाक्य का वर्गीकरण - संज्ञा-उपवाक्य, विशेषण-उपवाक्य, क्रियाविशेषण, उपवाक्य आदि । वाक्यों का वर्गीकरण- विभिन्न आधार ।
5. कारक -कर्ता,कर्म,करण,आदि अन्वय । काल, पक्ष, भाव, वाच्य, पदक्रम - वाक्य-विन्यास -निकटस्थ अवयव विश्लेषण, रूपान्तरण-प्रजनक व्याकरण । हिंदी के वाक्यों मे होने वाली अशुध्दियों का संशोधन ।

विर्धारित पुस्तकें -

1.	भाषाविज्ञान	-	भोलानाथ तिवारी (किताब महल,इलाहाबाद)
2.	भाषाविज्ञान एवं भाषाशास्त्र	-	डॉ. कपिलदेव व्द्विवेदी (विश्वविद्यालय प्रकाशन,वाराणसी)
3.	भाषाविज्ञान सैध्दांतिक चिंतन	-	रवीन्द्रनाथ श्रीवास्तव
4.	आधुनिक हिंदी व्याकरण और रचना	-	वासुदेवनंदन प्रसाद
5.	अच्छी हिंदी	-	रामचंद्र वर्मा
6.	भाषाशास्त्र की रुपरेखा	-	उदयनारायण तिवारी

भाषाविज्ञान

द्वितीय प्रश्न-पत्र

कोशविज्ञान एवं अर्थविज्ञान

(पेपर कोड-0178)

1. कोशविज्ञान- परिभाषा, उद्देश्य, विषय-क्षेत्र,विज्ञान है या कला, कोशविज्ञान का अन्य विषयों से संबंध, कोशों के अध्ययन के आधार - ऐतिहासिक,तुलनात्मक आदि
2. कोश-निर्माण-कोश-निर्माण की विधियाँ, शब्द-संकलन के आधार, प्रविष्टियों का चयन, क्रम -विन्यास, कोश-निर्माण मे होने वाली समस्याएँ ।
3. शब्दकोश के प्रकार - भाषा के आधार पर -एकभाषिक, द्विभाषिक, त्रिभाषिक, बहुभाषिक आदि; काल के आधार

पर–समकालिक, ऐतिहासिक आदि । कोशीय अर्थ का निर्धारण–पर्यायवाची, अनेकार्थी, अभिधार्थ, लक्षणार्थ, समध्वनि, विलोमार्थ, संदर्भपरक, अर्थ आदि । शब्दकोश की विशेषताएँ ।

4. अर्थीय संबंध –शब्द और अर्थ के बीच संबंध, अर्थ के प्रकार अर्थ परिवर्तन की दिशाएँ–अर्थ–विस्तार, अर्थसंकोच, अर्थादेश आदि । अर्थ–परिवर्तन के विभिन्न कारण ।

5. हिंदी शब्दों का प्रयोग और अर्थ – ऊनार्थक (लघुतावाची) शुद्ध, पर्यायवाची शब्द, विपरीतार्थक शब्द, समूहवाची शब्द, ध्वनिमूलक शब्द (सजीव तथा निर्जीव से संबंधित) समध्वनि मूलकशब्द, मुहावरे तथा लोकोक्तियों का अर्थ और प्रयोग ।

निर्धारित पुस्तकें–

1.	कोशविज्ञान	–	भोलानाथ तिवारी
2.	आधुनिक हिंदी व्याकरण और रचना	–	वासुदेवनंदन प्रसाद
3.	अच्छी हिंदी	–	रामचंद्र वर्मा
4.	शुद्ध हिंदी	–	हरदेव बाहरी

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MUSIC

PAPER - I

THEORY OF INDIAN MUSIC. VOCAL \ INSTRUMENTAL

(Paper Code-0201)

UNIT-I (a) Definitions and study of the following terms : Graha, Ansha, Nayas Swara, Paryayansha Swara, Alpatava-Bahutva, Aavirbhava-Tirobhava, Gandharva-Gan, Nibaddha-Anibaddha Gan, Jamjama, Ghaseet, Krintan, Shuddha, Chayalag, Sankirna Raga.

(b) Swasthan Niyam, Ragalap, Aalapti, Akshiptika, Samvadatva.

UNIT-II Short Biographics and contributions of the Musicians :- Sharangdeva, Acharya Bharat, Aahobal, Venkatmakhi, Sadarang-Adarang. Aalauddin Khan, Faiyaz Khan, Imdad Khan, Pt. Ravi Shankar.

UNIT-III Notation of Talas with Dugun and Chaugun Layakaries :-

Roopak, Teevra, Sultal, Deepchandi, Jhumra, Adachautal, Dhamar, Tilwara.

UNIT-IV (a) Study of Karnatak Taal System,

(b) Comparative study of Karnatak and Hindustani Taal System.

UNIT-V Definition of Vaggeyakar, Uttam Vageyakar, Adham Vaggeyakar, Classification of Instruments :- Tat, Vitat, Ghan, Shushir

PAPER - II

THEORY OF INDIAN MUSIC VOCAL.INSTRUMENTAL M.M. : 50

(Paper Code-0202)

UNIT-I Elementry of Medium-Sound, Musical Sound and Noice, Vibratory motions, Frequency, Pitch, Magnititude and Timber, Major Tone, Minor Tone, Semi Tone.

UNIT-II Study of Melas or Thatas as follows :

(a) 72 Melas of Venkat Mukhi

(b) 32 Thatas of V.N. Bhatkhande

UNIT-III History of Indian Music as follows :

(a) Origin of Music

(b) Vedic, Pauranik and Gupta Period a short survey

UNIT-IV (a) Explanation of the following terms :
Kajari, Chaiti, Rabindra Sangeet, Tribal Music, Lawani, Garba, Baul, Bhatiyali, Mand

(b) Merits of a good listener, Qualities of a good listener to make any music programme a success.

UNIT-V (a) Study of theoritical details of Ragas prescribed for practical course : Bihag, Kedar, Desh, Bageshwari, Malkauns, Jaunpuri, Bhairavi, Hameer, Kalingda, Kamod, Chhayanat

(b) Writing in notation of songs (Bandish) or gats prescribed in practical course of Second year

(c) Writing of a critical appreciation of Radio or T.V. Music (Classical) Programme

PRACTICAL

VOCAL/INSTRUMENTAL **M.M. : 50**

1. Study of the following Ragas : Bihag, Kedar, Desh, Bageshwari, Malkauns, Jaunpuri, Bhairavi, Hameer, Kalingda, Kamod, Chhayanat
2. Two Vilambit Khayalas/Maseet Khani Gat, with Alap and Tanas or Todas. One Choice of the candidate and one vilambit asked by the examiner. 10 marks
3. Sargam geet and Lakshan geet in all the above Ragas. Playing of a Gat in Jhaptal and Rupak Tal. 3 + 3 = 6
4. Drut Khayal or Raza Khani Gat with Tanas or Todas in any five of the above mentioned Ragas. 4 + 4 = 8
5. Singing of a Dhrupad Dhamar with Layakaris or playing a Gat in other than Teen Tal. 8 marks
6. Study of the following Talas :

   Roopak, Teevra, Sooltaal, Deepchandi, Jhumra, Adachautal, Dhamar, Tilwara.

   Demonstration of Talas with Dugun Chaugun. 4 marks

   Singing of Tarana/Playing of Bol or Jhala 4 marks

SESSIONAL WORK **M.M. : 10**

1. Keeping up to date Practical and Theory note books. Attendence in Class and performance in college classes.
2. Ten descriptions of Music Programmes in Radio, T.V. or Personally attended. Participation in Departmental activities.

BOOKS RECOMMENDED -

1. Hindustani Sangeet Paddhati Kramik Pustak Malika (Part-1-4) By V.N. Bhatkhande.
2. Sangeet Visharad, by Vasant.
3. Sangeet Bodh, by S.S. Paranjape.
4. Sangeet Shastra Darpan, By Shanti Govardhan Part I + II
5. Rag Bodh, By B.R. Deodher Part I, II, III
6. Bharatiya Sangeet, Ka Itihass by Umesh Joshi. By Dr. S.S. Paranjape.
7. Sangeet Shastra 1 + 2 + 3 by Mahesh Narayan Saxena.
8. Sangeet Shastra 1, 2, 3 by V.N. Bhatkhande.
9. Sangeetanjali, by Pt. Omkar Nath Thakur.
10. Sitar Malika, by Bhagwat Sharan Sharma.
11. Taal Prakash by Bhagwat Saran.
12. Dhwani Aur Sangeet by Lalit Kishore Singh.

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EDUCATION

PAPER - I

EDUCATION & INDIAN HERITAGE (Paper Code-0193) M.M. 75

UNIT-I Education in India during (a) Vedic (b) Budhastic and (c) Medival Periods.

UNIT-II Macavleys Minutes & Bentinik Resolution (1835), Adam's Report and its recommendation wood's despatch (1854).
Lord Curzon's educational policy, Growth of national consciousness, National education movement.

UNIT-IIII Report of Hunter Commission, its influence in the subsequent development of education.
Ghokhle's Bill.
Sadler Commission's recommendation.

UNIT-IV Wardha Scheme of education 1937. RadhaKrishanan Commission 1948, Mudaliar Commission (1952-53).

UNIT-V Kothari Commission 1964-66, New education policy 1986 and its revised formulation of 1992, Gujrat Vidya Peeth, Basic education, Visva Bharti.

PAPER - II

EDUCATION AND HUMAN DEVELOPMENT (Paper Code-0194) MM. 75

COURSE OBJECTIVES

To make the students understand about -

1. The meaning, scope and uses of psychology in education.
2. Human growth and development upto the stage of adolescence.
3. Meaning and purpose of learning and factors influencing learning.
4. The concept of intelligence, its meaning and measurement.
5. Heredity and environment and their roles in causing individual differences.

COURSE CONTENTS

UNIT-I Pshchology- Its meaning, nature and scope. Relationship between education and psychology. Distinction between psychology and educational psychology.

UNIT-II Stages of human development : infancy, Childhood, latency and adolescene- their needs, significance and problems. Human development and education, role of educational psychology in understanding the individual.

UNIT-III Learing : Learning and maturation, Essential aspects of different theories and laws of learning, motivation in learning, transfer of learning.
Attention and Interest. Nature and conditions for attention, their educational implications.
Emotions - their meening, characteristics and place of emotions in education.

UNIT-IV Personality Meanining & Factors.
Intelligence - concept, definition and measurement.
Habits, meaning of habit and its role and implications in education's.

UNIT-V Heredity and invironment and their implications for education.
Individual differences - causes of individual differences, significance of individual differences and educational implications.

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STATISTICS

PAPER - I

STATISTICAL METHODS (Paper Code-0222)

UNIT-I Sampling from a distribution : Definition of a random sample, simulating random sample from standard distributions, concept of a derived distributions of a function of random variables. Concept of a statistic and its sampling distribution, Point estimate of a parameter, Concept of bias and standard error of an estimate. Standard errors of sample mean, sample proportion. Sampling distribution of sum of binomial, Poisson and mean of normal distributions. Independence of sample mean and variance in random sampling from a normal distribution (without derivation).

UNIT-II Statistical Tests and Interval Estimation : Null and alternative hypotheses, Types of errors, p-values, Statement of chi-square, t, and F statistics. Testing for the mean and variance of univariate normal distribution, testing of equality of two means and testing of equality of two variances of two univariate normal distributions. Related confidence intervals. Testing for the significance of sample correlation coefficient in sampling from bivariate normal distribution and for the equality of means and equality of variances in sampling from bivariate normal distributions.

UNIT-III Large Sample Tests : Use of central limit theorem for testing and interval estimation of a single mean and a single proportion and difference of two means and two proportions, Fisher's Z transformation and its uses. Pearson's chi-square test for goodness of fit and for homogeneity for standard distributions. Contingency table and test of independence in a contingency table.

UNIT-IV Nonparametric tests : Definition of order statistics and their distributions, Non-parametric tests, Sign test for univariate and bivariate distributions, Wilcoxon-Mann-Whitney test, Run test, Median test and Spearman's rank correlation test.

UNIT-V Four short notes, one from each unit will be asked. Students have to answer any two.

REFERENCES -

- Freund, J.E. (2001) : Mathematical Statistics, Prentice Hall of India.
- Goon A.M., Gupta M.K., Das Gupta B. (1991) : Fundamentals of Statistics, Vol. I, World Press, Calcutta.
- Hodges J.L. and Lehman E.L. (1964) : Basic Concepts of Probability and Statistics, Holden Day.
- Mood A.M., Graybill F.A. and Boes D.C. (1974) : Introduction to the Theory of Statistics, McGraw Hill.

ADDITIONAL REFERENCES -

- Bhat B.R. Srivenkatramana T and Rao Madhava K.S. (1997) : Statistics : A Beginner's Text, Vol. II, New Age International (P) Ltd.
- Rohatgi V.K. (1967) : An Introduction to Probability Theory and Mathematical Statistics, John Wiley & Sons.
- Snedecor G.W. and Cochran W.G. (1967) : Statistical Methods. Lowa State University Press.

PAPER - II

A - SAMPLE SURVEYS (Paper Code-0223)

UNIT-I Sample Surveys, Concepts of population and sample, need for sampling, Census

and sample survey, basic concepts in sampling, organizational aspects of survey sampling, sample selection and sample size.

Some basic sampling methods - simple random sampling (SRS) with and without replacement.

UNIT-II Stratified random sampling, Systematic sampling, ratio and regression methods of estimation under SRS.

Non sampling errors, acquaintance with the working (questionnaires, sampling design, methods followed in field investigation, principal findings etc.) of NSSO, and other agencies undertaking sample surveys.

B - ANALYSIS AND DESIGN OF EXPERIMENTS

UNIT-III Analysis of variance for one way and two-way classifications.

Need for design of experiments, fundamental principles of design, basic designs- CRD, RBD, LSD and their analysis.

UNIT-IV Factorial designs - 2^n designs, illustrations, main effects and interaction effects and confounding in 2^3 design.

UNIT-V Four short notes, one from each unit will be asked. Students have to answer any two.

REFERENCES -

- Cochran W.G. and Cox G.M. (1957) : Experimental Designs, John Wiley and Sons.
- Das M.N. and Giri (1986) : Design and Analysis of Experiments, Springer Verlag.
- Murthy M.N. (1967) : Sampling Theory and Methods, Statistical Publishing Society, Calcutta.
- Sampath S. (2000) : Sampling Theory and Methods, Narosa Publishing House.
- Sukhatme B.V. (1984) : Sample Survey Method and its Applications, Indian Society of Agricultural Statistics.

ADDITIONAL REFERENCES-

- Des Raj (2000) : Sample Survey Theory, Narosa Publishing House.
- Goon A.M., Gupta M.K., Das Gupta B. (1986) : Fundamentals of Statistics, Vol.II, World Press, Calcutta.
- Kempthorne O. (1965) : The Design and Analysis of Experiments, Wiley Eastern.

PRACTICAL

1. Drawing random samples from standard univariate discrete and continuous distributions such as binomial, Possion, Normal, Cauchy and Exponential.
2. Tests of significance based on t, chi-square, F. Testing of significance of sample correlation coefficient, Use of Z transformation. Testing of equality of means and equality of variances in sampling from bivariate normal.
3. Large sample tests for means and proportions, tests of goodness of fit and independence of attributes in contingency tables.
4. Nonparametric Tests : Sign, Run, Median and Wilcoxon-Mann-Whitney tests, Selection of sample and determination of sample size, Simple random sampling, Stratified SRS, and systematic sampling, Allocation problems in stratified SRS, Ratio and Regression methods of estimation in SRS.
5. Analysis of variance for one-way and two-way classifications, Analysis of CRD, RBD, and LSD, Analysis of 2^2 and 2^3 factorial designs.

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B.A. / B.Sc. Part - II

(MATHEMATICS)

There shall be three compulsory papers. Each paper of 50 marks is divided into five units and each unit carry equal marks.

PAPER - I

ADVANCED CALCULUS

(Paper Code-0216)

UNIT-I Definition of a sequence. Theorems on limits of sequences. Bounded and monotonic sequences. Cauchy's convergence Criterion. Series of non-negative terms. Comparison tests. Cauchy's integral test. Ratio tests. Raabe's, logarithmic, De Morgan and Bertrand's tests. Alternating series. Leibnitz's theorem. Absolute and conditional convergence.

UNIT-II Continuity, Sequential continuity, Properties of continuous functions, Uniform continuity, Chain rule of differentiability, Mean Value theorems and their geometrical interpretations, Darboux's intermediate value theorem for derivatives, Taylor's theorem with various forms of remainders.

UNIT-IIII Limit and continuity of functions of two variables, Partial differentiation, Change of variables, Euler's theorem on homogeneous functions. Taylor's theorem for functions of two variables, Jacobians.

UNIT-IV Envelopes, Evolutes, Maxima, Minima and saddle points of functions two variables, Lagrange's multiplier method.

UNIT-V Beta and Gamma functions, Double and triple integrals, Dirichlet's integrals, Change of order of integration in double integrals.

REFERENCES -

1. Gabriel Klaumber, Mathematical Analysis, Marcel Dekkar, Inc. New York 1975.
2. T.M. Apostol, Mathematical Analysis, Narosa Publishing House, New Delhi 1985.
3. R.R. Goldberg, Real Analysis, Oxford & I.B.H. Publishing Co., New Delhi, 1970.
4. D. Soma Sundaram and B. Choudhary, A First Course in Mathematical Analysis, Narosa Publishing House, New Delhi, 1997.
5. P.K. Jain and S.K. Kaushik, An Introduction to Real Analysis, S. Chand & Co. New Delhi, 2000.
6. Gorakh Prasad, Differential Calculus, Pothishala Pvt. Ltd., Allahabad.
7. Murray R. Spiegel, Theory and Problems of Advanced Calculus, Schaum Publishing Co., New York.
8. Gorakh Prasad, Integral Calculus, Pothishala Pvt. Ltd., Allahabad.
9. S.C. Malik, Mathematical Analysis, Wiley Eastern Ltd., New Delhi.
10. O.E. Stanaitis, An Introduction to sequences, Series and Improper Integrals, Holden-Dey, Inc., San Francisco, California.
11. Earl D. Rainville, Infinite Series, The Macmillan Company, New York.
12. Chandrika Prasad, Text Book on Algebra and Theory of Equations, Pothishala Pvt. Ltd., Allahabad.

13. N. Piskunov, Differential and Integral Calculus, Peace Publishers, Moscow.
14. Shanti Narayan, A Course of Mathematical Analysis, S. Chand and Company, New Delhi.

PAPER - II

DIFFERENTIAL EQUATIONS

(Paper Code-0217)

UNIT-I Series solutions of differential equations- Power series method, Bessel and Legendres, Functions and their properties-convergence, recurrence and generating relations, Orthogonality of functions. Sturm-Liouville problem, Orthogonality of eigen-functions. Reality of eigen-values, Orthogonality of Bessel functions and Legendre polynomials.

UNIT-II Laplace Transformation- Linearity of the Laplace transformation, Existence theorem for Laplace transforms. Laplace transforms of derivatives and integrals, Shifting theorems, Differentiation and integration of transforms, Convolution theorem, Solution of integral equations and systems of differential equations using the Laplace transformation.

UNIT-III Partial differential equations of the first order. Lagrange's solution, Some special types of equations which can be solved easily by methods other than the general method, Charpit's general method of solution.

UNIT-IV Partial differential equations of second and higher orders, Classification or linear partial differential equations of second order, Homogeneous and non-homogeneous equations with constant coefficients, Partial differential equations reducible to equations with constant coefficients, Monge's methods.

UNIT-V Calculus of Variations- Variational problems with fixed boundaries- Euler's equation for functionals containing first order derivative and one independent variable. Extremals, Functionals dependent on higher order derivatives, Functionals dependent on more than one independent variable, Variational problems in parametric form, Invariance of Euler's equation under coordinates transformation.

Variational Problems with Moving Boundaries- Functionals dependent on one and two functions, One sided variations.

Sufficient conditions for an Extremum- Jacobi and Legendre conditions, Second Variation, Variational principle of least action.

REFERENCES -

1. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons Inc., New York, 1999.
2. D.A. Murray, Introductory Course on Differential Equations, Orient Longman, (India), 1967.
3. A.R. Forsyth, A Treatise on Differential Equations, Macmillan and Co. Ltd., London.
4. Lan N. Sneddon, Elements of Partial Differential Equations, McGraw-Hill Book Company, 1988.
5. Francis B. Hilderbrand, Advanced Calculus for Applications, Prentice Hall of India Pvt. Ltd., New Delhi, 1977.
6. Jane Cronin, Differential equations, Marcel Dekkar, 1994.

7. Frank Ayres, Theory and Problems of Differntial Equations, McGraw-Hill Book Company, 1972.
8. Richard Bronson, Theory and Problems of Differential Equations, McGraw-Hill Inc. 1973.
9. A.S. Gupta, Calculus of Variations with- Applications, Prentice-Hall of India, 1997.
10. R. Courant and D. Hilbert, Methods of Mathematical Physics, Vots. I & II, Wiley-Interscience, 1953.
11. I.M. Gelfand and S.V. Fomin, Calculus of Variations, Prentice-Hill, Englewood Cliffs (New Jersey), 1963.
12. A.M. Arthurs, Complementary Variational Principles, Clarendon Press, Oxford, 1970.
13. V. Komkov, Variational Principles of Continuum Mechanics with Engineering Applications, Vol. I., Reidel Publ. Dordrencht, Holland, 1985.
14. J.T. Oden and J.N. Reddy, Variational Methods in Theoretical Mechanies, Springer-Verlag, 1976.

PAPER - III

MECHANICS

(Paper Code-0218)

STATICS

UNIT-I Analytical conditions of Equilibrium, Stable and unstable equilibrium, Virtual work, Catenary.

UNIT-II Forces in three dimensions, Poinsot's central axis, Null lines and planes.

DYNAMICS

UNIT-III Simple harmonic motion, Elastic strings, Velocities and accelerations along radial and transverse directions, Projectile, Central orbits.

UNIT-IV Kepler's laws of motion, Velocities and acceleration in trangential and normal directions, Motion on smooth and rough plane curves.

UNIT-V Motion in a resisting medium, Motion of particles of varying mass, Motion of a particle in three dimensions, Acceleration in terms of different co-ordinate systems.

REFERENCES -

1. S.L. Loney, Statics, Macmillan and Company, London.
2. R.S. Verma, A Text Book on Statics, Pothishala Pvt. Ltd., Allahabad.
3. S.L. Loney, An Elementary Treatise on the Dynamics of a Particle and of Rigid bodies, Cambridge University Press, 1956.

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ANTHROPLOGY

PAPER - I

ARCHAEOLOGICAL ANTHROPOLOGY

(Paper Code-0212)

AIM : The main aim of this course is to introduce the students about the basic elements of Prehistoric Archaeology.

UNIT-I Meaning and scope of the different Kinds of archaeology : Classical Archaeology, Historical Archaelogy, Prehistoric Archaeology and Protohistoric Archaeology.

Differences between the old world and New world archaeology traditions.

Archaeology as anthropology, Dating : Relative Dating, Absolute Dating.

UNIT-II Geological time scale, The Greate Ice Age, Stratigraphy and other evidence of Ice Age : River terrace, moraine etc., Alpine and Himalayan glaciations, Pluvials and interpluvial, Stone age tools : Types and Technology.

UNIT-III Age of palaeolithic savegery : European lower palaeolithic period : Stone tools and culture, Indian lower palaeolithic period : Sohan Culture, Madrasian Culture, European Middle Palaeolithic Culture Period : Tools & Culture, Flake tool complex in India, European Upper Palaeolithic Period : Tools and Culture, Main characteristics of the European Palaeolithic Home and cave art, its significance.

UNIT-IV Mesolithic complex in North Europe, Mesolithic complex in Western Europe, Mesolithic Culture in India, Chief Feature of Neolithic Revolution, Neolithic complex in India.

UNIT-V Metal Age : Copper, Bronze, and Iron age : General feature of Urban revolution, The chief characteristics and the decay of Indus valley civilization, Megalithic culture in India.

RECOMMENDED READINGS :

1. Allehrin, B and Raymond : The birth of Indian Civilization
2. Border, F. : The Old Stone Age
3. Burkitt, M. : The Stone Age
4. Burkitt, M. : Our Early Ancestors
5. Childe, V.G. : Man Makes Himself
6. Oakly, K.P. : Man the Tool Maker
7. Shapiro, H.L. (Editor) : Man Culture and Socials
8. Bhattacharya, D.K. : Prahislosic Archaeology
9. Mishra, V.N. & M.S. Mala : Indian Pochistory
10. Sankalia, H.D. : Prehisotry and Portohistory of Indian & Pakistan
11. Wheeler, M. : The Indus Civilization
12. Sankalia, H.D. : The Tool Technology
13. Mazoomdar, D.N. & Sharanjeet Ji : Pragaitihasik
14. Choube, Ramesh : Puratatwik Manav Vigyan

ANTHROPOLOGY

PAPER - II

TRIBAL CULTURE OF INDIA

(Paper Code-0213)

AIM : The main aim of this course is to introduce the students about the basic-cultural life of Indian tribes.

UNIT-I Define tribe and Scheduled tribe. Geographical distribution of Indian tribes and their social and linguistic classification. Anthropological contribution in the study of Indian tribes. Sacred complex, Universalisation and parochialisation, Sanskritisation and westernisation dominant caste, Tribe & caste difference between S.C. and S.T. characteristic features.

UNIT-II Tribal economy : Hunting, food gathering, fishing, shifting and settled agriculture of property and ownership in tribal societies, problems of tribal people : Land alienation, bonded labour, indebtedness, shifting cultivation, irrigation, forest and tribals, unemployment, agricultural labour, The inter relationship of tribals with agricultural merchants, money lenders, excise officers and forest contractors, Stage of trible economy.

UNIT-III The problems of culture contact : Problems due to urbanisation and industrialisation, regionalism economic and psychological folk traditions, Tribal religion : Origin & function, animistic, totemistic, concept and practices : Magic and witchcraft, shamanism, Head hunting.

UNIT-IV Political and social organisation of Indian tribes : Political organisation of Indian tribes, Distinction between state and stateless society, Law in primitive society, Matriarchal and patriarchal family, Lineage and clan, Ways of acquiring mates in tribal societies, Youth dormitories : Type, organisation and functions.

UNIT-V Tribal development : History of tribal development. The constitutional safeguards for the scheduled tribes, Tribal problem : isolation, migration, acculturation, detribalizations, Policies, plans and programmes of tribal development and their implements. Tribal revolts in India, Response of the tribal people to the Governmental measurement for them, The role of anthropology in tribal development.

RECOMMENDED READINGS :

1. Bose, N.K. : Tribal India : National Integration
2. Bose, N.K. : Tribal Life of India
3. Elwin, V. : A new deal for Tribal India
4. Fuchs, S. : The Aboriginal Tribes of India
5. Government of India : Adivasi
6. Ghurye, G.S. : The Scheduled Tribes
7. Mamvrin : Tribal Demography
8. Vidyarthi, L.P. : The Tribal Culture of India
9. Nadeem Hasnain : Janjatiya Bharat
10. Verma, R.C. : Indian Tribes through ages

11. Upadyay & Sharma : Bharat Ki Janjati Sanskriti
12. Tiwari, Shiv Kumar : Madhyapradesh Ki Janjatiyan
13. Shrivastava, A.R.N. : Janjati Vikas Ke Char Dashak

ANTHROPOLOGY

PAPER - III

PRACTICAL

OBJECTIVES :

The objectives of this practical course is to introduce the students with the Primitive Material Culture and Technology used by primitive Man and the Students will be introduced with various techniques commonly used by Social Anthropology.

MATERIAL CULTURE :

PART-I Identification and technological descriptions of the following :

1. Implements for food gathering, hunting, fishing and agriculture.
2. Five making implements.
3. Types of habitations.
4. Land and water transport.

PART-II Sketching, Identification and the description of palaeolithic, Mesolithic and Neolithic tools.

(It is essential that students should draw at least five tools of each age)

RESEARCH TOOLS :

Construction of Schedules, Geneology and Questionnaire :

Each student should collect imformation through above tools from 10 Repodents. The student will be introduced to maintain practical records of all work done in the practical class.

RECOMMENDED BOOKS :

1. Beals, R. and Hoijar, N. : Introduction to Anthropology
2. Leakey, L.S.B. : Adam's Ancestors
3. Sankalia, H.L. : Prehistoric tools and their techniques
4. Murdock, G.P. : Outlines of cultural Material
5. Shapiro, H.L. (Editor) : Man, Culture and Society (Eng. & Hindi)
6. Choube, Ramesh : Puratatwik Manaw Vigyan
7. Vidyarthi & Singh : Bhoutik-Sanskriti ke Aditya-Charan

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पाट्यक्रम उर्दू अदब

बी.ए. भाग-2

नोट - इस इम्तेहान में दो पर्चे होंगे । हर पर्चा 75 का होगा ।

(1) नस

(2) शायरी

पहला पर्चा नस

(पेपर कोड-0199)

(खत निगारी, तन्जोमिजाह, तन्कीद)

निसाब :

खत निगारी :

1.	खुतूते गालिब	ऊर्दूए मोअल्ला और ऊदे हिंदी से तीन खत
2.	खुतूते मेंहदी इफादी	सहीकए मुहब्बत से तीन खते
3.	मुतूते अबुल कलाम आज़ाद	गुबारे खातिर से तीन खते

तन्जो पिजाह :

1.	खोजी का किरदार	फसानए आज़ाद से अज पं. रतननाथ सरशार
2.	औरत जात से	अज मुल्ला रमूजी
3.	गफूर मियाँ से इफ्तेताब	तखल्लुस भोपाल
4.	हिमाकते	शफीरकुर्रेहयान

तककीद :

1.	मजमून अज शिब्लि मजस्माने शिब्लि	
2.	गालिब शख्सो शायर से	मंजनू गौरखपुरी
3.	इकबाल की अज़मत	आले अहमद सुरूर
4.	चकबस्त बहैहियत पयाम्बरे दौरे जदीद	अहतेशाम हुसैन
5.	कसीदे सिन्फे सूखुन की हैसियत से	ऊर्दू में कसीदा निगारी से डॉ. अबु मुहम्मद सहर

इकाईयाँ :

पहली इकाई	:	शामिले निसाब असनाफ पर सवालात	नं. 15
दूसरी इकाई	:	खत निमारों पर तनकीदी सवालात	नं. 15
तीसरी इकाई	:	तन्जो मिज़ाह निगारों पर सवालात	नं. 15
चौथी इकाई	:	तन्कीद निगारों पर सवालात	नं. 15
पाँचवी इकाई	:	शामिले निसाब खुतूत और तन्कीदी गमामी के इक्बेबासात की तशरीह	नं. 15

निसाब उर्दू अदब

पर्चा-2 (शामरी)

(पेपर कोड-0200)

(मसनवियात ब-मन्जूमात) नं. : 75

निसाब :

मसनवियात :

1. मसनबी सहरूल बयात से इन्तेखाब अज मोर हसन (ब एतेबार प्लाट)
2. मसनवी गुलजारे रसीम इन्तेखाब अज दयाशंकरनसीम

मन्जूमात :

1.	आदबी नामा	अज नजीर अकबर आबादी
2.	बरसात की बहारे	अज नजीर अकबर आबादी
3.	चुण की दाद	अज अल्ताफ हुसैन हाली
4.	हुब्बे वतन	अज अल्ताफ हुसैन हाली
5.	रामायण का एक सीन	अज बृजमोहन चकबस्त
6.	जिब्रील और इब्लीस	डॉ. इकबाल
7.	शुभाए उम्मीद	डॉ. इकबाल
8.	अल्बेली सुबह	जोश मलीहाबादी
9.	तन्हाई	फैज अहमद फैज
10.	एक लड़का	अख्तर उल ईमान
11.	आवारा	मजाज लखनवी
12.	चाँद तारो का बन	मखदूम मुहीउद्दीन
13.	सुबहे परदा	सरदार जाफरी

इकाईयाँ :

इकाई नं. 1.	शामिले निसाब असनाफ पर सवालात	नं. 15
2.	मसनबी निगारो पर सवालात	नं. 15
3.	नज्म निगारों पर सवालात और मन्जूमात का खुलासा या जायजा	नं. 15
4.	तशरीह मसनवियात से	नं. 15
5.	तशरीह मन्ज्मात	नं. 15

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गृह विज्ञान

प्रश्न पत्र - 1

तंतु एवं वस्त्र विज्ञान

पूर्णांक : 50

(पेपर कोड-0191)

इस परीक्षा में दो लिखित प्रश्न पत्र होंगे । जिसमें से प्रत्येक तीन घंटे की अवधि तथा 50 अंकों का होगा । एक प्रायोगिक परीक्षा 50 अंकों की होगी । जिसमें से 10 अंक सत्रीय कार्य के लिये सुरक्षित रहेंगे । कुल अंक 150 होंगे। परीक्षार्थियों को लिखित एवं प्रायोगिक परीक्षा में पृथक-पृथक उत्तीर्ण होना अनिवार्य है-

इकाई-1 तन्तु विज्ञान का परिचय- तंतुओं का वर्गीकरण, विशेषतायें, भौतिक एवं रासायनिक परीक्षण ।

वस्त्र बुनाई (Weaves) : के प्रकार- सादी ट्विल सेटिन जैकार्ड, पाइल ।

इकाई-2 आधारभूत परिसज्जाऐं, विशेष परिसज्जाऐं । रंगों का वर्गीकरण एवं विभिन्न तंतुओं के लिये उनकी उपयुक्तता ।

इकाई-3 छपाई-प्रकार, ब्लाक, स्टेन्सिल, स्क्रीन, डिसचर्ज रोलर । प्रत्येक प्रकार की छपाई की विधियां । टाई एंड डाई- विशेषता, विधि ।

इकाई-4 धुलाई : जल, साबुन, शुष्क धुलाई, कलफ तथा नील । धब्बे छुड़ाना, विभिन्न प्रकार के वस्त्र धोना ।

इकाई-5 परिधान : परिधान एवं व्यक्तित्व, परिधान का चुनाव, ड्राफ्टिंग की विधि, सीवन (प्रकार) परिधान में पूर्णता (डार्ट, प्लीट्स, टक्स, गेदर्स) प्लैक्ट ओपनिंग, फासनर ।

स्वीकृत पुस्तकें :

1.	वस्त्र विज्ञान एवं परिधान	:	डॉ. प्रमिला
2.	वस्त्र विज्ञान के मूल सिद्धांत	:	डॉ. जी.पी. शैरी
3.	हाउसहोल्ड फिजिक्स		:डॉ. कुलश्रेष्ठ
4.	गृह व्यवस्था एवं गृह सज्जा	:	श्रीमती के. बक्शी
5.	गृह व्यवस्था एवं गृह सज्जा	:	चन्द्रकांता मांडलिक
6.	गृह व्यवस्था एवं गृह कला	:	जी.पी. शैरी
7.	गृह व्यवस्था एवं गृह कला	:	श्रीमती कांति पांडेय
8.	पारिवारिक परिधान एवं व्यवस्था	:	मंजु पाटनी व सपना हेनरी
9.	गृह व्यवस्था	:	डॉ. करुणा शर्मा

गृह विज्ञान

प्रश्न पत्र - 2

पारिवारिक संसाधन प्रबंधन

पूर्णांक : 50

(पेपर कोड-0192)

इकाई-1 **गृह प्रबंध :** गृह प्रबंध की परिभाषा, गृह प्रबंध प्रक्रिया, परिवार में गृहणी के कर्त्तव्य एवं उत्तरदायित्व- मूल्य, लक्ष्य स्तर-अर्थ विशेषता वर्गीकरण एवं विकास, निर्णय प्रक्रिया ।

इकाई-2 **गृह सज्जा :** कला के सिद्धांत एवं कला के तत्व । नमूना-रचनात्मक एवं अलंकारमय नमूना, नमूने के सिद्धांत । रंग-रंग के महत्व एवं प्रभाव, फर्नीचर का चुनाव एवं महत्व, गृह सज्जा के उपसाधन । पुष्प सज्जा, प्रकार,

सिद्धांत, उपयोग।

इकाई-3 **पारिवारिक साधन :** पारिवारिक साधन, वर्गीकरण, विशेषतायें, उपयोग को प्रभावित करने वाले तत्व, समय-अवधारणा, समय, व्यवस्थापन के साधन । समय व्यवस्थापक की प्रक्रिया ।

शक्ति-अवधारणा, विभिन्न घरेलू कार्यों में शक्ति का मूल्य, शक्ति व्यवस्थापन की प्रक्रिया ।

आय के साधन एवं प्रकार, पारिवारिक बजट, व्यय बचत, रहन सहन का स्तर, आय व्यय का लेखा जोखा (एकाउंट कीपिंग) ।

इकाई-4 **रसोई घर :** आधुनिक रसोई घर, प्रकार, रसोई-घर के कार्यक्षेत्र, ईधन के गैर परम्परागत स्रोत, सौर ऊर्जा, जल वितरण प्रणाली, वायुबीजन, प्रकाश की व्यवस्था, संग्रह व्यवस्था ।

इकाई-5 **कार्य का सरलीकरण :** अर्थ, कार्य विधियाँ एवं आदतों में सुधार की तकनीक, प्रोसेस चार्ट, पाथवे चार्ट, परिवर्तन की श्रेणियाँ । समय शक्ति एवं श्रम बचत के उपकरण ।

प्रायोगिक कार्य

1. सिलाई- ब्लाऊज, बेबी फ्राक, झबला, बाबा सूट, पंजाबी कुरता, सलवार, पेटीकोट, पुष्प सज्जा ।
2. धुलाई- विभिन्न वस्त्रों की धुलाई, धब्बे छुड़ाना, बांधनी का कार्य ।
3. पुष्प सज्जा ।

अंक विवरण -

सत्रीय	:	10
सिलाई	:	20
धुलाई	:	15 (धुलाई कार्य, बांधनी-10, धब्बा छुड़ाना 5)
पुष्प सज्जा	:	5

स्वीकृत पुस्तकें :

1.	वस्त्र विज्ञान एवं परिधान	:	डॉ. प्रमिला
2.	वस्त्र विज्ञान के मूल सिद्धांत	:	डॉ. जी.पी. शेरी
3.	हाउसहोल्ड फिजिक्स	:	डॉ. कुलश्रेष्ठ
4.	प्रारंभिक कृषि विज्ञान	:	राजेन्द्र प्रसाद
5.	उद्यान विज्ञान	:	डॉ. एस.एस. श्रीवास्तव
6.	गृह व्यवस्था एवं गृह सज्जा	:	श्रीमती के. बक्सी
7.	गृह व्यवस्था एवं गृह सज्जा	:	चन्द्रकांता मांडलिक
8.	गृह व्यवस्था एवं गृह कला	:	जी.पी. शेरी
9.	गृह व्यवस्था एवं गृह कला	:	श्रीमती कांति पांडेय
10.	कृषि विज्ञान	:	कृपाल सिंह भिंडर
11.	उद्यान शास्त्र	:	बसंत इंगोले
12.	पारिवारिक परिधान एवं व्यवस्था	:	मंजु पाटनी व सपना हेनरी

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DEFENCE-STUDIES

PAPER - I

WESTERN MILITARY HISTORY

(Paper Code-0214)

Note : The aim of this paper is to give a historical, political & social back ground of the state engaged in the conflicts under study and the factors influencing the development of different forms of warfare and weapons system.

Note : Question will be set from each unit there will be only Internal choice.

UNIT-I Age of Valour

1. Military System of Greek; Tactics of Phalanx.
2. Alexander the Great and his reforms.
3. Military system of Roman; Tactics of Legion, Jullius Caesar.
4. Battle of Arbela 311 B.C.
5. Battle of cannae 216 B.C.

UNIT-II Age of chivalry

1. Emergence and decline of cavalry.
2. Battle of Adrianopole 378 A.D.
3. Battle of Hastings 1066 A.D.
4. Cavalry tactics of Zenghiz Khan.
5. Battle of Cracee 1346 A.D.

UNIT-III Age of Gun Powder & Steam

1. Impact of Gun Powder in war.
2. Contribution of Gustavas adolphus & Fredrik the Great.
3. The Revolution in tactics - Causes of war of american Independence 1775-83.
4. The Revolution in tactics - Causes of French Revolution.
5. Nepoleanic art of warfare and his military reforms.

UNIT-IV World War - I & II

1. First World War - Causes of W.W., Policies and Strategic plans of the powers.
2. Role of Air Force with reference to theory of Douhet.
3. Role of Navy with reference of theory of Mahan.
4. Second World War - Causes of W.W., Objective and Strategy of Allied and Axis forces.
5. Personalities of Rommel.

UNIT-V World War - II

1. Armament and Mechanical warfare with reference to the theories of J.F.C. Fuller and Liddell Hart.
2. Role of air power, weapons, doctrines, tactics.
3. Role of naval power, weapons, doctrine tactics.

4 Tactics of Second World War.

5. Advent of Nuclear weapons and their impact on warfare.

SELECTED READING :

1 Harkabi Y. : Nuclear war and Nuclear peace

2 Earl E.M. : Makers of Modern strategy.

DEFENCE STUDIES

PAPER-II

THEORY AND PRACTICE OF WAR

(Paper Code-0215)

Aim : The aim of this paper it to acquaint the students with the concepts of theory and practice of war.

Note : Questions will be set from each unit and there will be only internal choice.

UNIT-I
1. Sunt Zu - Founderof MilitaryTheory and philosophy.
2. Clausewitz - War and its relationship with politics.
3. Macheavelli - Renaissance of Art of war.
4. Jomini- Concept of mass armies.

UNIT-II
1. Churchil.
2. Mahatma Gandhi.
3. Kautilya.
4. A. Hitler.

UNIT-III
1. Mao Tse Tung.
2. Che Guevara.
3. Economic and Psychological war.
4. Collective Security.

UNIT-IV
1. Indo-China War - 1962 Causes of war, political & military lesson.
2. Indo - Pak War - 1965 Causes of war, political & military lesson.
3. Indo - Pak War - 1971 Causes of war, political & military lesson.
4. Kargil Conflict.

UNIT-V
1. Internal & External threats of National Security.
2. Insurgency and Counter-Insurgency.
3. Terrorism-Problem and Solution.
4. Naxalism - Problem and solution.

REFRENCE BOOKS :

1 Howard M. : Theory and Practice of war

2 —,,— : Clausewitz

3 Mao Tse Tung : Guerilla war fare

4 Palit, D.k. : The lightning War Tadit Yudh
5 Mankekar : War of 1971
6 आर.सी. जोहरी : पाश्चात्य सैन्य विचारक
7 शर्मा व निगम : सैन्य विचारक

DEFENCE STUDIES

PRACTICAL

There shall be a practical examination of 3.5 hours duration carrying 50 Marks. The division of marks shall be as follow :

(a) Exercise based on Map-reading : 15 marks
(b) T.W.E.S.T. : 15 marks
(c) Sessional work : 10 marks
(d) Viva-Voce : 10 markss

PART - A

Map-reading :

1. Scales - Definition, method of expressing, construction of simple, time, diagonal and comparative.
2. Relief and its representation.
3. Slopes and Gradient.
4. Visibility and inter-visibility by Gradient, proportionate and section method.
5. Re-section and inter-section.
6. Grid system-Map reference, Indexto map. Four figure and Six figure.

PART - B

7. Organisation and equipment of infantry Platoon and Section.
8. Section Formation.
9. Indication of Target by various methods.
10. Fire control order.
11. Patrols.
12. Battle Procedures (ROFT).
13. Verbal Order.
14. Message-Writing.

BOOKS RECOMMENDED :

1 Manual of Map Reading : London Her.
2 युद्ध स्थल कला : चौ. नरेन्द्र सिंह
3 एन.सी.सी. परिचय : विष्णु कान्त शर्मा

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MANAGEMENT

PAPER - I

MANAGEMENT STUDIES : PERSONNEL MANAGEMENT

(Paper Code-0206)

Max. Marks : 75

UNIT - I Evolution of the personnel function :

1. Various concepts of labour.
2. Old and new definitions of personnel management.
3. Development of personnel management in India.
4. Organisation & function of the personnel division.
5. Personnel Management as a co-ordinating function.
6. F Personnel Policies.

UNIT - II Procurement :

1. Job analysis & Manpower requirments.
2. Recruitment and Hiring.
3. Test and interviews.
4. Executive manpower planning.

UNIT - III Development :

1. Training operative Personnel
2. Executive Development.
3. Advancement through promotion
4. Performance appraisal.

UNIT - IV Compensation :

1. Base compensation for the job.
2. Incentive compensation for the man.
3. Supplimentary Compensation for the group.

UNIT - V Integration :

1. Man in business organisation.
2. Motivation.
3. Man in conflict.
4. Human relations.
5. Collective bargaining.

UNIT - VI Maintenance :

1. Safety and Health.
2. Employees service programme.
3. Personnel research.

BOOKS RECOMMENDED :

1.	Scott. Clothier & Spriegal	:	Personnel Management
2.	Pigores & Myers	:	Personnel Administration
3.	Yoder Dale	:	Personnel Management and Industrial Relations
4.	Flippo, Edwin	:	Principles of Management
5.	Maroria, C.B.	:	Personnel Management
6.	Ahuja, K.K.	:	Personnel Management
7.	Dayat	:	Management Training Organisation.
8.	Dinesh, K.N.	:	Structure of Medium Scale Industries in Bhilai.

MANAGEMENT

PAPER - II

STATISTICS **Max. Marks : 75**

(Paper Code-0207)

UNIT-I Meaning definition, origin and growth of statistics importance, limitations and function of statistics collectionof data primary data and methods of collections samples and its types.

UNIT-II Measure central tendency, mean, Median,mode, Quartiles, Deciles and Percentiles, Merits & Demerits of different measures, Methods of calculation.

UNIT-III Measures of dispersion- Mean deviation standard deviation its merits and demerits Methods of calculation. Coefficient of variation.

UNIT-IV Correlation : Meaning, Kari Pearson's Coefficient of correlation, Direct and shortcut methods of calculation. Regression Equation & its Co-effcient.

UNIT-V Index numbers and growth of statistics, Types of Index numbers and construction of index numbers. Population Statistics Statistical agencies central & state agencies, National sample survey.

BOOKS RECOMMENDED :

1.	Ethance	:	Fundamental of Statistics.
2.	S.P. Gupta	:	Statistics
3.	K.C. Nagar	:	सांख्यिकी के मूल तत्व
4.	Shukla & Sahani	:	सांख्यिकी

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EDUCATION

There shall be two theory paper, each carrying 60 marks and Three hours duration and Viva-voce examination of 30 marks. The Viva-voce examination will be based on two theory papers. It will be for both regular and private candidtes. There will be an internal choice in question.

INSURANCE PRINCIPLES & PRACTICE

PAPER- I

FIRE AND MARINE INSURANC M.M. : 50

(Paper Code-0193)

UNIT - I FIRE INSURANCE CONTRACT :

Origin of fire insurance its nature, risks, hazards and indemnity; Legal basis; Stipulation and conditions; contracts; Full disclosure of material facts; Inspection and termination of coverge.

UNIT - II FIRE INSURANCE POLICIES :

Issue and renewal of policies; Different kinds; Risks covered; recovery of claims-insurer's option : Ex-gratia payment and subrogation. policy conditions; Hazards not covered, contribution and average; Reinsurance. double insurance and excess insurance. Types of fire protection policies issued by the General Insurance corporation of India.

UNIT - III MARINE INSURANCE CONTRACT :

Origin and growth; History of lloyds; Evaluation of Marine insurance business in India. Basic elements Insurable interest Utomost Good Faith Implied warranties: Policy document.

UNIT - IV Types of marine insurance contract-freight, Cargo and vessel. Procedure for obtaining marine protection policy; Marine policies and conditions. Nature of coastal marine insurance; Perils covered, protection avlable; Procedure for preparation, and presentation of claim; Payment of campensation by insurer.

UNIT - V MARINE LOSSES

Total loss, Partial loss, particular average loss and general average loss; Preparation of loss statement, Payment of Marine losses-reguirement of the insured documents needed procedure for presentation of claim; Valuation of loss salvage; limits of liability; Attachment and termination of risk.

INSURANCE PRINCIPLES & PRACTICE

PAPER - II

INSURANCE FINANCE & LEGISLATION

(Paper Code-0194)

UNIT - I INTRODUCTION :

Laws of probability; Forecast of future events; Construction of mortality tables; Mortality tables for annuities.

UNIT - II PREMIUM DETERMINATION :

Basic factors; Use of mortality tables in premium determination; Interest, compound interest functions. Net and gross premiun: Mode and perlodicity of premium payment; Mode of claim payment; benefits to be provided; Mode of loadingfor expenses.

UNIT - III Gross premium-general considerations, insurer's expenses; Margin adjusting; Premium for term insurance; Temporary insurance; Endowment insurance; Level and natural premium plan; Premium calculation for study of actuarial valuation.

UNIT - IV RESERVES ANS SURPLUS :

Nature, origin and importance of reserves and funds in life and property insurance. Retrospective and prospective reserve Computation. Statutory regulationof re-serves. Nature of surrender value; concept and calculation of surrend value, reduced paid up values; Settlement options; Autometice premium loan. Nature and Sources of insurance surplus; special form of surplus; Distribution of surpluses-extra dividend, residuary dividend; Investments of surplus and reserves-basic principles. Investment policy of L.I.C. and GIC in India.

UNIT - V LEGISLATIN :

A-Brief study of indian Insurance Act, 1938.

Detailoed stydy of Life Insurance Corporation of India.

Act, 1956,General Insurance Corporation of India.

Act,1976 , Export Credit and Guarantee corporation Act.

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FUNCTIONAL ENGLISH

PAPER - I **Mark: 50**

(Paper Code-0208)

UNIT - I	(i)	Nouns, Gender, Number,	15
	(ii)	Modal Velus and Auxilaries.	
	(iii)	Synonyms and Antonyms	
UNIT - II	(i)	Active and Passive Voice.	15
	(ii)	Direct and Indirect Speech.	
	(iii)	Sentence Connecters.	
UNIT - III	(i)	Transformation of Sentences	10
	(ii)	Errors in Individuala Sentences.	
UNIT - IV	(i)	Isions and phrases.	
	(ii)	Use of Foreign words in english.	

FUNCTIONAL ENGLISH

PAPER - II **Mark: 50**

(Paper Code-0209)

(i) Precis writing
(ii) Report writing
(iii) Expansion of Ideas.
(iv) Drafting Telegrames.
(v) Letter-Writing (Personal,Business,General)
(vi) English in Situations :-

(a) Greetings.	(b) Buying a Dress.
(c) Making a Telephone call.	(d) In the Post office.
(e) At the Doctors	(f) At the Restaurant.
(g) At the Chemist.	(h) Booking a room At a Hotel.
(i) At the Airport.	(j) At the Bank
(k) At the Book Shop.	(l) In the Library.
(m) Receving and Seeing off a Guest.	

B.A. II nd Year

HISTORY OF INDIAN PAINTING

Marks : 50

(Paper Code-0219)

(1) The time of theory paper is three hours.

pre-historic to Middle age.

* Pre-Historic Painting :

Mirjapur	-	(U.P.)
Shinghanpur	-	(M.P.)
Housangabad	-	(M.P.)
Vimbatka	-	(M.P.)

* Proto Historic Painting :

Jogimara
Bayha
Ajanta

* Middle age : Rajthani Painting -
  - Mewad Style
  - Kishan garh
  - Bundi
  - Mural Painting
  - Akbar
  - Jahangir
  - Sahajahan
* Pahadi Painting :
  - Basholi
  - Kangda
  - Chamba

LIST OF THE BOOK RECOMENDED FOR THEORY :

*	Bharatiya Kala Ka Itihas	:	Shayam Bihari Aggrawal
*	Bharatiya Chitra Kala Ka Vikas	:	C.L.Jha
*	Kala Vilas	=	R.A.Aggrawal

PRACTICAL

There will be two practical paper evalution will be made by the external and the internal examiner. Together and sessional marking is made by the class Teacher.

The time of each paper is four hour's and there will be a half hour's recess in between.

PORTRAIT FROM HEAD

PAPER - I

Scheme of Examination. — Total Mark - 50
Time - Four Hour's — Examination-40
Size - 1/2 Imp. paper — Sessional - 10
Medium - Pencil or pastal
Sessional marking - 10

Class work - Minimum work to be submited Five painting size 1/2 Imp Paper portait from plaster or cement head will be drown with light and shedow.

COMPOSITION

PAPER - I

Scheme of Examination — Total Mark - 50
Time - Four hour's — Examination - 40
Size - 1/4 Imp Paper — Sessional -10
Medium - Poster colour
Sessional Marks - 10

Class work -

Minimum work to be submited. Five painting size 1/4 Imp.

Composition -

Minimum two human figure and Meximum four human figure will be composed.

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नृत्य (भरत नाट्यम)

इस विषय में दो सैद्धांतिक प्रश्न पत्र एवं एक प्रायोगिक परीक्षा होगी । पूर्णांक एवं उत्तीर्णांक --- होगा ।

क्रं.	विवरण	पूर्णांक	अत्तीर्णांक
1.	सैद्धांतिक प्रश्न पत्र प्रथम	50	17
2.	सैद्धांतिक प्रश्न पत्र द्वितीय	50	17
3.	प्रायोगिक	50	17
	योग	**150**	**51**

प्रथम प्रश्न पत्र

(पेपर कोड-0220)

1. पाणिनी काल से गुप्त काल तक नृत्य का इतिहास ।
2. नृत्य अभिनय के भेद - आंगिक, वाधिक, आहार्य एवं सात्विक अभिनय ।
3. विभिन्न भारतीय शास्त्रीय नृत्य प्रणालियों का संक्षिप्त परिचय ।
4. दक्षिण भारतीय ताल पद्धति ।
5. लोकधर्मी नाट्य परम्परा - संक्षिप्त जानकारी तीन की -
   (1) जात्रा (2) कीर्तनेया (3) तमाशा (4) गरबा (5) डांडियारास (6) करमा (7) माड़िया ।

द्वितीय प्रश्न पत्र

(पेपर कोड-0221)

1. नृत्य संबंधी निबंध ।
2. संक्षिप्त टिप्पणीयाँ-(1) मंगलाचरण (2) पुष्पांजलि (3) नृत्य कलाकार के आवश्यक गुण व दोष ।
3. भरत नाट्यम पद्धति के क्रमों का संक्षिप्त विवरण -
   (1) अलारिपु (2) गतिस्वरम् (3) शब्दम् (4) अष्टपदी (5) पदम् ।
4. किसी वरिष्ठ नृत्य कलाकार की संक्षिप्त जीवनी- (1) श्रीमती गौरी अम्मा (2) श्री मीनाक्षी सुंदरम् पिल्लई
5. संक्षिप्त टिप्पणी - नटन, नट, नट्य, नृत्य, नृत्त ।

प्रायोगिक

1. मौखिक मुद्रा प्रदर्श -
   (1) एक हाथ की प्रथम दस मुद्राओं का विनियोग (असंयुक्त हस्त मुद्रा विनियोग)
   (2) देव हस्त
   (3) बंधु-बांधव हस्त ।
2. कार्यक्रम विभाग -
   (1) बस अड़ऊ (अंग संचालन) का चार काल में प्रयोग ।
   (2) जतिस्वरम् प्रदर्शन ।
   (3) शब्दम् या श्लोकन् प्रदर्शन ।

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ORDINANCE NO.-12

BACHELOR OF ARTS-CLASSICS

1. The three year course has been broken up into three Parts, Part-I known as B.A. Classics Part-I Examination at the and of the First year, Part-II known as B.A. Classics Part-II examination at the end of the Second year and Part-III known as B.A.Classics Part-III examination at the end of the Third year.

2. A candidate who, after passing (10 + 2) or Intermediate Examination of M.P. Board of Second, Education, Bhopal or any other Examination recongnised by the University or M.P. Board of Secondary Education as equivalent there to has attended a regular course of study in an affiliated College or in the teaching department of the University for one academic year, shall be eligible for appearing at B.A. Classics Part-I examination.

3. A Candidate who, after passing B.A. Classics Part I examination of the University, has attended a regular course of study for one academic year in an affiliated college or in the teaching department of the University, shall be eligible for appearing at the B.A. Classics Part-II Examination.

4. A candidate who, after passing the B.A. Classics Part-II examination of the University, has completed a regular course of study for one academic year in an affiliated college or in the Teaching department of the University, shall be eligible for appearing at the B.A. Classics Part-III examination.

5. Besides regular students and subject to their compliance with this Ordinance, ex-students and non-collegiate candidates shall be eligible for admission to the examination as per provisions of Ordinance No. 6 relating to Examinations (General). Provided that non-collegiate candidate shall be permitted to offer only those subject/papers as are taught to the regular students at any of the University Teaching Department or College.

6. Every candidate for the Bachelor of Arts classics Examination shall be examined in :

Foundation Course :

A - Language Components

(1) Hindi Language

(2) Sanskrit Language or English Language.

B - Compulsory-Vyakaranam and Sahityam

C - Any one of the following branches of studies-

1- Veda 2- Vyakaranm 3- Sahityam 4-Darshanam 5- Puranam 6- Jyotisham 7- Dharmashastram 8-Niruktam

D - Any one of the following branches of studies :

1- English Literature 2- Hindi Literature ,3- Economics 4- History, 5- Political Sicence

E - Practical (if necessary) for each core subject.

F - Viva voce in Sanskrit subject at the final examination (i.e. Part-III)

Note : Syllabus (D) will be common as prescribed by UGC (Part I,II,III)

7. Any candidate who has passed B.A. Classics Examination of the University shall be allowed to present himself for examination in any of the additional subjects prescribed for B.A. Classics examination and not taken at the Degree examination. Such candidate will have to first appear and pass B.A. Classics Part I & Part-II examination in the subject which he proposes to offer and then the B.A. Classics Part-III examination in the same subject. Successful candiates will be given a certificate to that effect.

8. In order to pass at any part of the three year degree course examination an examinee must obtain not less than 33% of the total marks in each subject/group of subjects. In groups where both theory and practical examinations are provided an examinee must pass in both theory and practical part of the examination spearately.

9. Candidates will have to pass separately to the B.A. Classic Part-I, Part-Ii and Part-III examinations. No divison shall be assigned on the result of Part-I and II examinations. The divison in which a candidate is placed at the Part-III examination shall be determined on the basis of the aggregate of total marks obtained in the part I,II and III examinations.

Provided in case a candidate who has passed the B.A. Classica Part I & II examination through the Supplementary Examination having failed in one subject only, the total aggregate marks for being carried over for determining the division shall include actual marks obtained in the subject in which he appeared at Supplementary examination.

10. Successful examinees at the Part-III examination obtaining 60% or more marks shall be placed in the First Divison. Those obtaining less than 60% but not less than 45% marks in the Second Divison and other successful examinees in the Third Division.

USE OF CALCULATORS

The Students of Degree/P.G. Classes will be permitted to use of Calculators in the examination hall from annual 1986 examination on the following conditions as per decision of the standing committee of the Academic Council at its meeting held on 31-1-1986.

1. Student will bring their own Calculators.
2. Calculators will not be provided either by the university or examination centres.
3. Calculators with, memory and following variables be permitted +, -, x, - square, reciprocal, expotentials log, square root, trignometric functions, wize, sine, cosine, tangent etc, factiorial summation, xy, yx and in the light of objective approval of merits and demerits of the viva only will be allowed.

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बी.ए. क्लासिक्स भाग-दो

अनिवार्य विषय : प्रथमः

आधार पाठ्यक्रमः

(पेपर कोड-0711)

(क) हिन्दी भाषा — अंकाः 75

(ख) अंग्रेजी/संस्कृत भाषा — अंकाः 75

संस्कृत भाषा (1) मूल रामायणम — अंकाः 50

(2) प्रारंभिक रचनानुवाद कौमुदी — अंकाः 25

(पाठ 11 से 20)

(आयोग द्वारा निर्धारित पाठ्यक्रम) लेखक- कपिल द्विवेदी

अनिवार्य विषय : द्वितीयः

प्रथमं : प्रश्न पत्रम्

(पेपर कोड-0712)

साहित्यम् इतिहासश्च — अंका : 75

(क) साहित्यम्

(1) अभिज्ञान शाकुन्तलम् (कालिदास विरिचितम्) — अंकाः 30

प्रकाशन- रामनारायणलाल बेनी प्रसाद, इलाहाबाद ।

(2) हर्षचरितम् बाणभट्टविरचितम् (प्रथम द्वितीयौ उच्छ्वासौ) — अंकाः 20

(ख) इतिहासः — अंकाः 25

(कथा साहित्य नाटकानां चा संक्षिप्तं ज्ञानं आवश्यकम्)

सहायक ग्रंथ :

(1) संस्कृत साहित्य का इतिहास : पं. बलदेव उपाध्याय

(2) संस्कृत साहित्य का इतिहास : पं. चंद्रशेखर पाण्डेय, प्रकाशक- साहित्य निकेतन, कानपुर

(3) संस्कृत साहित्य विमर्शः : पं. द्विजेन्द्रनाथ शुक्ल

द्वितीयं : प्रश्न पत्रम्

(पेपर कोड-0713)

व्याकरणम् अनुवादश्च — अंकाः 75

(क) मध्य सिद्धांत कौमुदी (भ्वादिगणात् लकारार्थ प्रक्रिया यावत्) — अंकाः 60

चुरादयन्तः विशेषतो ध्येयः घातवः-

(1) भ्वादि गणे-भू-अत्, षिध्, पच्, अर्च्, वन्, षण्, ब्रज्, कटे, गुपू, क्षि, क्रम्, पा धेट्, श्रृ, दृशिर्, गम्लृ, जि, एध्, कमु द्युत्, वृतु, कृपू, त्रपुष, व्यथ्, भृज् ।

(2) अदादिगणे, अद्, हन्, रुदिर, जागृ, शासु, शीङ; ईड्; ईड्, ब्रूञ् ।

(3) जुंहात्यादि गणे: - ञिभी, ओहाक माङ्, डुधाञ् ।

(4) दिवादि गणे: -दिव्, नृती, त्रसी, शो, णश् श्लिष्, शमु, असु, यस् जनि ।

(5) स्वादि गणे: - षुञ् चिञ्, स्तृञ, तृप्, अशु ।

(6) तुदादि गणे: - तुद्, भ्रस्ज्, मुच्लृ, शदलृ, कृ प्रच्छ् ।

(7) रुधादि गणे: - रुधिर, हिसि, अञ्जु, भुज् ।

(8) तनादि गणे: - तनु, षणु, डुकृञ् ।

(9) क्रयादि गणे: - डुक्रीञ् स्तम्भु, ग्रह् ।

(10) चुरादि गणे: - चुर् प्रीञ्, प्रथ्, गण् ।

(ख) अनुवाद पाठ्यग्रंथ- रचनानुवाद कौमुदी (पाठा: 21-40 पर्यन्तम्) अंका: 15

सहायक ग्रंथ :

(1) आख्यातिक : अजमेर मुद्रणालय मुद्रित: ।

(2) माधवीय धातुवृत्ति : सायणाचार्य विरचिता, तारा पब्लिकेशन, वाराणसी

(3) व्याकरण चंद्रोदय : पं. चारुदेव शास्त्री (तृतीय खण्ड) ।

वैकल्पिक विषया:

(क) वेद:

प्रथमं : प्रश्न पत्रम् **अंका: 75**

(पेपर कोड-0714)

(1) शुक्लयजुर्वेद महीधरभाष्यम् 1-2 अध्यायौ अंका: 40

(2) शतपथ ब्रह्मणम् - (प्रथम काण्ड, अध्यायौ 1-2) अंका: 35

द्वितीयं : प्रश्न पत्रम् **अंका: 75**

(पेपर कोड-0715)

(1) शुक्लयजुर्वेद : महीधरभाष्यम् 39, 40 अध्यायौ अंका: 35

(2) निरुक्तम्- यास्काचार्यप्रणीतम् (तृतीय चतुर्थाध्यायौ) अंका: 40

(ख) व्याकरणम्

प्रथमं : प्रश्न पत्रम् **अंका: 75**

(पेपर कोड-0716)

(1) सिद्धांन्त कौमुदी- भट्टोजी दीक्षित प्रणीता । (भ्वादिगणमात्रम्) अंका: 75

सहायक ग्रंथ :

(1) आख्यातिक : अजमेर मुद्रणालय मुद्रित ।

(2) माधवीय धातुवृति : सायणाचार्य रचित, वाराणसी ।

(3) व्याकरण चद्रोदय : पं. चारूदेव शास्त्री (तृतीय खण्ड) ।

द्वितीयं : प्रश्न पत्रम् **अंका : 75**

(पेपर कोड-0717)

(1) सिद्धांत कौमुदी-भट्टोजी दीक्षित प्रणीता । अंका: 75

(अदादि, जुहोत्यादि- दिवादि, स्वादि, तुदादि, रुधादि, तनादि, क्रयादि, चुरादि, गणा:)

(ग) साहित्यम्

प्रथमं : प्रश्न पत्रम् **अंका : 75**

(पेपर कोड-0718)

(1) चंद्रालोक: जयदेव प्रणीत: 5 से 10 पर्यन्तम् (मयूखा:) अंका : 40

(2) दशकुमार चरितम् (उत्तर पीठिकात: प्रथम उच्छवास:) अंका : 35

द्वितीयं : प्रश्न पत्रम् **अंका : 75**

(पेपर कोड-0719)

(1) किरातार्जुनीयम् 1-2 सर्गौ अंका : 40

(2) शिशुपालवधम् 1-2 सर्गौ अंका : 35

सहायक ग्रंथ :

(1) संस्कृत साहित्य विमर्श : पं. द्विजेन्द्रनाथ शुक्ल ।

(2) संस्कृत साहित्य का इतिहास : पं. बलदेव उपाध्याय ।

(3) संस्कृत साहित्य की रूपरेखा : चन्द्रशेखर पाण्डेय ।

(घ) दर्शनम्

प्रथमं : प्रश्न पत्रम् **अंका : 75**

(1) वेदान्तसार : सदानन्द विरचित: अंका: 40

(2) भारतीय दर्शनम् : अद्वैत विशिष्ट द्वैतवेदान्तश्च अंका : 35

द्वितीयं : प्रश्न पत्रम् **अंका : 75**

(1) पातन्जल योगसूत्रम् अंका : 40

(2) अर्थसंग्रह: (लौगांक्षभास्कर प्रणीत:) अंका: 35

(ङ) ज्योतिषम्

प्रथमं : प्रश्न पत्रम् **अंका : 75**

(पेपर कोड-0720)

(1) ग्रहलाघवम् (आदित: सूर्यचंद्रस्पष्टाधिकारं यावत्) अंका : 45

(2) मुहूर्तचिंतामणि : (आदित: गोचरप्रकरणं यावत्) अंका : 30

द्वितीयं : प्रश्न पत्रम् **अंका : 75**

(पेपर कोड-0721)

(1) ताजिक नीलकंठी (प्रथम तंत्रम्) अंका 45

(2) मध्यपाराशरी अंका : 30

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पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़)

पाठ्यक्रम

बी.ए.-3 (कोड-103) B. A.-3 (Code-103)

बी.ए. क्लासिक्स-3 (कोड-053) B.A. CLASSICS-3 (Code-053)

परीक्षा : **2016-17**

कुलसचिव पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़) की ओर से

B.A./B.A. (CLASSICS) PART-III

INDEX

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REVISED ORDINANCE NO.11

(As per State U.G.C. Scheme)

BACHELOR OF ARTS

1. The three year course have been broken up in to three Parts.

   Part-I Examination : at the end of the first year.

   Part-II Examination : at the end of the second year and

   Part-III Examination : at the end of the third year.

2. A candidate who after passing (10-2) or intermediate examination of C.G. Board of Secondary Education, Raipur or any other examination recognised by the University or C.G. Board of Secondary Education as equivalent thereto, has attended a regular course of study in an affiliated college or in the Teaching Department of the University for one academic year shall be eligible for appearing at the B.A. Part-I examination.

3. A candidate who after passing B.A. Part-I examination of the University or any other examination recognised by the University as equivalent thereto has attended a regular course of study for one academic year in an affiliated college or in the Teaching Department of the University shall be eligible for appearing at the B.A. Part II Examination.

4. A candidate who after passing B.A. Part II examination of the University has completed a regular course of study for one academic year in an affiliated college or in the Teaching Department of the University shall be eligible for appearing at the B.A. Part-III examination.

5. Besides regular students, subject to their compliance with this ordinance, ex-students and non-collegiate candidates shall be eligible for admission to the examination as per provisions of Ordinance N. 6 relating to Examinations (General). Provided that non-collegiate candidates shall be permitted to offer only such subjects/papers as are taught to the regular students at any of the University Teaching Department or College.

6. Every candidate for the Bachelor of Arts examination shall be examined in :

   A. Foundation Course :

      i. Group B - Hindi Language

      ii. Group C - English Language

   B. Three Core subjects : One subject from any three groups out of the following six groups :

      1. Sociology/Ancient Indian History/An thropology.

      2. Political Science/Home Science/Vocational Course.

      3. Hindi Literature/Sanskrit Literature/Urdu Literature/Math.

      4. Economics/Music/Linguistics/Defence studies.

      5. Philosophy/Psychology/Geography/Education/Management.

6. History/English Litrature/Statistics.

7. Practicals (if necessary) for each core subject.

7. Any candidate who has passed the B.A. examination of the University shall be allowed to present himself for examination in any of additional subjects prescribed for the B.A. examination and not taken by him at the degree examination. Such candidate will have to first appear and pass the B.A. Part I examination in the subject which he proposes to offer and then the B.A. Part II and Part III examination in the same subject. Successfull candidate will be given a certificate to that effect.

8. In order to pass at any part of the three year degree course examination, an examinee must obtain not less than 33% of the total makrs in each subject/group of subjects. In subject/group of subjects, where both theory and practical examination are provided, an examinee must pass in both theory and practical parts of the examination separately.

9. Candidate will have to pass separately at the Part-I, Part II and part-III examination. No division shall be assigned on the result of the Part-I and Part-II examination. In determining the divison of the Final examination, total marks obtained by the examinees, in their Part-I, Part-II and Part-III examination in the aggregate shall be taken into account. Candidate will not be allowed to change subjects after passing Part I Examination.

Provided in case of candidate who has passed the examination through the supplementary examination having failed in one subject only the total aggregate marks being carried over for determining the division shall include the actual marks obtained in the subject in which he appeared at the supplementary examination.

10. Successful exminees at the Part-III examination obtaining 60% or more marks shall be placed in the First division, those obtaining less than 60% but not less than 45% marks in the Second division and other successful examinees in the third division.

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SCHEME OF EXAMINATION

Subject		Paper		Max. Marks	Min. Marks
A.	**Compulsory Subject - Foundation Course :**				
	Hindi Language	I		75	26
	English Language	I		75	26
B.	**Three Core Subject :**				
	1. Hindi Literature	I	75		
		I	75	150	50
	2. Sanskrit Literature	I	75		
		I	75	150	50
	3. English Literature	I	75		
		I	75	150	50
	4. Philosophy	I	75		
		I	75	150	50
	5. Economics	I	75		
		I	75	150	50
	6. Political Science	I	75		
		I	75	150	50
	7. History	I	75		
		I	75	150	50
	8. Ancient Indian History	I	50		
	Culture & Archaeology	I	50	100	50
			Practical	50	17
	9. Sociology	I	75		
		I	75	150	50
	10. Geography	I	50		
		I	50	100	50
			Practical	50	17
	11. Mathematics	I	50		
		I	50	150	50
		III	50		
	12. Statistics	I	50		
		I	50	100	33
			Practical	50	17

Subject	Paper		Max. Marks	Min. Marks
13. Anthropology	I	50	100	33
	I	50		
		Practical	50	17
14. Linguistics	I	75	150	50
	I	75		
15. Indian Music	I	50	100	33
	I	50		
		Practical	50	17
16. Home Science	I	50	100	33
	I	50		
		Practical	50	17
17. Education	I	75	150	50
	I	75		
18. Psychology	I	50	100	33
	I	50		
		Practical	50	17
19. Management	I	75	150	50
	I	75		
20. Defence Studies	I	50	100	33
	I	50		
		Practical	50	17
21. Urdu	I	75	150	50
	I	75		

USE OF CALCULATORS

The Students of Degree/P.G. Classes will be permitted to use of Calculators in the examination hall from annual 1986 examnination on the following conditions as per decision of the standing committee of the Academic Council at its meeting held on 31-1-1986-

1. Student will bring their own Calculators.
2. Calculators will not be provided either by the university or examination centres.
3. Calculators with, memory and following variables be permitted +, -, x, ¸ square, reciprocal, expotentials log, square root, trignometric functions, wize, sine, cosine, tangent etc. factiorial summation, xy, yx and in the light of objective approval of merits and demerits of the viva only will be allowed.

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हिन्दी भाषा

(पेपर कोड-0231)

प्रथम प्रश्न पत्र **पूर्णांक - 75**

(बी.ए., बी.एस.सी., बी.एच.एस-सी., बी.काम., तृतीय वर्ष के पुनरीक्षित एकीकृत आधार पाठ्यक्रम एवं पाठ्य सामग्री का संयोजन 2000-2001 से लागू है)

।। सम्प्रेषण कौशल, हिन्दी भाषा और सामान्य ज्ञान ।।

आधार पाठ्यक्रम की संरचना और अनिवार्य पाठ्य पुस्तक- हिन्दी भाषा एवं समसामयिकी- का संयोजन इस तरह किया गया है कि सामान्य ज्ञान की विषय वस्तु- विकासशील देशों की समस्याओं- के माध्यम, आधार और साथ-साथ हिन्दी भाषा का ज्ञान और उसमें सम्प्रेषण कौशल अर्जित किया जा सके । इसी प्रयोजन से व्याकरण की अन्तर्वस्तु को विविध विधाओं की संकलित रचनाओं और सामान्य ज्ञान की पाठ्य सामग्री के साथ अन्तगुर्स्फित किया गया है । अध्ययन-अध्यापन के लिए पूरी पुस्तक की पाठ्य सामग्री है और अभ्यास के लिये विस्तृत प्रश्नावली है । यह प्रश्नपत्र भाषा का है अत: पाठ्य सामग्री का व्याख्यात्मक या आलोचनात्मक अध्ययन अपेक्षित नहीं है । पाठ्यक्रम और पाठ्य सामग्री का संयोजन निम्नलिखित पाँच इकाइयों में किया जाता है । प्रत्येक इकाई दो भागों में विभक्त किया गया है ।

इकाई - 1 (क) भारत माता : सुमित्रानंदन पंत, परशुराम की प्रतीज्ञा : रामधारी सिंह दिनकर, बहुत बड़ा सवाल : मोहन राकेश, संस्कृति और राष्ट्रीय एकीकरण : योगेश अटल ।

(ख) कथन की शैलियाँ : रचनागत उदाहरण और प्रयोग ।

इकाई -2 (क) विकासशील देशों की समस्यायें, विकासात्मक पुनर्विचार, और प्रौद्योगिकी एवं नगरीकरण ।

(ख) विभिन्न संरचनाएँ ।

इकाई - 3 (क) आधुनिक तकनीकी सभ्यता, पर्यावरण प्रदूषण तथा धारणीय विकास ।

(ख) कार्यालयीन पत्र और आलेख ।

इकाई - 4 (क) जनसंख्या : भारत के संदर्भ में और गरीबी तथा बेरोजगारी ।

(ख) अनुवाद ।

इकाई - 5 (क) ऊर्जा और शक्तिमानता का अर्थशास्त्र ।

(ख) घटनाओं, समारोहों आदि का प्रतिवेदन और विभिन्न प्रकार के निमंत्रण-पत्र ।

मूल्यांक योजना : प्रत्येक इकाई से एक-एक प्रश्न पूछा जायेगा । प्रत्येक प्रश्न में आंतरिक विकल्प होगा । प्रत्येक प्रश्न के 15 अंक होंगे । प्रत्येक इकाई दो-दो खंड (क्रमश: 'क' और 'ख' में) विभक्त है, इसलिए प्रत्येक प्रश्न के भी दो भाग, (क्रमश: 'क' और 'ख') होंगे । 'क' अर्थात पाठ एवं सामान्य ज्ञान से संबद्ध प्रश्न के अंक 8 एवं 'ख' अर्थात भाषा एवं सम्प्रेषण कौशल से संबद्ध प्रश्न के अंक 7 होंगे । इस प्रकार पूरे प्रश्न पत्र के पूर्णांक 75 होंगे ।

PART - II

ENGLISH LANGUAGE M.M. 75

(Paper Code-0232)

The question paper for B.A./B.Sc./B.Com./B.H.Sc. III Foundation course, English Language and General Answers shall comprise the following items :

Five question to be attempted, each carrying 3 marks.

UNIT-I Essay type answer in about 200 words. 5 essay type question to be asked three to be attempted. 15

UNIT-II Essay writing 10

UNIT-III Precis writing 10

UNIT-IV (a) Reading comprehension of an unseen passage 05

(b) Vocabulary based on text 10

UNIT-V Grammar Advanced Exercises 25

Note : Question on unit I and IV (b) shall be asked from the prescribed text. Which will comprise of popular create writing and the following items. Minimum needs housing and transport Geo-economic profile of M.P. communication Educate and culture. Women and Worm in Empowerment Development, management of change, physical quality of life. War and human survival, the question of human social value survival, the question of human social value, new Economic Philosophy Recent Diberaliation Method) Demoration docontralisation (with reference to 73, 74 constitutional Amendment.

Books Prescribed :

Aspects of English Language And Development - Published by M.P. Hindi Granth Academy, Bhopal.

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हिन्दी साहित्य

प्रथम प्रश्न पत्र

जनपदीय भाषा - साहित्य (छत्तीसगढ़ी)

(पेपर कोड-0233)

प्रस्तावना-

हिन्दी केवल खड़ी बोली नहीं है, बल्कि एक बहुत बड़ा भाषिक समूह है । हिन्दी जगत में अनेक विभाषाएं बोलियाँ और उपबोलियाँ विद्यामन है जिनमें पुष्कल साहित्य सम्पदा है । इनके सम्यक अध्ययन और अन्वेषण की आवश्यकता है । जनपदीय भाषा छत्तीसगढ़ी निरन्तर विकास की ओर अग्रसर हो रही है । अस्तु, इस भाषा का और इसमें रचित साहित्य का इतिहास-विकास स्पष्ट करते हुए इनसे संबंधित प्रमुख रचनाकारों का आलोचनात्मक अनुशीलन करना हिन्दी के वृहत्तर हित में होगा । छत्तीसगढ़ी भाषा का पाठ्यक्रम निम्न बिन्दुओं पर आधारित है -

(क) छत्तीसगढ़ी भाषा का इतिहास - विकास ।

(ख) छत्तीसगढ़ी भाषा में रचित साहित्य का इतिहास ।

(ग) छत्तीसगढ़ी भाषा के प्रमुख प्राचीन एवं अर्वाचीन रचनाकारों की कृतियों का अध्ययन ।

पाठ्य विषय -

रचनाएँ-

(1) प्राचीन कवि संत धर्मदास के 3 पद

1. गुरू पइंया लागों नाम लखा दीजो हो ।
2. नैन आगे ख्याल घनेरा ।
3. भजन करौ भाई रे, अइसन तन पाय के ।

(सन्दर्भ - धर्मदाश के शब्दावली से उदधृत)

(2) लखनलाल गुप्त का गद्य -

1. सोनपान

(गद्य - पुस्तक 'सोनपान' के उद्धृत)

(3) अर्वाचीन रचनाकार

डॉ. सत्यभामा आडिल रचित गद्य

1. सीख सीख के गोठ

(गद्य पुस्तक 'गोठ' के उद्धृत)

(4) डॉ. विनय पाठक की कविताएँ -

1. तँय उठथस सुरुज उथे
2. एक किसिम के नियाव

('अकादसी और अनचिन्हार' पुस्तक से उद्घृत)

(5) मुकुन्द कौशल - छत्तीसगढ़ी गजल

''छै बित्ता के मनखे देखों..... से - मछरी मन लाख लेथे'' तक

(पुस्तक 'छत्तीसगढ़ी गजल' के पृष्ठ 17 से उद्घृत)

द्रुतपाठ के रचनाकार - (व्यक्तित्व एवं कृतित्व)

1. सुन्दर लाल शर्मा
2. कविलनाथ कश्यप
3. रामचन्द्र देशमुख (रंगकर्मी)

अंक विभाजन

3 व्याख्याएँ	-	21 अंक
2 आलोचनात्मक प्रश्न	-	24 अंक
5 लघुत्तरी प्रश्न	-	15 अंक
15 वस्तुनिष्ठ/अति लघुत्तरी प्रश्न	-	15 अंक

कुल - 75 अंक

इकाई विभाजन

इकाई एक	-	व्याख्या
इकाई दो	-	प्राचीन एवं अर्वाचीन रचनाकार
इकाई तीन	-	(अ) छत्तीसगढ़ी भाषा का इतिहास
		(ब) छत्तीसगढ़ी साहित्य का इतिहास
इकाई चार	-	द्रुत पाठ के तीन रचनाकार
इकाई पाँच	-	वस्तुनिष्ठ / अतिलघूत्तरीय प्रश्न (सम्पूर्ण पाठ्यक्रम से)

द्वितीय प्रश्न पत्र

हिन्दी भाषा - साहित्य का इतिहास तथा काव्यांग विवेचन

(पेपर कोड-0234)

प्रस्तावना -

हिन्दी भाषा का इतिहास जितना प्राचीन है, उतना ही गुढ़-गहन भी । इसमें रचित साहित्य ने लगभग डेढ़ हजार वर्षों का इतिहास पूरा कर लिया है । इसलिए हिन्दी भाषा और साहित्य के ऐतिहासिक विवेचन की बड़ी आवश्यकता है । इसी के साथ-साथ हिन्दी ने अपना जो स्वतंत्र साहित्य शास्त्र निर्मित किया है, उसे भी रूपायित करने की आवश्यकता है । इसके संज्ञान द्वारा विद्यार्थी की मर्मग्राहिणी प्रतिभा का विकास होगा और ऐतिहासिक परिप्रेक्ष्य में शुद्ध साहित्यिक विवेक का सन्निवेश होगा ।

पाठ्य विषय -

(क) हिन्दी भाषा का स्वरूप विकास - हिन्दी की उत्पत्ति, हिन्दी की मूल आकर भाषाएँ तथा विभिन्न विभाषाओं का विकास । हिन्दी भाषा के विभिन्न रूप -

1. बोलचाल की भाषा
2. रचनात्मक भाषा
3. राष्ट्रभाषा
4. राजभाषा
5. सम्पर्क भाषा
6. संचार भाषा

हिन्दी का शब्द भण्डार – तत्सम, तद्भव, देशज, आगत शब्दावली ।

(ख) हिन्दी साहित्य का इतिहास :- आदिकाल, पूर्व मध्यकाल, उत्तर मध्यकाल और आधुनिक काल की सामाजिक, सांस्कृतिक पृष्ठभूमि, प्रमुख युग प्रवृत्तियां, विशिष्ट रचनाकार और उनकी प्रतिनिधि कृतियाँ, साहित्यिक विशेषताएँ ।

(ग) काव्यांग – काव्य का स्वरूप एवं प्रयोजन ।
रस के विभिन्न भेद, विभिन्न अंगह, विभावादि तथा उदारहण ।

प्रमुख 5 छंद – दोहा, सोरठा, चौपाई, कुण्डलियॉ, सवैया ।

शब्दालंकार – अनुप्रास, यमक, श्लेष, वक्रोक्ति, पुनरुक्ति प्रकाश ।

अर्थालंकार – उपमा, रूपक, उत्प्रेक्षा, अतिशयोक्ति, भ्रांतिमान ।

संदर्भ ग्रन्थ – (1) हिन्दी साहित्य का इतिहास
संपादक – डॉ. सुशील त्रिवेदी व बाबूलाल शुक्ल । (प्रकाशक – म.प्र. उ.शि. अनुदान आयोग)

(2) राजभाषा हिन्दी – मलिक मोहम्मद (प्रभात प्रकाशन दिल्ली)

(3) हिन्दी भाषा – डॉ. भोलानाथ तिवारी ।

अंक विभाजन –

4 आलोचनात्मक प्रश्न	–	44 अंक
4 लघुत्तरीय प्रश्न	–	16 अंक
15 वस्तुनिष्ट प्रश्न	–	15 अंक

कुल अंक – 75 अंक

इकाई विभाजन –

इकाई – 1 हिन्दी भाषा का स्वरूप – विकास – (खण्ड – 'क')

इकाई – 2 हिन्दी का शब्द भण्डार – (खण्ड 'क' का अंतिम भाग)

इकाई – 3 हिन्दी साहित्य का इतिहास – (खण्ड – ख)

इकाई – 4 काव्यांग – रस, छंद, अलंकार (भाग–ग)

इकाई – 5 लघुत्तरीय एवं वस्तुनिष्ठ प्रश्न (सम्पूर्ण पाठ्यक्रम से)

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प्राचीन भारतीय इतिहास, संस्कृति एवं पुरातत्व

प्रथम प्रश्न पत्र

भारतीय वास्तु तथा कला के मूल तत्व (पेपर कोड-0266) पूर्णांक - 50

इकाई-1 हड़प्पा कालीन वास्तु, मौर्य कालीन वास्तु, स्तूप वास्तु (सांची, भरहुत तथा अमरावती), पश्चिमी भारत के चैत्यगृह तथा विहार - भाजा, कार्ले, कोण्डाने, अजंता और एलोरा ।

इकाई-2 मंदिर वास्तु - गुप्तकालीन मंदिर, चंदेल कालीन, चालुक्य, पल्लव, कलचुरि मंदिर ।

इकाई-3 मूर्तिकला - हड़प्पा कालीन, मौर्यकालीन, शुंगकालीन, कुषाण कालीन (गांधार एवं मथुरा)

इकाई-4 गुप्तकालीन मूर्तिकला, कलचुरि मूर्तिकला ।

इकाई-5 प्रागैतिहासिक चित्रकला, अजंता और बाघ की चित्रकला, सिंघनपुर की चित्रकला, काबरा पहाड़ ।

अनुशंशित ग्रंथ -

1.	वासुदेव शरण अग्रवाल	-	भारतीय कला भाग-1
2.	रामनाथ मिश्र	-	भारतीय मूर्तिकला
3.	कृष्णदत्त बाजपेयी	-	भारतीय वास्तुकला का इतिहास
4.	वासुदेव उपाध्याय	-	प्राचीन भारतीय स्तूप, गुहा एवं मंदिर
5.	कृष्णदत्त बाजपेयी एवं संतोष कुमार बाजपेयी	-	भारतीय कला
6.	सच्चिदानंद सहाय	-	मंदिर स्थापत्य का इतिहास
7.	जयनारायण पांडेय	-	भारतीय कला
8.	मारुतिनंदन प्रसाद तिवारी तथा कमल गिरी	-	भारतीय प्रतिमा विज्ञान
9.	ए. एल. श्रीवास्तव	-	भारतीय कला
10.	A.K. Coomarswami	-	History of Indian and Indonesion Art
11.	Percy Brown	-	Indian Architecture, Vol. - I
12.	Krishnadeva	-	Temples of north India
13.	S. Kramrisch	-	Hindu Temples Part I & II

द्वितीय प्रश्न पत्र

(अ) भारतीय पुरातत्व के मूलतत्व (पेपर कोड-0267) पूर्णांक - 50

इकाई-1 पुरातत्व विज्ञान की परिभाषा, विस्तार क्षेत्र, अध्ययन की अन्य शाखाओं से सम्बन्ध ।

इकाई-2 भारत में पुरातत्व का इतिहास, प्राचीन स्थलों की खोज, तिथि निर्धारण ।

इकाई-3 उत्खनन-विधियाँ, सर्वेक्षण स्तर विन्यास, उत्खनन का लेखा-जोखा ।

इकाई-4 भृदभाण्ड, गैरिक भृदभाण्ड, चित्रित धूसर भृदभाण्ड, काले और लाल भृदभाण्ड, उत्तरी कृष्ण मार्जित भृदभाण्ड (एन.वी.पी.) ।

इकाई-5 प्रमुख पुरास्थलों का अध्ययन -
कालीबंगा, एरण, कौशाम्बी, हस्तिनापुर, ब्रह्मगिरी, सिरपुर, मल्हार ।

अनुशंशित ग्रंथ -

1.	के. डी. बाजपेयी	-	मध्यप्रदेश का पुरातत्व
2.	आर. एम. व्हीलर	-	पृथ्वी से पुरातत्व
3.	बी.एन. पुरी	-	पुरातत्व विज्ञान
4.	जयनारायण पाण्डेय	-	पुरातत्व विमर्श
5.	राकेश प्रकाश पाण्डेय	-	पुरातत्व विज्ञान
6.	मदन मोहन सिंह	-	पुरातत्व की रुपरेखा

''अथवा''

द्वितीय प्रश्न पत्र

(ब) पुराभिलेख एवं मुद्राशास्त्र के मूल तत्व (पेपर कोड-0268) पूर्णांक - 50

इकाई-1 1. प्राचीन भारतीय इतिहास की पुनर्रचना में अभिलेखों का महत्व ।
2. लेखन कला का उद्‌भव एवं विकास ।
3. अभिलेखों में प्रयुक्त भाषायें, लिपियाँ तथा सामग्री ।

इकाई-2 निम्नलिखित अभिलेखों का ऐतिहासिक महत्व :
1. अशोक का द्वितीय शिलालेख ।
2. अशोक का बारहवां शिलालेख ।
3. हेलियोडोरस का बेसनगर स्तम्भलेख ।
4. रूद्रदामन का जूनागढ़ अभिलेख ।
5. समुद्रगुप्त की प्रयाग प्रशस्ति ।
6. पुलकेशिन द्वितीय का ऐहोल अभिलेख ।

इकाई-3 1. इतिहास की पुनर्रचना में मुद्रा का महत्व ।
2. मुद्रा का उद्‌भव तथा प्राचीनता ।
3. आहत सिक्के ।

इकाई-4 जनपदीय सिक्के : तक्षशिला, कौशम्बी, एरण, कोसल जनपद के सिक्के ।

इकाई-5 गुप्त सिक्के, महेन्द्रादित्य क्रमादित्य प्रकार के सिक्के, (छत्तीसगढ़ अंचल से प्राप्त), नल नरेशों के सिक्के ।

अनुशंशित ग्रंथ -

1. डी. सी. सरकार - इंडियन एपिग्राफी
2. डी. सी. सरकार - सेलेक्ट इन्सक्रिप्शन्स भाग 1 व 2
3. एस. एच. दानी - इंडियन पैलियोग्राफी
4. वासुदेव उपाध्याय - प्राचीन भारतीय अभिलेखों का अध्यय
5. कृष्णदत्त बाजपेयी, कन्हैयालाल अग्रवाल संतोष कुमार बाजपेयी - ऐतिहासिक भारतीय अभिलेख
6. परमेश्वरी लाल गुप्ता - प्राचीन भारतीय मुद्राएँ
7. डी. सी. सरकार - स्टडीज एव इंडियन क्वाएन्स
8. ए. के. शरण - ट्राइबल क्वाएन्स
9. भास्कर चट्‌टोपाध्याय - द एज ऑफ दि कुषाणाज: ए न्यूमिस्मेटिक स्टडी
10. ए. एस. अल्तेकर - गुप्तकालीन मुद्राएं
11. राजवन्त राव - प्राचीन भारतीय मुद्राएं

प्रायोगिक तथा मौखिक परीक्षा पूर्णांक - 50

1.	किसी महत्वपूर्ण पुरातात्विक / ऐतिहासिक स्थान का भ्रमण एवं विवरण प्रस्तुति	-	20 अंक
2.	पुरावस्तुओं की पहचान	-	20 अंक
3.	मौखिकी	-	10 अंक
	योग	-	**50 अंक**

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ENGLISH LETERATURE

PAPER -I

INDIAN WRITING IN ENGLISH M.M.: 75

(Paper Code-0235)

All questions are compulsory.

Note : 1. Uint - I is compulsory. Two passages from each of the units II to V to be set and three to be attempted. (3x5 = 15)

2. Short answer questions from unit VII, seven to be set and five to be attempted. (5x2 = 10)

3. Long-answer questions from unit II to VI. Êive questions from each unit with internal choice to be set. (5x10 = 50)

UNIT-I Annotations and short answer questions.

UNIT-II **Poetry -**

Toru Dutt	-	'Our Casurina Tree'
Tagore	-	Songs 1 & 103 from 'Gitanjali'
Sarojini Naidu	-	'The Ecstasy', 'The Lotus'

UNIT-III

Kamla Das	-	'The old playhouse'
Gauri Deshpandey	Or	' The female of the species
Jayant Mahapatra	-	'Dawn at Puri'
K.N. Daruwala	Or	'Death by Burial'
Shiv K. Kumar	-	'Indian Women'

UNIT-IV **Prose -**

Nirad C.Choudhary	-	My Birth Place.
Dr. S. Radhakrishnan	-	The call of the suffering.

UNIT-V **Drama -**

Girish Karnad	-	Hayavadana
	Or	
Tendulkar	-	Silence ! The Court is in session.

UNIT-VI **Fiction -**

R.K. Narayan - Guide

UNIT-VII 1. Lyric, 2. Subjective poetry, 3. Couplet, 4. Fable, 5. Hymn, 6. Allegory, 7. Autobiography,

BOOK RECOMMENDED :

1. Indian Poetry in English, Ed. Hari Mohan prasad, Sterling Publication.
2. An Introduction to the study of English Literature, B. Prasad.
3. A Glossary of Literary Terms - M.H. Abrams.
4. Prose of To day - M.C. Millan.

PAPER - II

(A) AMERICAN LITERATURE

(Paper Code-0236)

All questions are compulsory.

Note : 1. Uint-I is compulsory. Two passages from each of the units II to V to be set and three to be attempted. (3x5 = 15)

2. Short answer questions from unit VII, seven to be set and five to be attempted. (5x2 = 10)

3. Long-answer questions from unit II to VI. (word limit for each answer is 300-400 words) internal choice to be set. (5x10 = 50)

UNIT-I Annotations and short answer question.

UNIT-II **Poetry -**

Wait whitman	-	O Captain ! My Captain, when the Lilacs Last in the Dooryard Bloomed.
Carl Sandberg	-	'Who Am I ?', 'I am the People, The Mob'

UNIT-III

Emily Dickinson	-	'Hope is the thing with Feather' I Felt a funeral in My Brain'
E.E. Cummings	-	'The Cambridge Ladies' 'As Freedom is a Breakfast food'

UNIT-IV **Prose -**

William Faulkner	-	Nobel Award Acceptence Speech
W. Carlos Williams	-	In the American Grain
Walt Whitman	-	Preface to "Leaves of Grass'

UNIT-V **Drama -**

Miller	-	All My Sons
	Or	
Eugene O'Neill	-	The Hairy Ape

UNIT-VI **Fiction -**

E. Hemingway	-	A Farewell to Arms
	Or	
W. Faulkner	-	The Sound and the Fury

UNIT-VII 1. Naturalism, 2. Realism, 3. Art for Art's sake, 4. Poetic-Drama, 5. Symbolism, 6. American Renaissance, 7. Existentialism.

BOOK RECOMMENDED :

1. American Literature, An Anthology, Ed. Fr. Egbert S. Oliver.
2. A Glossary of Literary Terms - M.H. Abrams.

PAPER - II

(B) 20TH CENTURY LITERATURE IN ENGLISH

(Paper Code-0237)

The paper will be taught as an optional paper to Paper-II(A) which is a paper on American Literature. The Principle focus will be to probe the students a general background and cultural history of this period and also to make them aware of the Literary trends of the twentieth century. The Paper will comprise six units and in all six quetions are to be attempted, one from each unit.

UNIT-I The following historical and literary topics will be included in this unit. Students are required to write short notes of not more than three hundred words on any two of the following topics. (10 Marks)

i. The Two world wars.

ii. The Russian Revolution.

iii) The Great Depression.
iv) The Vietnam war.
v) Freudian Thought
vi) Existentialism.
vii) Absurdism.
viii) Modernism and Post Modernism.
ix) New Development in fiction and Drama.

UNIT-II Ten objective type questions on the life History and major poetical works of the following poets of the twentieth century will be asked in this unit. (10 Marks)

i) W.B. Yeats (1865-1939)
ii) Siegfried Sasson (1886-1967)
iii) Rupert Brooke (1887-1915)
iv) T.S. Eliot (1888-1965)
v) Wilfred Owen (1893-1918)
vi) W.H. Auden (1907-1937)
vii) Louis Macneice (1907-1963)
viii) Stephen Spender (1909-)
ix) Dylan Thomas (1914-1953)
x) Philip Larkin (1922-1985)

UNIT-III (15 marks)

T.S. Eliot	-	'The Waste Land'
	Or	
Wilfred Owen	-	'Disabled'
Siegfried Sassoon	-	'Attack', 'Falling Asleep'
Rupert Brooke	-	'The Hill'
W.H. Auden	-	'Miss Gee'

UNIT-IV (15 marks)

Joseph Conrad	-	'Heart of Darkness'
	Or	
Chinua Achebe	-	'Things Fall Apart'

UNIT-V (Non Fictional Prose) (10 marks)

Virginia Woolf	-	'The Death of the Moth'
Graham Greene	-	'The Lost Childhood'

UNIT-VI (Drama) (15 marks)

Bernard Shaw	-	'Pygmalion'
	Or	
Samuel Beckett	-	'Waiting for Godot'

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संस्कृत साहित्य

प्रथम प्रश्न पत्र

नाटक, छन्द तथा व्याकरण

पूर्णांक - 75

(पेपर कोड-0257)

इकाई-1 अभिज्ञान शाकुन्तलम् (कालिदास)

1. दो श्लोकों की ससन्दर्भ व्याख्या 20
2. एक श्लोक का अनुवाद 10

(प्रथम, चतुर्थ, पंचम और सप्तम अंक, व्याख्या हेतु, द्रुतपाठ - शेष अंक)

इकाई-2 अभिज्ञान शाकुन्तलम् - समीक्षात्मक प्रश्न 10

इकाई-3 निर्धारित छन्दों के लक्षण तथा उदाहरण 15

अनुष्टुप्, इन्द्रवज्रा, उपेन्द्रवज्रा, उपजाति, वंशस्थ, आर्या, मालिनी, शिखरिणी, वसन्ततिलका, शार्दूलविक्रीडित, स्त्रग्धरा, मन्दाक्रान्ता ।

इकाई-4 व्याकरण - लघुसिद्धान्त कौमुदी 10

कृदन्त प्रकरण

तव्यत्, अनीयर्, यत्, क्यप्, क्यच्, शतृ, शानच्, क्त्वा, ल्यप्, तुमुन्, क्त, क्तवतु, ण्वुल, तृच्, ल्युट, अण्

इकाई-5 व्याकरण - लघुसिद्धान्त कौमुदी

1. तद्धित प्रत्यय

   अण्, ढक्, ष्यञ्, त्व, तढक्, इमनिच्, तठक्, अञ्, मतुप्, इनि, इतच्, ईयसुन्, इष्ठन्, तरप्, तमप्, ण्य, यञ्
2. स्त्री प्रत्यय

   टाप्, ङीष्, ङीप्, ङीन् ।

अनुशंसित ग्रन्थ -

1. शीघ्रबोध व्याकरणम - डॉ. पुष्पा दीक्षित, पाणिनीय शोध संस्थान, तेलीपारा, बिलासपुर
2. लघुसिद्धान्त कौमुदी - श्रीधरानंद शास्त्री
3. संस्कृत हिन्दी कोश - वामन शिवराम आपटे
4. छन्दोमंजरी - चौखंबा प्रकाशन

प्रश्न पत्र द्वितीय

काव्य, अलंकार तथा निबन्ध

पूर्णांक - 75

(पेपर कोड-0258)

इकाई-1 किरातार्जुनीय (भारवि) प्रथम सर्ग

दो श्लोकों की ससन्दर्भ व्याख्या 20

इकाई-2 किरातार्जुनीयम् - आलोचनात्मक प्रश्न 10

इकाई-3 मूलरामायणम - वाल्मीकि

व्याख्या अथवा आलोचनात्मक प्रश्न 15

इकाई-4 अलंकार -

उपमा, रूपक, उत्प्रेक्षा, अर्थान्तरन्यास, स्वाभावोक्ति, काव्यालिङ्ग, अतिशयोक्ति, दीपक, विभावना, विशेषोक्ति, अपह्नुति, दृष्टांत, प्रतिवस्तूपमा, निदर्शना, यमक, शब्दश्लेष, अनुप्रास, अनन्वय, ससन्देह, भ्रान्तिमान् ।

टिप्पणी : अलंकारों के लक्षण चन्द्रालोक, साहित्य दर्पण, अथवा काव्य प्रकाश से अध्येतव्य हैं, उदाहरण पाठ्यक्रमों से भी दिये जा सकते हैं ।

इकाई-5 निबन्ध (संस्कृत भाषा में) 15 वाक्यों में 15

टिप्पणी : निबन्ध समीक्षात्मक अथवा विश्लेषणात्मक न होकर वर्णनात्मक पूछे जायेंगे ।

अनुशंसित ग्रन्थ -

1. संस्कृत निबन्ध शतकम् - डॉ. कपिलदेव द्विवेदी, चौखंबा प्रकाशन, वाराणसी
2. निबन्ध पारिजात - डॉ. रजनीकान्त लहरी, चौखंबा प्रकाशन, वाराणसी
3. रचनानुवाद कौमुदी - डॉ. कपिलदेव द्विवेदी, चौखंबा प्रकाशन, वाराणसी
4. प्रबन्ध रत्नाकर - डॉ. रमेशचन्द्र शुक्ल, चौखंबा प्रकाशन, वाराणसी

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राजनीति विज्ञान

प्रश्न पत्र - प्रथम

अंतर्राष्ट्रीय राजनीति

पूर्णांक - 75

(पेपर कोड-0244)

इकाई-1 अंतर्राष्ट्रीय राजनीति का अर्थ, प्रकृति, क्षेत्र, अंतर्राष्ट्रीय राजनीति के अध्ययन के उपागम ।

इकाई-2 अंतर्राष्ट्रीय राजनीति के विभिन्न सिद्धांत - शक्ति, परिभाषा, तत्व ।

शक्ति संघर्ष, शक्ति संचय, शक्ति वृद्धि, शक्ति प्रदर्शन ।

इकाई-3 शक्ति सन्तुलन की अवधारणा - सैद्धांतिक लाभ एवं मूल्यांकन ।

शांति एवं सुरक्षा की अवधारणा - सामूहिक सुरक्षा का सिद्धांत ।

इकाई-4 राजनय परिभाषा, प्रकार, कार्य, उद्देश्य एवं साधन नि:शस्त्रीकरण - अर्थ, परिभाषा एवं विकास, नि:शस्त्रीयकरण के मार्ग की बाधाएं एवं निराकरण ।

इकाई-5 अंतराष्ट्रीय राजनीति के नए प्रतिमान :

1. पर्यावरणवाद,
2. वैश्वीकरण,
3. मानव अधिकार ।

संदर्भ ग्रन्थ -

1. महेन्द्र कुमार - अन्तर्राष्ट्रीय राजनीति के सैद्धांतिक पत्र
2. विजय कुमार अरोरा - अन्तर्राष्ट्रीय राजनीति
3. दीनानाथ वर्मा - अन्त: संबंध - ज्ञानदा प्रकाशन, दिल्ली
4. मथुरालाल शर्मा - अन्त: संबंध - 1945 से, कॉलेज बुक डिपो, जयपुर
5. डी.सी. चतुर्वेदी - अन्त: संबंध 1945 से वर्तमान तक, रस्तौगी प्रकाशन, मेरठ
6. रमेश भारद्वाज - नवीन विश्व व्यवहार और भारती विदेश नीति
7. पंत एवं जैन - अन्तर्राष्ट्रीय संबंध, मीनाक्षी प्रकाशन, मेरठ
8. बी.के. खन्ना एवं अरोरा - भारतीय विदेशनीति के नये आयाम, डी.के. प्रकाशन, नई दिल्ली
9. Palmar and Prkins - International Relations.
10. R. Aron - Peace & war - A theory of International Relations, London.
11. Organski - World Politics
12. C.P. Schliccher - International Relations, Co-operation and Competition.
13. J. Frankel - The making of Foreign policy, london, 1963.
14. H.J. Morgenthau - Politics Among Nations, 6th adition, New York, 1985.
15. K.N. Waltz - Theory of International Politics, Addison - Wesley, 1979.

प्रश्न पत्र - द्वितीय

लोक प्रशासन

पूर्णांक - 75

(पेपर कोड-0245)

इकाई-1 लोकप्रशासन का अर्थ, प्रकृति एवं क्षेत्र

एक अनुशासन के रूप में लोक प्रशासन का मल्यांकन लोक प्रशासन एवं व्यक्तिगत प्रशासन में समानाताएं एवं व्यक्तिगत प्रशासन में समानताएँ एवं असमानताएँ ।

इकाई-2 लोक प्रशासन के अध्ययन की पद्धति एवं उपागम,

नवीन लोक प्रशासन ।

इकाई-3 राजनीति एवं लोकप्रशासन

प्रशासनिक व्यवहार - नेतृत्व, निर्णय, निर्माण संचार, जवाबदेही ।

इकाई-4 नौकरशाही एवं बजट प्रक्रिया

वैश्वीकरण एवं उदारीकरण के युग में लोक प्रशासन के नये आयाम ।

इकाई-5 प्रशासन पर विधायी नियंत्रण,

प्रशासन पर न्यायिक नियंत्रण ।

संदर्भ ग्रन्थ -

1. सी.पी. भाम्भरी - लोक प्रशासन की सिद्धांत
2. पी.डी. शर्मा - भारत में लोक प्रशासन
3. खान एवं वर्मा - प्रशासनिक विचारधाराएँ, भाग 1, 2
4. इन्द्रीजीत कौर - लोक प्रशासन, साहित्यभवन, आगरा
5. जे.पी. शर्मा - लोक प्रशासन, रायपुर
6. आर. बसु - लोक प्रशासन, नई दिल्ली, जवाहर पब्लिशर्स
7. बी.एल. फातिया - लोक प्रशासन - साहित्य भवन, आगरा
8. निशा वशिष्ठ - भारत में नौकरशाही की कार्यप्रणाली
9. सी.एन. चतुर्वेदी - तुलनात्मक लोक प्रशासन, जयपुर (कॉलेज बुक डिपो)
10. Pfittner J.M. - Public Administration.
11. White L.D. - Introdution to the Principles of Public Administration.
12. Bhambhari C.P. - Bureaucracy and Politics in India, Delhi Vikas 1971.
13. Bhattacharya M. - Public Administration.
14. Maheshwari S.R. - Indian Administration system.
15. Awasthi & Maheshwari - Public Administration.

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ECONOMICS

PAPER - I

DEVELOPMENT AND ENVIRNMENTAL ECONOMICS M.M. 75

(Paper Code-0242)

UNIT-I Economic Growth and Development - Factors affecting economic growth, Capital and Technology Development & under development, Population of Under-developed Countries, Poverty - Absolut & Relative, Measuring development and Undevlopment, gap per capita income, inequlity of income and wealth.

Human Delopment index GDI, GEM, Poverty Index of development & Quality of life.

UNIT-II Population problem and growth, pattern of population. Theory of demographic trasition. Population poverty & Environment. Theory of Social Change Immutable laws of Capital Development - Crisis in capitalism. Karl Marx - Theory of Development, Mahalonobis four sectoral Model. Schumpeter's development in Capitalistic economy, Big-Push Balance and unbalanced Growth, Critical Minimum Effort thesis, Low Income Equilibrium Trap-Dualism : Technical, Behavioural & Social.

Unit-III Harrod and Domar Growth Model, Neo Classical models, So low, Meade & Mrs. Joan Robinson's Growh model, Unlimited supply of Labour.

UNIT-IV Environment and Ecology : Economic linkage, Environment as a necessary and luxury, Population environment linkage, Environmental use & environmental disruption as an allocation problem. Market failure for environmental goods, environment as a public good, the Common problem. Property Human right approach to environmental problem, valuation of environmental damages-land, water, air & forest Pollution Control-Prevention. Control and asbtement of pollution Choice of policy instruments in developing Countries, Environmental legislation Indicators of Sustainable Development, environmental accounting.

UNIT-V Concept of Intellectual Capital - Food Security, Education Helath & Nutrition, Efficiency & Productivity in Agriculture New Technology & Sustainable Agriculture, Globalization & Agriculture growth, the Choice of Technique & appropriate technology & employment. Role of Monetory & Fiscal policies in developing Countries.

PAPER - II

STATISTICAL METHODS M.M. 75

(Paper Code-0243)

UNIT-I Statistical Methods Statistcs - Definition Statistical Data, Statistical Methods, Functions of Statistics. Importance of Statistics, Limitations of Statistics. Statistical Survey & Report writing. Collection of Data, Primary & Secondary Data, Sampling & Sampling Designs. Sampling Errors, Frequency Distribution, Diagrammatic & Graphic Presentation.

UNIT-II Central Tendency. Measurement of Mean, Median, Mode, Geometric Mean & Harmonic Mean and their uses.

Unit-III Dispersion : Meaning of Dispersion, Properties good measure of Variation - Methods

of Despersion Range, Quartiles Deviation - Mean Deviation, Standard Deviation, Coefficaient of Variation, Lorenz Curve, Skewness & Kurtosis.

UNIT-IV Coefficient of Correlation - Karl Pearson's Method, Probable Error, Spearman's Rank Correlation Coefficient.

UNIT-V Index Number - Construction of Index Numbers Simple & weighted Index Number's- Fisher's Ideal Index Number & Reversal Test. Consumer Price Index Numbers and Time Seris Analysis - components of Time-Series.

Measurement of Trend - Graphic Method, Semi Average Method. Moving averages, Least Square Method, Measuring Trend by logariths.

BOOK RECOMMENDED :

1. Salvalore, D.L. (1997), International Economics, Prentice Hall, Upper Saddle River, N.J.
2. Sodersten, Bo (1991), International Economics, Macmillan Press Ltd. London.
1. Aggarwal, M.R. (1979), Regional Economic Cooperation in South Asia, S. Chand and Co. New Delhi.
2. Bhagwati J. (Ed.) (1981), International Trade, Selected Readings, Cambridge University Press, Mass.
3. Creckjell A. (1982), International Mony, Issue and Analysis, E.I.B.S and Nelson, London.
4. Greenaway, D. (1983) International Monetary Economics, Prentice Hall Indoa.
5. Joshi V. and I.M.D. Little (1998), India's Economic Reforms, 1999-2001, Oxford University Press, Delhi.
6. Panchmukhi, V.R. (1978) Trade Policies of India : A Quantitative Analysis, Concept Publishing Company. New Delhi.
7. Patel, S.J. (1995) Indian Economy Towards the 21st Century. University Press Ltd. India.
8. Singh M. (1964), India Export Trends and the Prospects for sell sustained growth Oxford Univesity Press, Oxford.

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इतिहास

प्रश्न -पत्र प्रथम

भारत का इतिहास सन् 1761 ई. से 1950 ई. तक

M.M. 75

(पेपर कोड-0240)

उद्देश्य : इस पाठ्यक्रम का उद्देश्य आधुनिक काल में भारत के राजनीतिक, सामाजिक आर्थिक एवं सांस्कृतिक इतिहास से विद्यार्थियों को अवगत कराना है ।

इकाई-1
1. ब्रिटिश साम्राज्य का विस्तार एवं सुदृढ़ीकरण - युद्ध एवं कूटनीति - कर्नाटक युद्ध
2. ब्रिटिश साम्राज्य का विस्तार एवं सुदृढ़ीकरण - प्लासी एवं बक्सर
3. सहायक संधि एवं हड़प नीति (व्यपगत का सिद्धांत)
4. ब्रिटिश प्रशासन एवं सुधार - बेंटिंग, लिटन, रिपन, कर्जन

इकाई-2
1. वाणिज्यवाद - उद्योगों का पतन
2. वाणिज्यवाद - व्यापार का पतन
3. कृषि का ह्रास एवं कृषक आन्दोलन
4. भूराजस्व व्यवस्थाएं - स्थाई बन्दोबस्त, रैयतवाड़ी, महालवाड़ी

इकाई-3
1. भारतीय पुनर्जागरण - ब्रह्म समाज, आर्य समाज, प्रार्थना समाज,
2. रामकृष्ण मिशन, थियोसोफिकल सोसायटी, अलीगढ़ आन्दोलन
3. पाश्चात्य शिक्षा का विकास एवं प्रेस
4. विभिन्न सामाजिक वर्ग - कृषक, मजदूर, मध्यम वर्ग एवं महिलाएं

इकाई-4
1. राष्ट्रवाद का उदय एवं 1857 की क्रान्ति
2. भारतीय राष्ट्रीय कांग्रेस - उदारवादी, उग्रवादी
3. क्रान्तिकारी आन्दोलन
4. गांधीवादी आन्दोलन

इकाई-5
1. साम्प्रदायिकता : उदय एवं विकास
2. सुभाषचन्द्र बोस एवं आजाद हिन्द सेना
3. भारत का संवैधानिक विकास : 1919 ई. - द्वैध शासन, 1935 - प्रान्तीय स्वायत्तता
4. भारत की स्वतंत्रता तथा भारतीय संविधान की विशेषताएं ।

संदर्भ ग्रंथ :

1. Sarkar and Dutt - Modern India (English and Hindi Version)
2. Singh, Gurumukh Nihal - Landmarks in Indian Constitutional Development and National Movement.
3. Agrawal R.C. - Indian Constitutional Development and National Movement in India.
4. राधेशरण - भारत की सामाजिक एवं आर्थिक संरचना और संस्कृति के मूल तत्व (आदिकाल से 1950 ई. तक) (म.प्र. हिन्दी ग्रंथ अकादमी का प्रकाशन)

5. मिश्रा जे.पी. – आधुनिक भारत का इतिहास
6. नागौरी एस.एल. लाल – आधुनिक भारत का इतिहास
7. ग्रोवर बी.एल. – आधुनिक भारत का इतिहास
8. दुबे सत्यनारायण – आधुनिक भारत का इतिहास
9. मजूमदार दत्त राय चौधरी – भारत का वृहत् इतिहास
10. जैन एम. एस. – आधुनिक भारत का इतिहास
11. सिंह प्रताप – आदुनिक भारत का सामाजिक एवं आर्थिक इतिहास
12. सिंह प्रताप – आधुनिक भारत (1858 - 1919)
13. सिंह प्रताप – आधुनिक भारत (1919 - 1950)
14. दिल्ली विश्वविद्यालय प्रकाशन – आधुनिक भारत का इतिहास
15. दिवाकर ब्रज मोहन – आधनिक भारत
16. छाबड़ा जी.एस. – आधुनिक भारत का इतिहास (तीन खण्डों में)
17. नागपाल ओभ – भारत का राष्ट्रीय आंदोलन और....
19. सीताराम शर्मा – उन्नीसवीं सदी भारतीय धार्मिक तथा सामाजिक जागरण
20. डॉ. सीताराम जी 'श्याम' – भारतीय स्वतंत्रता संग्राम की रूपरेखा
21. विपिन चन्द्रा – भारत का स्वतंत्रता संग्राम
22. रामलखन शुल्क – अधुनिक भारत
23. रमेशचन्द्र दत्त – ब्रिटिश बारत का आर्थिक इतिहास
24. डॉ. अयोध्यासिंह – भारत का मुक्ति संग्राम
25. डॉ. एग्नेस ठाकुर – आधुनिक भारत का इतिहास

प्रश्न -पत्र द्वितीय

विश्व इतिहास - सन् 1871 ई.से 1945 ई.तक

M.M. 75

(पेपर कोड-0241)

उद्देश्य : इस पाठ्यक्रम का उद्देश्य विश्व इतिहास की प्रमुख घटनाओं से विद्यार्थियों को अवगत कराना है । साथ ही अन्तर्राष्ट्रीय परिदृश्य का ज्ञान भी इन्हें देना है ।

इकाई-1
1. फ्रांस का तृतीय गणतंत्र
2. बिस्मार्क : सह एवं विदेश नीति
3. विलियम द्वितीय की विदेश नीति
4. अफ्रीका का विभाजन

इकाई-2
1. जापान का आधुनिकीकरण
2. रूस - जापान युद्ध : कारण एवं परिणाम
3. चीन की क्रान्ति - कारण एवं परिणाम
4. डॉ. सन-यत- सेन

इकाई-3 1. पूर्वी समस्या - बर्लिन कांग्रेस, युवा तुर्क आन्दोलन

2. बाल्कन युद्ध : कारण एवं परिणाम

3. प्रथम विश्व युद्ध : कारण एवं परिणाम

4. रूस की क्रान्ति 1917

इकाई-4 1. वर्साई की संधि

2. फासीवाद - मुसोलिनी

3. नाजीवाद - हिटलर

4. जापान का सैन्यवाद - तोजो

इकाई-5 1. राष्ट्रसंघ : स्थापना एवं विल्सन के 14 सूत्र

2. द्वितीय विश्वयुद्ध - कारण एवं परिणाम

3. संयुक्त राष्ट्र संघ - स्थापना एवं संगठन

4. संयुक्त राष्ट्र संघ - उपलब्धियां

अनुशंसित ग्रंथ :

1. Grant and Temperley - Europe in the 19th and 20th Century (also Hi-- Version)
2. Kettelby - History of the Modern Times
3. Moon - Imperialism in World Politics
4. Plamor & Parkins - International Politics
5. Parks, Hengy Bamford - The United States of America A History
6. Panikkar K.M. - Asia and Western Dominance
7. Schuman - International politics
8. Taylor, A.J.P. - Struggle for Mastery over Europe
9. Vinacke, H.M. - A History of Far East in Modern Times
10. Fay - Origins of the World War
11. Robert. Engong - Europe since waterloo
12. Manazir Ahmad - Europe ka Itihas (in Hindi)
13. Satyaketu Vidyalankar - Sudurpurva ka Itihas (in Hindi)
14. Deonath Verma - Aungla ka Itihas (in Hindi)
15. वर्मा भगवान सिंह - विश्व इतिहास की प्रमुख धारायें (1871-1956) (म.प्र. हिन्दी ग्रंथ एकादमी का प्रकाशन)
16. शर्मा भथुरालाल एवं बघेला हेतसिंह एवं माथुर कौशिक इत्यादि - युरोप का इतिहास (1789-1945) : एक शोध पूर्ण अध्ययन
17. अहमद लइक - आधुनिक विश्व का इतिहास

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GEOGRAPHY

1. The B.A. Part III Examination in Geography will be of 150 marks. There will be two theory papers and one practical each of 50 marks as follows :

   Paper - I Resource and Environment

   Paper - II Geography of India (with special reference to Chhattisgarh)

   Paper - III Practical Geography

2. Each theory paper shall be of three hours' duration.
3. Candidates will be required to pass separately in theory and practical examinations.
4. Each theory paper is divided into five units.
5. (a) In the practical examination the following shall be allotment of time and marks.

i)	Lab work	-	20 marks	up to three hours
ii)	Survey	-	10 marks	Two hours
iii)	Field Report	-	10 marks	
iv)	Practical Record and viva-voce	-	10 marks	

   (b) The external and internal examiners shall jointly submit marks.

   (c) The candidates shall present at the time of the practical examination their practical records regularly signed by the teachers concerned.

PAPER - I

RESOURCES AND ENVIRONMENT M.M. 50

(Paper Code-0248)

A. Resources

UNIT-I Meaning, nature and components of resources and environment. Resources and environment interface. Classification of resources : renewable and nonrenewable : biotic (forests, wild-life, live-stock, fisheries, agricultural crops) and abiotic (land, water, mineral)

UNIT-II Distribution and utilization of water mineral and energy resources, their economic and environmental significance and conservation. Types and distribution of forests, fauna and fisheries, their economic, and environmental significance and conservation. Major soil types and their distribution; problems of soil erosion and soil conservation.

UNIT-III Number, density, growth and distribution of population; population pressure and resource utilization.

B. Environment

UNIT-IV Classification of environment : Natural and Human. Man environment interrelations with respect to population size, types of economy and technology; exploitation of natural resources and environmental hazards.

UNIT-V Emerging environmental issues - population explosion; food security; deforestation; global warming, conservation of bio-diversity; sustainable development.

PAPER - II

GEOGRAPHY OF INDIA M.M. 50

(With Special reference to Chhattisgarh)

(Paper Code-0249)

UNIT-I Physical features : Structure, Relief and Physiographic regions, Drainage, Climate-origin and mechanism of monsoon, and regional and seasonal variation.

UNIT-II Natural resources : Soils - types, their distribution and characteristics. Water resources (major irrigation and hydel power projets); Forests-types, distribution, economic significance and conservation. Mineral and Power resources-Iron-ore, Manganese, Copper, Coal, Petroleum and Natural gas, Non conventional sources of energy.

UNIT-III Cultural Features : Agriculture - Major crops, impact of green revolution and agricultural regions; Industries - Iron and steel, Cotton Textile, Cement, Sugar, Population - growth, density and distribution. Transport, Foreign Trade.

UNIT-IV Chhattisgarh :

Physical Features : Structure, Physiography, Drainage, Climate, Soils, Natural vegetation, Water resources - availability and development. Mineral and Power resources, Power projects.

UNIT-V Chhattisgarh :

Cultural features : Agriculture, Industries, Population - growth, distribution and density, social groups, literacy and sex-ratio, urbanisation. Major tribes-their habitat, economy and society. Transport and Tourism.

SUGGESTED READING :

1. Sharma, T.C. and Coutinho, O. : Economic and Commercial Geography of India, Vikas Pub. House, New Delhi, 1988.
2. Singh, R.L. (Ed.) : India : A regional Geography, Nat. Geog. Soc. of India, Varanasi, 1971.
3. Spate, O.H.K. and Learmonth, A.T.A. India and Pakistan : A General and Regional Geography, Methuen & Co. Ltd. London, 1967.
4. Tiwari, R.C. : Geography of India, Prayag Pustak Bhawan. Allhabad, 2003.
5. प्रमीला कुमार (सम्पादक) : मध्यप्रदेश का प्रादेशिक भूगोल, म.प्र. हिन्दी ग्रंथ अकादमी, भोपाल
6. अग्रवाल, प्रेमचंद : भारत का भौतिक भूगोल

PAPER - III

PRACTICAL GEOGRAPHY M.M. 50

UNIT-I Band graph, Hythergraph and Climograph. Square root, cube-root and vernier scales.

UNIT-II Map Projection : Conical Projection : one standard parallel, two standard parallels, Bonne's, Ployconic, Polar Zenithal Projections; Gnomonic, Stereographic and Orthographic.

UNIT-III Study and Interpretation of Indian topographical sheets : classification and numbering system, Interpretation of topographical sheets with respect to cultural and physical features.

UNIT-IV Surveying - Plane Table Survey, Basic Principles of plane table surveying, Plane table survey including intersection and resection.

UNIT-V Importance of field work in Geography. Field work and field report : physical, social and economic survey of a micro-region.

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MUSIC

PAPER - I

THEORY OF INDIAN MUSIC, VOCAL/INSTRUMENTAL M.M.:50

(Paper Code-0264)

I Definitions and Elementary Knowledge of the following terms : Shruti, Gram, Murchana, Jaati, Sadaj-Pancham Bhav, Sadaj-Madhyam Bhav, Sada-jantar Bhav, Chatuh Sarana by acharya Bharat, Praman Shruti, Kaku Bhed, Jhala, Razakhani gat, Maseetkhani gat, Toda.

II. Introduction of Harmony and Melody Characteristics and comparative study of Harmony and Melody.

III. Methods of Placement of swars :

(a) Method of placing shudha and Vilkrit Swaras on Veena by Ahobal, Pt. Srinivas and Pt. V.N. Bhatkhande.

(b) Shruti Swar system of different granthakars (authors) Ancient, Medieval and Modern period.

IV. Evolution and Development of Swar Saptaka of western and Indian scales :

(a) Phthogorian Scale.

(b) Scale from Sadaj-Pancham Bhav,

(c) Scale from Sadaj-Madhyam Bhav,

(d) Equally tempered Scale

(e) Diatonic Scale

(f) Mean tempered Scale

(g) Concept of Acharya Bharat and Bilawal Thata.

(h) Chromatic Scale.

V. Definition and prime elements of Gharana and their history.
Gwalior, Agra, Kirana, Patiyala, Jaipur, Senia Gharana of Instrumental Music.

VI. Difinition of Gram and Gram Bhed -
Sadaj Gram, Madhyam Gram, Gandhar Gram and their Swaras.

VII. Writing of Talas in Natation with Dugun and Chaugun layakaris in all the Talas prescribed in Ist and IInd Year.

PAPER - II

THEORY OF MUSIC, VOCAL/INSTRUMENTAL M.M.:50

(Paper Code-0265)

1. Study of Theoritical details of Ragas prescribed for practical course and their comparative study.

2. Writing in notation of Bandish / Gat of prescribed Ragas.

3. Biographics and contributions of the musicians : Haddu - Hassu khan, Inayat Kan, Pandit Omkar Nath Thakur, Matang, Ramamatya, Srinivas, Lochan, Hrideya Narayan Dev, Somnath, Bhav Bhatta.

4. History of Indian Music : Medieval and Modern period; Analytical study of the styles, position and effects of granthkaras and eminent musician of medieval and modern Period.

5. Classical Music and Folk Music : Comparative study of Classical and Folk music. Intensive study of the Folks of Chhattisgarh.

6. Voice-Culture : Definition, Importance and utility of vioce-culture. Construcution of throat and production of sound. General sicentific methods of voice-culture.
7. Guided listening to Radio and T.V. national Programmes of Indian classical Music and ability to write their critical appreciation.
8. Essay on topics related to music.

PRACTICAL
VOCAL/INSTRUMENTAL

I Study of Eight Ragas from the following :
Ramkali, Jaijaiwanti, Miyan ki Malhar, Pooriya, Basant, Bahar, Darbavi Kanhada, Miyan ki Todi, Adana, Kalavati, Hansdhwani, Shuddhkalyan, Pooriyadhamashri, Marwa.

1. Two Vilambit Khayalas / Maseetkhani Gats in any of the above mentioned Ragas with Alap and Tanas / Todas.
One Vilambit Khayalas / Maseethkhani / Gat choice Raga and one asked by the examiner. (5+5 = 10 marks)
3. Lakshan Geets, Sargams, Madhayalaya Khyals / Razakhani Gats with Tanas / Todas in all the eight Ragas. (5+5 = 10 marks)
4. Study of One Dhrupad and one dhamar with Dwigun, Trigun Chaugun / study of Two Madhayata gats in other than Trital out of the Ragas precribed in the course. 8 marsk
5. Study of one Tarana, One Bhajan / One Dhun. 4 marks
6. Ability to demonstrate (orally by given Tali Khali on hand) Talas prescribed in 1st year and IInd year Matta Tala, Panjabi Trital, Ganesh Tal, Rudra Tala. 4 marks

SESSIONAL WORK

1. Keeping upto date practical and theory note Books. Attendence and activities in the class and college.
2. Ten descriptions of Music programmes of Radio, T.V. or personally attended.

BOOK RECOMMENDED :

1. Kramik pustak Malika Part I, II, III, IV by Pt. V.N. Bhatkhande.
2. Sangeetanjali Part I, II, III, IV, V, VI by Pt. Omkarnath Thakur.
3. Raga Vigyan Part I, II, III, IV, V by Pt. V.N. Patvardhan.
4. Rag Bodh. B.R. Devdhar, Part I, II & III.
5. Sitar Vadan, S.G. Vyas.
6. Sangeet Visharad, Vasant
7. Sangeet Bodh - S.C. Paranjape
8. Sangeet Darshika - Navigopal Banerjee
9. Sangeet Shastra Darpan - Shanti Gowardhan Part I, II & III
10. Dawadhavi and Sangeet - Lalit Kishore singh
11. Shrimallakshay Sangeetam - Chatur Pandit.

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PSYCHOLOGY

PAPER - I

PSYCHOLOGICAL STATISTICS M.M.:50

(Paper Code-0250)

UNIT-I Statistics : Meaning and application in Psychology, nature of score, categorical and continuous variables, frequency distribution, Graphic representation of data.

UNIT-II Measures of Central Tendency : Mean, Median and mode of group and un group data, Measures of variability : Range, S.D., Q.D., A.D., applications of measures of central tendency and variability.

UNIT-III Nature and characteristics of normal probability curve : concept of skewness and Kurtosis, Correlation : Concept, Types and methods - rank difference and product moment (in ungrouped data), Biserial and Tetrachoric coefficient.

UNIT-IV Inferential statistics : Concept of null Hypothesis, level of significance, type I error & type II error, T-test (uncorrelated data)

UNIT-V Distribution free statistics : Chi-square, Median and sign test, applications of computer in psychological statistics.

REFERENCES :

1. Siegel S., (1994) Non parametric statistics New York : Mcgraw Hill

   Garret : Statistics in Psychology and Education Times of India Publisher.

2. कपिल एस. के. – सांख्यिकी के मूल तत्व

   गैरेट – मनोविज्ञान एवं शिक्षा में, सांख्यिकी

PAPER - II (Optional)

(A) HUMAN DEVELOPMENT M.M.:50

(Paper Code-0251)

Candidate has to opt. any one of the following Optional papers.

UNIT-I Concept of Human Development, Theories of Human Development : Psychoanali-tical and Maslow, Determinants of Human Development - Biological, social, cultural factors, Approaches to study human developments : Longitudinal and cross - sectional.

UNIT-II Socialisation : Role of family, peers and school, Media and socialisation, Ecological factors in Human Development, Cognitive Development : Theoritical Perspectives Piaget, Information Processing, Vyogotsky.

UNIT-III Self and Identity : Emergence of self, Development of personal identity, identity crises, Physical and sexuel maturation, Sequential development of emotions.

UNIT-IV Development of morality and self concept, Development of gender differences and gender roles. Role of marriage, family and occupation in Human Development.

UNIT-V Problems of Aging - Cognitive, conative, affective, Developmental Disabi-lities.

BOOK RECOMMENDED :

1. Berk L.E. (1989) Child Development. Boston : Allyn and Bacon

2. Santrock J.W. (1999) Lifespan development. New York McGraw Hill.
3. E.B. Hurlock (1997) Development Psychology : A life span approach. V, edition.
4. शाह गोवर्धन – विकासात्मक मनोविज्ञान

PAPER - II (Optional)

(B) ENVIRONMENTAL PSYCHOLOGY M.M.:50

(Paper Code-0252)

UNIT-I Evaluing environmental ethics from values about nature in the ancient India systems. Earth as a living system, Psychological approaches to environment : Eco cultural Psychology (Berry), Bio-social Psychology (Dawson), Ecological Psychology (Berkar) Person Environment Transactions (sokols, Itlelson)

UNIT-II Effects of environment on behaviour : Noise pollution chemical Pollution, crowding and personal space. Effect of behaviour on environment : Perception, Preferences and awareness of environment.

UNIT-III Human Nature and environmental problems : Pro-social and pro environment behaviours, Eco-systems and their components Demography : Mortality and fertility, Resource Use : Common Property resources, Sustainable Development, Ecology : Acculturation and Psychological adaptation.

UNIT-IV Methods : Naturalistic observetion and field surveys. Environmental Assessment : Naturalistic observation and field surveys Socio - Psychological dimensions of environments impact Environmental deprivation : Nature and consequences, Creating environmental awareness - Social Movements : Chipko, Tehri Narmad.

UNIT-V Application of Psychology in man environment fit : Education - Classroom environment, Industry - Industrial / Organisational effectiveness, Health - Physical, mental and spiritual, Social - Communal harmony and National integration.

REFERENCES :

1. Goldsmith E. (1991) - The way : The ecological world vic Boston : Shambhala.
2. Jain U (1987) The Psychological consequences of crowding New Delhi : Sage.
3. Mishra R.C. Sinha D & Berry, J.W. (1996) Ecology, Community and life style, New Delhi.

PSYCHOLOGY PRACTICALS M.M.:50

This paper carries 50 marks. It comprises of two parts. Part A comprises of psychological experiments and testing while part B comprises of complition of Project Report.

PART - A

Note : From the following experiment any 5 are to be done-

1. Bilateral transfer of training.
2. Measurement of Illusion.
3. Habit interference.
4. Effect of need priority on selection of Advertising material.

5. Effect of mental fatigue upon performance.
6. Reaction Time
7. Effect of frustration on learning.
8. Depth Perception.

Note : From the following tests any 4 are to be done-

1. Level of aspiration
2. Need for guidence
3. Maturity scale
4. Attitude Scale.
5. Classroom environment scale.
6. Mental health
7. Family environment test
8. Test of Moral values.

PART - B

The condidate will be alloted a topic of project by the departmental committee. He/she is required to carry out a small scale project based on small sample. He/she is required to complet the project and submit its report. 15-20 pages, covering all major steps of scientific enquiry under the supervision of the departmental teacher. This will be the part of practical work. The soggested areas for the project work are as under Mental health, sibling rivarly, deprivation, identity crises, drug abuse aging media effect, woman employment, Job sotisfaction, stress, stren management, problems of adolscent etc.

DISTRIBUTION OF MARKS

Conduction of Experiment	-	10 marks
Administration of test	-	10 marks
Evaluation of Project Report and Practical record	-	10 marks
Viva - Voce	-	10 marks

Note : Candidate is required to attend practical work regularly. His/Her attendence should not be less than 75%. If his / her practical work performance is not satisfactory, he / she shall be debarred from the examinations.

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ANTHROPOLOGY

PAPER-I (Paper Code-0275)

"FUNDAMENTALS OF HUMAN GENETICS & HUMAN GROWTH"

AIM- The aim of this paper is to introduce the students the basics of Human Genetics and Human Growth.

UNIT-I Human Genetics : aims and scope. Cell division : Mitosis and Meiosis. Mendelism, Chromosomes ; Normal and Abnormal chromosomes. Genes, concept of DNA & RNA. Types of Inheritance : autosomal, (Dominant and Recessive). Sex linked Inheritance.

UNIT-II Concept of Race. Formation of Racial groups. Criteria for racial classification. Racial elements in India. Major stocks of the world and their broad sub divisions.

UNIT-III Types of twins and their importance in genetic investigation. Inheritance of ABO Blood groups, P.T.C., Colour blindness and dermatoglyphics. Genetic councelling, Eugenics. Population Genetics.

UNIT-IV Definition and scope of Human growth. Methods of studying human growth and Development. Ageing, Nutritional requirement for normal growth. Common nutritional disorder (Protein, Fat, Carbohydrates, Mineral, Vitamin).

UNIT-V Ecology : definition and scope. Varieties of human ecosytems. Environmental Population. Definition, nature and scope of biological demography. Demographic Profiles : Fertility, Mortality, Morbidity.

RECOMMENDED READINGS :

1. Agrawal S.N. : India Population Problems
2. Bogue : Principles of Demography
3. Bresler : Human Ecology
4. Gran and Shamir : Methods of Research in Human Growth
5. Hami.II. : Biochemical Genetics Man
6. Harrison. A.E. (editor) : Human Biology
7. Phyllis and Home, P.S. : Basic nutrition in health & disease
8. Race, R.R. & Sanger R. : Blood Group in Man
9. Stern C. : Principles of Human Genetics
10. Tanner, J.M. : Human Growth
11. Theodarson : Studies in Human Ecology
12. Walson and Lowry : Growth and Development of Children
13. Winchester A.W. : Principal of Genetics
14. रघुवंशी अरूण एवं चन्द्रलेखा : पर्यावरण प्रदूषण
15. Sinnot, Dunn & Dozansky : Principles of Genetics

PAPER-II (Paper Code-0276)

THEORIES IN SOCIAL CULTURAL ANTHROPOLOGY

AIM : The main aim of this course is to introduce the student about the basic pricinciples and Theories of Social cultural Anthropology to-provide preliminary understatnding of various theoretical models evolved by Social and Cultural Anthropology.

UNIT-I The contributions made by the following Anthropologists to Social-Cultural Anthropology. (I) E.Durkheim, (II) F. Boas, (III) R. Redcfield, (IV) A. L. Kroeber, (V) S.C. Dube, (VI) M.N. Shrinivas, (VII) L.P. Vidyarthi.

UNIT-II Evolution: Biological and cultural Evolutionism; classical Evolutionism; E.B. Tylor, L.H. Morgan.

Neo - Evolutionism; jLeslie white, Gordon childe.
Culture traits, Culture Complex, Culture Area, Culture focus.
Diffusion of Culture : British diffusionist : Genrman - Austrian diffusionist (Kuttre kriese American diffusionist (Culture Area).

UNIT-III Function and structure: Functionalism (Malinowski) and Structure Functionalism (Redcliffe Brown) Structuralism (Levi strauss).

UNIT-IV Personality : Basic personality and Model personality.
Culture pattern : Configurationalism (Ruth Benedict). Anthropological study of National character.

UNIT-V Feild work tradition in Anthropology Major tools of Research: Schedule, Questionaire, Participant observation, interview, case study, Geneological Method. The main bases of Anthropological Methods: Historical Method, Comparative Method and Functional Method.

PAPER-III

PRACTICAL

Obejctive : The main of this practical coures is to introduce the student about the tools and Method, analysis & statistical methods used in Human Biology. Laboratory Procedures in blood grouping and dermatoglyphics would give confidence in Dealing with all the applied dimensions they process.

PART-I : Somatometry :

(a) Measurements on body :
(i) Height vertex, (ii) Height tragus, (iii) Suprasternale height, (iv) Biacromial Breadth, (v) Bi-illioncristal breadth, (vi) Tibial Height, (vii) Upper extremity Length, (viii) Sitting height, (ix) height dactylion, (x) Body weight.

(b) Head and Face Measurement :
(i) Morphological upper facial length. (ii) Physiognomic upper facial length.
(iii) Morphological facial length. (iv) Bizygomalic breadth.
(v) Max head length (vi) Max head breadth
(vii) Nasal length (viii) Nasal breadth

(c) Indices :
(i) Cephalic Index (ii) Nasal Index
(iii) Facial Index

PART-II Genetic Traits :

ABO blood group ; colour blindness, PTC taste sensitivity, Dermatioglyphics, Methods of taking finger and palm prints and their analysis.

PART-III Statistics

Mean, Median, Standard deviation, X^2 test.

BOOKS RECOMMENDED :

1. Basin M.K. and I.P. Singh : Anthropometry
2. Cummins H. and Midlo C. : An Introduction of Dermatoglyphics
3. Dunsford and Bowley : Blood Group Techniques
4. Fisher R.S. : Statistical methods for Research Workers
5. मित्रा, मिताश्री : प्रायोगिक मानव विज्ञान भाग-२
6. Olivia : Practical Anthropology

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भाषाविज्ञान

प्रश्न -पत्र प्रथम

भाषा का सामाजिक परिप्रेक्ष्य (पेपर कोड-0238) कुल अंक : 75

इकाई-1 व्यक्ति, भाषा, एवं समाज - भाषा-ज्ञान - सहजात एवं सामाजिक संदर्भ, भाषा-समुदाय, भाषा-संप्रेषण, साधन के रूप में, साध्य के रूप में, भाषा एवं अस्मिता, भाषा के माध्यम से सामाजिक संरचना ।

इकाई-2 भाषा का सामाजिक संदर्भ - मानक भाषा, परिनिष्ठित भाषा, पिजिन एवं क्रियोल, क्षेत्रीय भाषा, संपर्क-भाषा, डिग्लोसिया (भाषा - द्वैत) ।

इकाई-3 भाषा-भेद - सामाजिक एवं क्षेत्रीय भेद, सामाजिक एवं भाषिक भेद में संबंध, समाजभाषिक परिवर्त ।

इकाई-4 भाषा-नियोजन - उद्देश्य, राष्ट्रीय नियोजन के अंग के रूप में भाषा-नियोजन, भाषा-मानकीकरण ।

इकाई-5 द्विभाषिकता एवं बहुभाषिकता - कोड-मिश्रण एवं कोड-परिवर्तन ।

निर्धारित पुस्तकें :

1. हिन्दी का सामाजिक संदर्भ - रामनाथ सहाय एवं अन्य (सं.), केन्द्रीय हिन्दी संस्था, आगरा
2. हिन्दी भाषा का समाज शास्त्र - रवीन्द्रनाथ श्रीवास्तव
3. हिन्दी भाषा की सामाजिक संरचना - डॉ. भोलानाथ तिवारी (सं.)
4. हिन्दी का सामाजिक भूमिका - डॉ. भोलानाथ तिवारी एवं मुकुल प्रियदर्शिनी
5. Socioliryuistics : R.S. Hudson, Cambridge University Press Cambridge
6. An Introduction to Sociolinguistics : R. Wardhangh, Penguin, Harm.

प्रश्न -पत्र द्वितीय

भाषा एवं साहित्य (पेपर कोड-0239) कुल अंक : 75

इकाई-1 भाषा एवं साहित्य का संबंध - मानक भाषा और काव्य भाषा, सामान्य भाषा और काव्य भाषा, भावनात्मक भाषा एवं वैज्ञानिक तथा तकनीकी भाषा, भाषा की सर्जनात्मकता, भाषा का सौंदर्यशास्त्र, काव्यशास्त्र एवं साहित्यिक समीक्षा ।

इकाई-2 शैली एवं प्रकार्य - शैली विज्ञान एवं भाषाविज्ञान का संबंध, शैली की उपयोगिता, शैली-भेद एवं संदर्भ-भेद, भाषा प्रयोग एवं संदर्भ ।

इकाई-3 प्रोक्ति - परिभाषा एवं विभिन्न आधारों पर प्रोक्ति के प्रकार; चयन, विचलन, समांतरता, प्रतीकात्मकता एवं बिम्बात्मकता ।

इकाई-4 भाषा-शिक्षण - सिद्धांत एवं महत्व, भाषा-शिक्षण की विधियाँ, मातृभाषा शिक्षण, अन्य भाषा-शिक्षण, अन्य भाषा के रूप में हिन्दी का शिक्षण, भाषा-शिक्षण में व्याघात, संस्कृति का प्रभाव ।

इकाई-5 साहित्य-शिक्षण - साहित्य-शिक्षण : उद्देश्य, विधियाँ, एवं सिद्धांत ; कविता-शिक्षण, नाट्य-शिक्षण, निबंध-शिक्षण, कहानी-शिक्षण का परिचय ; साहित्य-शिक्षण में दृश्य-श्रण्य उपकरणों का उपयोग एवं महत्व ।

निर्धारित पुस्तकें :

1. शैलीविज्ञान - भोलानाथ तिवारी
2. प्रारंभिक शैलीविज्ञान - डॉ. चित्तरंजनकर
3. शैलीविज्ञान - सुरेश कुमार
4. हिन्दी भाषा-शिक्षण - रवीन्द्रनाथ श्रीवास्तव एवं अन्य
5. भाषाशिक्षण - मनोरमा गुप्त

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STATISTICS

PAPER-I

APPLIED STATISTICS

(Paper Code-0289)

UNIT-I Indian Applied Statistical System : Present official statistical system in India, Methods of collection of official statistics, their reliability and limitations, and the principal publications containing such statistics on the topics- population agriculture, industry, trade, price, labour and employment, transport and communications, banking and finance. (15L)

UNIT-II Demographic Methods : Sources of demographic data - census, register, adhoc survey, hospital records, demographic profiles of Indian census. Measurement of mortality and life tables- crude, death rates, infant mortality rates, death date by cause, standardized death rate, complete life table - its main features, mortality rate and probability of dying, use of survival tables. Measurement of fertility - crude birth rate, general fertility rate, total fertility rate, gross reproduction rate, net reproduction rate. (25L)

UNIT-III Economic Statistics : Index number - its definition, applications of index numbers. price relatives and quantity or volume relatives, link and chain relatives, problems involved in computation of index numbers, use of averages, simple aggregative and weighted average methods, Laspeyre's, Paasche's and Fisher's index numbers, time and factor reversal tests of index numbers. Consumer Price Index. (20L)

UNIT-IV Static laws of demand and supply, price elasticity of demand, analysis of income and allied size distribution - Pareto distribution, graphical test, fitting of Pareto's law, log normal distribution and its properties, Lorenz curve and estimation of elasticity from time series data. Gini's coefficient.

UNIT-V Time Series Analysis : Economic time series, its different components, Illustrations, additive and multiplicative models, determination of trend, growth curves, analysis of seasonal fluctuations construction of seasonal indices. (15L)

REFERENCES :

1. Croxton F.E. and Cowden D.J. (1969) : Applied General Statistics, Prentice Hall of India.
2. Goon, A.M., Gupta, M.K., Das gupta, B (1986) : Fundamentals of statistics, vol.-II, World Press, Calcutta.
3. Guide to Current Indian Offical Statistics : Central Statistical Organization, Govt. of India, New Delhi.
4. Saluja M.P. ( ) Indian Official statistical Systems, Statistical Publishing Society, Calcutta.
5. Srivastava, O.S. (1983) : A textbook of Demography, Vikas Publishing.

ADDITIONAL REFERENCES :

1. Gupta and Mukhopadhyay P.P. ( ) Aplied Statistics, Central Book Agency.
2. Pressat R. (1978) : Statistical Demography, Methuen and Co. Ltd.

PAPER-II

STATISTICAL QUALITY CONTROL AND COMPUTATIONAL TECHNIQUES

(Paper Code-0290)

UNIT-I Importance of statistical methods in industrial research and practice, specification of items and lot qualities corresponding to visual gauging, count and measurements, types of inspection, determination of tolerance limits. General theory of control charts, causes of variation in quality, control limits, sub-grouping, summary of out-ot control criteria, charts for attributes, np chart, p - chatr, c- chart, u- chart, Charts for variables- X- and R charts, design of X and R charts versus p-charts, process capability studies. (30L)

UNIT-II Principle of acceptance sampling- problem of lot acceptance, stipulation of good and bad lots, producer's and consumers risks, single and double sampling plans, their OC functions, concepts of AQL, LTPD, AOQL, average amount of inspection and ASN function, rectifying inspection plans, Sampling inspection plans, Indian Standards Tables Part-I (including applications), IS 2500 Part I. (15L)

UNIT-III Computational techniques : Difference tables and methods of inferpolation, Newton's and Lagrange's methods of interpolation, Divided differences, numerical differentiation and integration, Trapezoidal rule, Simpson's one-third formula, iterative solution of non-linear equations. (15L)

UNIT-IV Linear Programming : Elementary theory of convex sets, definition of general linear programming problems (LPP), formulation problems of LPP, examples of LPP, Problems occurring in various fields, graphical and Simplex method of solving an LPP, artificial variables, duality of LPP. Transportation Problem (non-degenerate and balanced cases only), Assignment Problem. (30L)

UNIT-V Four short notes, one from each unit. Student have to answer any two.

REFERENCES :

1. Brownless K.A. (1960) : Statistical theory and Methodology in Science and Engineering. John Wiley and Sons.
2. Grant E.L. (1964) : Statistical Quality Control, McGraw Hill.
3. Duncan A.J. (1974) : Quality Control and Industrial Statistics, Traporewala and Sons.
4. Gass S.I. (1975) : Linear Programming Methods and Applications, McGraw Hill.
5. Rajaraman, V. (1981) : Computer Oriented Numerical Methods, Prentice Hall.
6. Sastry S.S. (1987) : Introductory Methods of Numerical Analysis, Prentice Hall.
7. Taha H.A. (1989) : Operations Research : An Introduction, Macmillan Publishing Company.

ADDITIONAL REFERENCES :

1. Bowker H.A. and Liberman G.T. (1962) : Engineering Statistics, Prentice Hall.
2. Cowden D.J. (1960) : Statistical Methods in Quality Control, Asia Publishing Society.
3. Garvin W.W. (1960) : Introduction to Linear Programming, McGraw Hill.
4. Mahajan M. (2001) : Statistical Quality Control, Dhanpat Rai & Co. (P) Ltd.
5. Rao S.S. (1984) : Optimization Theory and Applications, Wiley Eastern.

6. Krishnamurthy E.V. and Sen S.K. (1976) : Computer Based Numerical Algorithms, Affiliated East-West Press.

PRACTICAL

1. Computing measures of mortality & fertility, Construction of life tables and examples involving use of life tables, Graduation of mortality rates by Gompertz curve, fitting of a logistic curve.
2. Construction of Index Numbers by Laspeyre's, Paasche's, Fisher's method.
3. Determination of trend in a time series, construction of seasonal indices.
4. Fitting of Pareto curve to income data, Lorenz curve of concentration, Estimation of price elasticity of demand form time series data.
5. Drawing of X-R, np, p and c- charts. Drawing of OC curve for single and double sampling plans for attributes, AOQ and ATI curves.
6. Construction of difference tables, use of Newton's Lagrange's methods of interpolation and divided difference formulae, numerical evaluation of integrals using Trapezoidal and Simpson's one-third formulae, solution of non-linear equation by Newton-Raphson iterative method.
7. Formulation of LPP's and their duals. Solving LPPs by graphical and simplex methods, transportation and assignment problems.

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MATHEMATIS

TThere shall be three theory papers. Two compulsory and one optional Each paper carrying 50 marks is divided into five units and each unit carry equal marks.

PAPER - I

ANALYSIS

(Paper Code-0279)

REAL ANALYSIS

UNIT-I Series of arbitrary terms. Convergence, divergence and Oscillation. Abel's and Dirichlet's test. Multiplication of series. Double series.

Partial derivation and differentiability of real-valued functions of two variables. Schwarz and Young's theorem. Implicit function theorem.

Fourier series. Fourier expansion of piecewise monotonic functions.

UNIT-II Riemann integral. Intergrability of continuous and monotonic functions. The fundamental theorem of integral calculus. Mean value theorems of integral calculus.

Improper integrals and their convergence, Comparison tests. Abel's and Dirichlet's tests. Frullani's integral. Integral as a function of a parameter. Continuity, derivability and integrability of an integral of a function of a parameter.

COMPLEX ANALYSIS

UNIT-III Complex numbers as ordered pairs. Geometric representation of Complex numbers. Stereographic projection.

Continuity and differentiability of Complex functions. Analytic functions. Cauchy-Riemann equations. Harmonic functions.

Elementary functions. Mapping by elementary functions.

Mobius transformations. Fixedpoints, Cross ratio. Inverse points and critical mappings. Conformal mappings.

METRIC SPACES

UNIT-IV Definition and examples of metric spaces. Neighbourhoods, Limit points, Interior points, Open and closed sets, Closure and interior. Boundary points, Sub-space of a metric space. Cauchy sequences, Completeness, Cantor's intersection theorem. Contraction principle, Construction of real numbers as the completion of the incomplete metric space of rationals. Real numbers as a complete ordered field.

UNIT-V Dense subsets. Baire Category theorem. Separable, second countable and first countable spaces. Continuous functions. Extension theorem. Uniform continuity, Isometry and homeomorphism. Equivalent metrics. Compactness,Sequential compactness. Totally bounded spaces. Finite intersection property. Continuous functions and compact sets, Connectedness, Components, Continuous functions and connected sets.

REFERENCES :

1. T.M. Apostol, Mathematical Analysis, Narosa Publishing House, New Delhi, 1985.
2. R.R. Goldberg, Real Analysis, Oxford & IBH publishing Co., New Delhi, 1970.
3. S. Lang, Undergraduate Analysis, Springer-Verlag, New York, 1983.
4. D. Somasundaram and B. Choudhary, A First Coarse in Mathematical Analysis, Narosa Publishing House, New Delhi, 1997.

5. Shanti Narayan, A Course of Mathematical Analysis, S. Chand & Co. New Delhi.
6. P.K. Jain and S.K. Kaushik, An introduction to Real Analysis, S. Chand & Co., New Delhi, 2000.
7. R.v. Churchill & J.W. Brown, Complex Variables and Applications, 5*" Edition, McGraw-Hill, NewYork, 1990.
8. MarkJ. Ablowitz & A.S.Fokas, Complex Variables : Introduction and Applications, Cambridge University Press, South Asian Edition, 1998.
9. Shanti Narayan, Theory of Functions of a Complex Variable, S. Chand & Co., New Delhi.
10. E.t. Copson, Metric Spaces, Cambridge University Press, 1968.
11. P.K. Jain and K. Ahmad, Metric Spaces, Narosa Publishing House, New Delhi, 1996.
12. G.F. Simmons, Inroductin to Topology and Modern Analysis, McGraw-Hill, 1963.

PART - II

ABSTRACT ALGEBRA

(Paper Code-0280)

UNIT-I Group-Automorphisms, inner automorphism. Automorphism groups and their computations, Conjugacy relation, Normaliser, Counting principle and the class equation of a finite group. Center for Group of prime-order, Abelianizing of a group and its universal property. Sylow's theorems, Sylow subgroup, Structure theorem for finite Abelian groups.

UNIT-II Ring theory-Ring homomorphism. Ideals and Quotient Rings. Field of Quotients of an Integral Domain, Euclidean Rings, Polynomial Rings, Polynomials over the Rational Field. The Eisenstien Criterion, Polynomial Rings over Commutative Rings, Unique factorization domain. R unique factorisation domain implies so is R [x1, x2 ..... xn] Modules, Submodules, Quotient modules, Homomorphism and Isomorphism theorems.

UNIT-III Definition and examples of vector spaces. Subspaces. Sum and direct sum of subspaces, Linear span. Linear dependence, independence and their basic properties. Basis. Finite dimensional vector spaces. Existence theoremfor bases. Invariance of the number of elements of a basis set. Dimension. Existence of complementary subspace of a subspace of a finite dimensional vector space. Dimension of sums of subspaces. Quotient space and its dimension.

UNIT-IV Linear transformations and their representation as matrices. The Algebra of linear transformations. The rank nullity theorem. Change of basis. Dual space. Bidual space and natural isomorphism. Adjoint of a linear transformation. Eigenvalues and eigenvectors of a linear transformation. Diagonalisation. Annihilator of a subspace. Bilinear, Quadratic and Hermitian forms.

UNIT-V Inner Product Spaces-Cauchy-Schwarz inequality. Orthogonal vectors. Orthogonal Complements. Orthonormal sets and bases. Bessel's inequality for finite dimensional spaces. Gram-Schmidt Orthogonalization process.

REFERENCES :

1. I.N. Herstein, Topics in Algebra, Wiley Eastern Ltd., New Delhi, 1975.
2. N. Jacobson, Basic Algebra, Vols. I & II. W.H. Freeman, 1980 (also published by Hindustan Publishing Company).
3. Shanti Narayan, A Text Book of Modern Abstract Algebra, S.Chand & Co. New Delhi.

4. K.B. Datta, Matrix and Linear Algebra, Prentice Hall of India Pvt. Ltd., New Delhi, 2000.
5. P.B. Bhattacharya, S.K. Jain and S.R. Nagpal, Basic Abstract Algebra (2"" Edition) Cambridge University Press, Indian Edition, 1997.
6. K. Hoffman and R. Kunze,Linear Algebra, 2"" Editon, Prentice Hall. Englewood Cliffs, New Jersey, 1971.
7. S.K. Jain, A. Gunawardena & P.B. Bhattacharya, Basic Linear Algebra with MATLAB. Key College Publishing (Springer-Verlag) 2001.
8. S. Kumaresan, Linear Algebra, A.Geometric Approach, Prentice-Hall of India, 2000.
9. Vivek Sahai and Vikas Bist, Algebra, Norosa Publishing House, 1997.
10. I.S. Luther and I.B.S.Passi, Algebra, Vol. I-Groups, Vol. II-Rings. Narosa Publishing House (Vol. I-1996, Vol. II-1999)
11. D.S. Malik, J.N. Mordeson, and M.K. Sen, Fundamentals of Abstract Algebra, McGraw-Hill International Edition, 1997.

PAPER - III - (OPTIONAL)

(I) PRINCIPLES OF COMPUTER SCIENCE

(Paper Code-0281)

UNIT-I **Data Storage -** Storage of bits. Main Memory. Mass Storage. Coding Information of Storage. The Binary System. Storing integers, storing fractions, communication errors.
Data Manipulation - The Central Processing Unit. The Stored-Program Concept. Programme Execution. Other Architectures. Arithmetic/Logic Instructions. Computer-Peripheral Communication.

UNIT-II **Operating System and Networks -** The Evolutionof Operating System. Operating System Architecture. Coordinating the Machine's Activities. Handling Competition Among Process. Networks. Networks Protocol.
Software Engineering - The Software Engineering Discipline. The Software Life Cycle. Modularity. Development Tools and Techniques. Documentation. Software Ownership and Liability.

UNIT-III **Algorithms -** The Concept of an Algorithm, Algorithm Representation. Algorithm Discovery. Iterative Structures. Recursive Structures. Efficiency and Correctness. (Algorithms to be implemented in C^{++}).
Programming Languages - Historical Perspective. Traditional Programming Concepts, Program Units. Language Implementation. Parallel Computing. Declarative Computing.

UNIT-IV **Data Structures -** Arrays. Lists. Stacks. Queues. Trees. Customised Data Types. Object Oriented Programming.
File Structure - Sequential Files. Text Files. Indexed Files. Hashed Files. The Role of The Operating System.
Database Structure - General Issues. The Layered Approach to Database Implementation. The Relational Model. Object-Oriented Database. Maintaining Database Integrity. E-R models.

UNIT-V **Artifical Intelligence -** Some Philosophical Issues. Image Analysis. Reasoning, Control System Activities. Using Heuristics. Artificial Neural Networks. Application of Artificial Intelligence.
Theory of Computation - Turning Machines. Computable functions. A Non computable Function. Complexity and its Measures. Problem Classification.

REFERENCES :

1. J. Glen Brookshear, Computer Science : An Overview, Addition -Wesley.
2. Stanley B. Lippman, Josee Lojoie, C^{++} Primer (3rd Edition), Addison-Wesley.

PAPER - III - (OPTIONAL)

(II) DISCRETE MATHEMATICS

(Paper Code-0282)

UNIT-I **Sets and Propositions -** Cardinality. Mathematical Induction, Principle of Inclusion and exclusion.

Computability and Formal Languages - Ordered Sets. Languages. Phrase Structure Grammars. Types of Grammars and Languages. Permutations. Combinations and Discrete Probability.

UNIT-II **Relations and Functions -** Binary Relations, Equivalence Relations and Partitions. Partial Order Relations and Lattices. Chains and Antichains. Pigeon Hole Principle.

Graphs and Planar Graphs - Basic Terminology. Multigraphs. Weighted Graphs. Paths and Circuits. Shortest Paths. Eulerian Paths and Circuits. Travelling Salesman Problem. Planner Graphs.

TREES.

UNIT-III **Finite State Machines -** Equivalent Machines. Finite State Machines as Language Recognizers. Analysis of Algorithms - Time Complexity. Complexity of Problems. Discrete Numeric Functions and Generating Functions.

UNIT-IV1 **Recurrence Relations and Recursive Algorithms -** Linear Recurrence Relations with Constant Coefficients. Homogeneous Solutions. Particular Solution. Total Solution. Solution by the Method of Generating Functions. Brief review of Groups and Rings.

UNIT-V **Boolean Algebras -** Lattices and Algebraic Structures. Duality, Distributive and Complemented Lattices. Boolean Lattices and Boolean Algebras. Boolean Functions and Expressions. Prepositional Calculus. Design and Implementation of Digital Networks. Switching Circuits.

REFERENCES :

C.L. Liu, Elements of Discrete Mathematics, (Second Edition), McGraw Hill, International Edition, Computer Science Series, 1986.

PAPER - III - (OPTIONAL)

(III) APPLICATION OF MATHEMATICS IN FINANCE AND INSURANCE

(Paper Code-0283)

Application of Mathematics in Finance :

UNIT-I **Financial Management -** An overview. Nature and Scope of Financial Management. Goals of Financial Management and main decisions of financial management. Difference between risk, speculation and gambling.

Time value of Money-Interest rate and discount rate. Present value and future valuediscrete case as well as continuous compounding case. Annuities and its kinds.

UNIT-II Meaning of return. Return as Internal Rate of Return (IRR). Numerical Methods like Newton RaphsonMethod to calculate IRR. Measurement of returns under uncertainty

situations. Meaning of risk. Difference between risk and uncertainty. Types of risks. Measurement of risk. Calculation of security and Portfolio Risk and Return-Markowitz Model. Sharpe's Single Index Model Systematic Risk and Unsystematic Risk.

UNIT-III Taylor series and Bond Valuation. Calculation of Duration and Convexity of bonds. Financial Derivaties - Futures. Forward. Swaps and Options. Call and Put Option. Call and Put Parity Theorem. Pricing of contingent claims through Arbitrage and Arbitrage Theorem.

Application of Mathematics in Insurance

UNIT-IV Insurance Fundamentals - Insurance defined. Meaning of loss. Chances of loss, peril, hazard, and proximate cause in insurance. Costs and benefits of insurance to the society and branches of insurance-life insurance and various types of general insurance. Insurable loss exposuresfeature of a loss that is ideal for insurance. Life Insurance Mathematics - Construction of Mortality Tables. Computation of Premium of Life Insurance for a fixed duration and for the whole life.

UNIT-V Determination of claims for General Insurance - Using Poisson Distribution and Negative Binomial Distribution-the Polya Case.

Determination of the amount of Claims in General Insurance - Compound Aggregate claim model and its properties, and claims of reinsurance. Calculation of a compound claim density function. F-recursive and approximate formulae for F.

REFERENCES :

1. Aswath Damodaran, Corporate Finance - Theory and Practice, John Wiley & Sons Inc.
2. John C. Hull, Options, Futures, and Other Derivatives, Prentice-Hall of Indian Private Limited.
3. Sheldon M. Ross, An Introduction to Mathematical Finance, Cambridge University Press.
4. Mark S. Dorfman, Introduction to Risk Management and Insurance, Prentice Hall, Englwood Cliffs, New Jersey.
5. C.D. Daykin, T. Pentikainen and M. Pesonen, Practical Risk Theoryfor Actuaries, Chapman & Hall.

PAPER - III - (OPTIONAL)

(Paper Code-0284)

Theory component will have maximum marks 30.

Practical component will have maximum marks 20.

(IV) PROGRAMMING IN C AND NUMERICAL ANALYSIS (Thoury & Practical)

Programming in C

UNIT-I Programmer's model of a computer. Algorithms. Flow Charts. Data Types. Arithmetic and input/output instructions. Decisions control structures. Decision statements. Logical and Conditional operators. Loop. Case control structures. Functions. Recursions. Preprocessors. Arrays. Puppetting of strings. Structures. Pointers. File formatting.

Numerical Analysis

UNIT-II Solution of Equations : Bisection, Secant, Regula Falsi, Newton's Method, Roots of Polynomials : Interpolation : Lagrange and Hermite Interpolation, Divided Differences, Difference Schemes, Interpolation Formulasusing Differences. Numerical Differentiation.

Numerical Quadrature : Newton-Cote's Formulas. Gauss Quadrature Formulas, Chebychev's Formulas.

UNIT-III Linear Equations : Direct Methods for Solving. Systems of Linear Equations (Guass Elimination, LU Decomposition, Cholesky Decomposition), Iterative Methods (Jacobi, GaussSeidel, Relaxation Methods).

The Algebraic Eigenvalue problem : Jacobi's Method, Givens' Method, Householder's Method, Power Method, QR Method, Lanezos' Method.

UNIT-IV Ordinary Differential Equations : Euler Method, Single-step Methods, Runge-Kutta's Method, Multi-step Methods, Milne-Simpson Method, Methods Based on Numerical Integration, Methods Based on Numerical Differentiation, Boundary Value Problems, Eigenvalue Problems.

Approximation : Different Types of Approximation, Least Square Polynomial Approximation, Polynomial Approximation using Orthogonal Polynomials, Approximation with Trigonometric Functions, Exponential Functions, Chebychev Polynomials, Rational Functions.

Unit-V Monte Carlo Methods Random number generation, congruential generators, statistical tests of pseudo-random numbers.

Random variate generation, inverse tranform method, composition method, acceptancerejection method, generation of exponential, normal variates, binomial and Poisson variates.

Monte Carlo integration, hit or miss Monte Carlo integration, Monte Carlo integration for improper integrals, error analysis for Monte Carlo intergration.

REFERENCES :

1. Henry Mullish& Herbert L. Cooper, Spirit of C : An Introductionto Modern Programming, Jaico Publishers, Bombay.
2. B.W. Kernighan and D.M. Ritchie. The C Programming Language 2"d Edition, (ANSI features) Prentice Hall, 1989.
3. Peter A Darnel and Philip E. Margolis, C : A Software Engineering Approach, Narosa Publishing House, 1993.
4. Robert C. Hutehisonand Steven B. Just, Programming using C Language, McGraw Hill, 1988.
5. Les Hancock and Morris Krieger, The C Primer, McGraw Hill, 1988.
6. V. Rajaraman, Programming in C, Prentice Hall of India, 1994.
7. Byron S. Gottfried, Theory and Problems of Programming with C, tata McGraw-Hill Publishing Co. Ltd., 1998.
8. C.E. Froberg,Introduction to Numerical Analysis, (Second Edition), Addison-Wesley, 1979.
9. James B. Scarborough, Numerical Mathematical Anasysis, Oxford and IBHPublishing Co. Pvt. Ltd. 1966.
10. Melvin J. Maron, Numerical Analysis A Practical Approach, Macmillan publishing Co., Inc. New York, 1982.
11. M.K. Jain, 'S.R.K. lyengar, R.K. Jain, Numerical Methods Problems and Solutions, New Age International (P) Ltd., 1996.
12. M.K. Jain, S.R.K. lyengar, R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International (P) Ltd., 1999.
13. R.Y. Rubistein, Simulation and the Monte Carlo Methods, John Wiley, 1981.
14. D.J. Yakowitz Computational Probability and Simulation, Addison-Wesley, 1977.

PAPER - III - (OPTIONAL)

(V) MATHEMATICAL MODELLING

(Paper Code-0285)

The Process of Applied mathematics.

UNIT-I Setting up first-order differential equations - Qualitative solution sketching. Difference and differential equation growth models.

UNIT-II Single-species population models. Population growth-An age structure model. The spread of Technological innovation.

UNIT-III Higher-order linear models- A model for the detection of diabetes. Combat modes. Traffic models - Car-following models. Equilibrium speed distributions.

UNIT-IV Nonlinear population growth models. Prey-Predator models. Epidemic growth models. Models from political science - Proportional representation-cumulative voting, comparison voting.

UNIT-V Applications in Ecological and Environmental subject areas- Urban waste water management planning.

REFERENCES :

1. Differential equation models, Eds. Martin Braun, C.S. Coleman, D.A. Drew.
2. Political and Related Models, Steven. J. Brams, W.F. Lucas, P.D. Straftin (Eds.)
3. Discrete and System models, W.F. Lucas, F.S. Roberts, R.M. Thrall.
4. Life Science Models, H.M. Roberts & M. Thompson.

All volumes published as modules in applied Mathematics, Springer-Verlag, 1982.

5. Mathematical Modelling by J.N. Kapur, New Age International, New Delhi.

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SOCIOLOGY

PAPER - I

SOCIOLOGY OF TRIBAL SOCIETY M.M. 75

(Paper Code-0246)

UNIT-I The concept of Tribe.

Characteristics of Tribal society Distinction in Tribe and Caste.

UNIT-II Classification of Tribal people :-

Food gatherers and hunters, shifting cultivates, nomads, peasants settled agriculturists, artisans.

Unit-III Sociocultural profile - Kinship, marriage and family, religions beliefs cultural traditions.

UNIT-IV Social mobility and change sensitization.

Schemes of Tribal Development Various tribal movements.

UNIT-V Problems of Tribal people -

Poverty, illitracry, indebtedness, agrarian issues, exploitation study of tribal immunities in Chhattisgarh with special reference to "oraon", "Kanwar" and "Gond".

PAPER - II

SOCIAL RESEARCH METHODS M.M. 75

(Paper Code-0247)

UNIT-I Meaning and significance of Social Research.

Hypothesis and its formulation Scientific method and its applicability.

UNIT-II Positivism

Ethnography, observation, case study, content analysis.

Unit-III Types of Research -

Historical, descriptive, comparative exploratory, experimental.

UNIT-IV Techniques of data collection - survey sampling, Questionnaire, Interview schedule and Interview guide.

UNIT-V Meaning, importance and limitations of social statistics.

Graphs, diagrams and measures of central tendency - mean mode, mediaJ correlation.

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नृत्य (भरत नाट्यम)

इस विषय में दो सैद्धांतिक प्रश्न पत्र एवं एक प्रायोगिक परीक्षा होगी । पूर्णांक एवं उत्तीर्णांक इस प्रकार होंगे –

क्रं.	विवरण	पूर्णांक	उत्तीर्णांकत
1.	सिद्धांतिक प्रश्न पत्र प्रथम	50	17
2.	सैद्धांतिक प्रश्न पत्र द्वितीय	50	17
3.	प्रायोगिक	50	17
	योग	150	51

विस्तृत पाठ्यक्रम – सैद्धांतिक

प्रथम प्रश्न पत्र (पेपर कोड-0287)

1. गुप्त काल में आधुनिक काल तक नृत्य का इतिहास ।
2. नृत्य का परम्परागत परिवर्तन ।
3. नृत्य विषय संबंधी निबंध ।
4. नवरस विवरण ।
5. भारतीय प्रेक्षागृहों की जानकारी (भरत नाट्यमशास्त्र के द्वितीय अध्याय के अनुसार)

द्वितीय प्रश्न पत्र (पेपर कोड-0288)

1. ताण्डव और लाक्ष्य नृत्य का परिचय ।
2. (1) लोकधर्मी नाट्य परम्परा –
   किन्ही तीन की संक्षिप्त जानकारी – यक्षमान, कुचिपूड़ी, ----- ओट्टनदुल्लन ।
   (2) लोकनृत्य परिचय –
   (अ) कोलाट्टम, (ब) पिन्नल कोला पट्टम, (स) कोरतिकुम्मी, (द) कुचिपूड़ी, (इ) भांगड़ा (कोई भी चार)।
3. नायक – नायिका भेद निरूपण ।
4. भारतीय नृत्य में ताल का महत्व ।
5. नृत्य कलाकारों की जीवनी –
   (1) रुक्मिणी देवी अरूण्डेल, (2) श्रीमती वाला सरस्वती, (3) श्री शंभू महाराज, (4) श्री लच्छू महाराज ।
6. संक्षिप्त टिप्पणियाँ –
   (1) कीर्तनम्, (2) जावली, (3) वर्जम्, (4) तिल्लाना, (5) प्रलीकम् ।

प्रायोगिक

1. मौखिक मुद्रा प्रदर्शन –
   (1) समस्त असंयुक्त हरत्त मुद्राओं का विनियोग एवं पांच संयुक्त हस्त ----- विनियोग
   (2) जाति हस्त
   (3) दशावतार हस्त ।
2. सप्ततालों का जाति के अनुसार प्रयोग ।
3. देहाभ्यास – कूदना, झकना, अरमंडी (अर्धबैठक) मुरूमंडी, नऽय आदि ।
4. अष्टपदी या कीर्तनम् तथा पदम् या जावली का प्रदर्शन ।

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HOME SCIENCE

Paper - I

"HUMAN DEVELOPMENT"

(Paper Code-0253)

UNIT-I

1. Development-meaning of child growth and developement. Defferent aspects of gowth, principles of development, factors affecting child development, heredity and environment.
2. Stages of development -
   1. Physiology of pregnancy
   2. Prental
      (a) Reproductive system
      (b) Prenatal development
   3. Infancy
      (a) Early infancy
      (b) Babyhood
   4. Childhood
      (a) Early childhood
      (b) Late childhood
   5. Adolescence
      (a) Early adolescence
      (b) Late adolescence

   (ii) Prental growth and development -
      (a) Sources of studing prenatal life
      (b) Stages of growth prenatal and development
      (c) Factors affecting prenatal and development growth
         (1) Mother's food
         (2) Health of mother
         (3) Narcotics
         (4) Age of parents
         (5) Effect of season
         (6) Emotion of mother

UNIT-2

1. Effect of normal and scissoring delivery.
2. Adjustment to new environment -
   (a) Temperature
   (b) Respiration
   (c) Food consumption
   (d) Excretion
3. Physical development of infant-
   (a) Physical proportion
   (b) Height
   (c) Weight
   (d) Pulse rate
   (e) Respiration rate
   (f) Body temperature
   (g) Frequency of hunger.
4. Sensory development of infant
   (a) Light

(b) Sound
(c) Taste
(d) Smell
(e) Skin sensitivity

5. Motor activity of infants -
   (a) Mass activities
   (b) Specific activities -
      (i) Reflex activities
      (ii) Advanages of reflex action

6. Emotions of infants -
   (a) Types of emotions
   (b) Significance of emotions

7. Characteristics of infant behaviour -
   (a) Dependancy
   (b) Individual difference
   (c) Adjustment

UNIT-3 Childhood : Adolescence.

1. Characterstics of this stage.
2. Factors affecting growth and development during childhood and adolescence.
3. Physical growth height, weight, body proportion, teeth
4. Growth and development of internal organs (a) Nervous (b) Mental (c) Circulatory system (d) Digestive system, (e) Respiratory system (f) Tissues and muscles systems.
5. Development of motor abilities (i) Types of motor abilities (ii) importance and characteristics of motor abilities in childhood (iii) Development of motor skills, Types of motor skills (iv) Delayed motor development.

UNIT-4

6. Development of emotional behaviour-characteristics special emotions (affection, anger, fear, jealousy and worries) factors affecting emotional behaviour.
7. Social developments stages - (a) during infancy, (b) nursery school period (c) elementory school period (d) Factor affecting social development.
8. Development of intelligence - Types according to throndyke, theories regarding intellegence.

UNIT-5

9. Play meaning of play, work and play, theories of play, characteristics of children's play, types of play, factors effecting play and importance of play.
10. Habits :
    1. Definition.
    2. Functions performed by habits.
    3. Habits and learning
    4. Laws of habit formation-identical to laws of learning.
    5. Habit formation.
       (a) Principles of habit formation.
       (b) Rules for habit formation.
11. Children delinquency-Types causes and remedial measures.

द्वितीय - पेपर

आहार एवं पोषण विज्ञान

पूर्णांक-50

(पेपर कोड-0254)

यूनिट-1 पोषण

1. पोषण की परिभाषा ।
2. कार्यों के आधार पर पौष्टिक तत्वों का वर्गीकरण ।
   (अ) उष्मा प्रदान करने वाले कार्बोज, वसा ।
   (ब) शरीर का निर्माण करने वाले-प्रोटीन, खनिज तत्व ।
   (स) सुरक्षा व नियमन करने वाले जल, जीवन तत्व ।
3. **कार्बोज** - परिभाषा, कार्य पाचन, अभिपोषण, चयापचय, रक्त शंर्करा स्तर व इसके नियमन अधिकता का प्रभाव प्राप्ति का साधन एवं दैनिक आवश्यकता ।
4. **वसा** - परिभाषा, कार्य, वर्गीकरण, पाचन, अभिशोषण, चयापचय, संतृप्त व असंतृप्त वसीय अम्ल, आवश्यक वसीय अम्ल, कोलेस्टोरॉल कमी व अधिकता के प्रभाव एवं दैनिक आवश्यकता ।
5. **प्रोटीन** - परिभाषा, कार्य, वर्गीकरण, पाचन, अभिपोषण, चयापचय, नाइट्रोजन संतुलन, प्रोटीन का जैविक मूल्य, प्रोटीन का पूरक मूल्य, प्रोटीन व कैलोरी कुपोषण, प्राप्ति के साधन एवं दैनिक आवश्यकता ।
6. **खनिज तत्व** - सामान्य वर्गीकरण व कार्य, कार्य, अभिपोषण को प्रभावित करने वाले तत्व कमी व अधिकता के प्रभाव, साधन (कैल्शियम, फास्फोरस, लौहलवण, आयोडीन सोडियम, व क्लोराईड)
7. **विटामिन्स** - (जीवन तत्व) सामान्य वर्गीकरण व कार्य, कमी व अधिकता के प्रभाव, प्राप्ति के साधन, (जीवन सत्व ए.बी.सी.डी.ई. के)
8. **जल** - सामान्य कार्य, जल का संतुलन अधिकता के प्रभाव व निर्जलीकरण ।

यूनिट-2 आहार

1. आहार का वर्गीकरण व कार्य, आधारीय चार-भोज्य समूह व सात-भोज्य समूह
2. **अनाज** - प्रकार, रचना, संगठन, पकाने सेपहले की प्रक्रिया - मौलिंग, पालिशिंग, पारवाईलिंग, फनोरिंग, पारचिंग, अनाज को उपयोग करने के विभिन्न तरीके, अनाज-ताप, क्षार, खमीरीकरण व ब्रीडिंग के प्रभाव।
3. **दालें** - प्रकार, संलग्न, अंकुरण व खमीरीकरण के प्रभाव
4. **दूध** - प्रकार, संगठन, दूध से बने पदार्थ - दही, मक्खन, चीज आदि पाश्च्युराइलेशन एवम् होमोजीनाइजेशन।
5. **फल व सब्जियां** - वर्गीकरण, संगठन, वर्णक, प्रोटीन का महत्व, परिपक्व होने की प्रक्रिया ।
6. **अण्डा** - संगठन, पकाने का प्रभाव
7. **मांस मछली, पोल्ट्री** - संगठन, पकाने से होने वाले परिवर्तन ।
8. **शक्कर, गुड़, शहद** - संगठन, प्रकार, विधियों में उपयोग
9. **पेय पदार्थ** - वर्गीकरण, पोषण की दृष्टि से महत्व, अत्याधिक उपयोग का प्रभाव ।
10. **मसाले** - प्रकार, संगठन, पोषण की दृष्टि से महत्व ।

यूनिट-3

1. **खाद्य संरक्षण** - उद्देश्य, विधियां, घरेलू संरक्षण, औद्योगिक संरक्षण ।
2. **खाद्य पदार्थों में सड़ंद** - कारण, पहचान, उपचारात्मक विधियां
3. **भोज्य विषाक्तता** - कारण, प्रकार, पहचान, उपचारात्मक तरीके
4. **खाद्य मिलावट** - आवश्यकता, प्रकार, महत्वपूर्ण मिलावटी पदार्थ, मिलावटी पदार्थों को पहचानने की सरल विधियां ।

5. **आहार, स्वास्थ्य व स्वच्छता** – प्रकार, उपचारात्मक तरीके ।
6. **खाद्य संग्रहण** – आवश्यकता, प्रकार, उपयोग में होने वाले महत्वपूर्ण रसायन ।

यूनिट–4 आहार नियोजन :

1. **महत्व** – आहार नियोजन के सिद्धांत प्रतिदिन की निर्धारित मात्रा (आर.डी.ए.) आहार आयोजन को प्रभावित करने वाले तत्व समय व शक्ति बचाने वाले आहार का आयोजन करना –
   (अ) पहले से योजना बनाना
   (ब) क्रय करने की योजना
   (स) सरल आहार तालिका
   आर्थिक स्तर के आधार पर आहार का आयोजन करना । चुनाव संग्रहण पूरक पदार्थों का उपयोग, बचे खाद्य पदार्थों का उपयोग ।
2. शिशु विभिन्न आयु में पौष्टिक तत्वों व खाद्य पदार्थों की आवश्यकता, आहार माता का दूध, फार्मूला फीडिंग ।
3. **बालक का पोषण** – आयु समूह की विशेषताएँ, पौष्टिक तत्व एवं आहार को आवश्यकता, शालेय आहार कार्यक्रम–प्रकार, महत्व, कीमत, पोषण स्तर, आहारीय व लक्षण, परीक्षण शरीर मापन विधियाँ ।
4. **गर्भावस्था व छात्रीवस्था में पोषण** – शारीरिक परिवर्तन, पौष्टिक तत्वों की आवश्यकता, असामान्य परिस्थितियाँ,
5. **वृद्धावस्था में आहार एवम् पोषण** – शारीरिक परिवर्तन, पौष्टिक तत्वों की आवश्यकत । असामान्य स्थितियाँ ।

यूनिट–5 उपचारात्मक पोषण – परिभाषा

सामान्य आहार परितर्वन – तरलता, पौष्टिक तत्व, गंध की उपस्थिति/अनुपस्थिति, कुछ खाद्य पदार्थों का सम्मिलित न करना ।

चयापचयी रोग –

1. **मधुमेह** – परिभाषा, लक्षण, कारण, इन्सुलेशन के प्रकार, आहार का प्रभाव, हाइपोग्लोसेकिक दवाईयाँ, मधुमेह में असामान्य स्थितियां, मधुमेह व गर्भावस्था, मधुमेह व बाल्यावस्था ।
2. **अधिक वजन/कम वजन** – परिभाषा, कारण, उपचारात्मक तरीके, असामान्य स्थितियां ।

पौष्टिक तत्वों की कमी से होने वाले रोग –

1. **रक्तहीनता** – प्रकार, कारण, पहचान, आहार ।
2. **ए–विटामीनोसिस** – प्रकार, कारण, उपचार ।
3. **प्रोटीन कैलोरी कुपोषण** – कारण, उपचारात्मक तरीके ।

रोग जिसमें आहारीय चिकित्सा सम्मिलित है –

1. **यकृत के रोग** – प्रकार, कारण, आहार (पौष्टिक तत्वों की आवश्यकता)

अमाशय के रोग –

1. **पेप्टिक अल्सर** – कारण, लक्षण, आहार (पौष्टिक तत्वों की आवश्यकता)
2. **अपचन** – कारण, पौष्टिक तत्वों की आवश्यकता ।
3. **अतिसार** – प्रकार, कारण, आहार ।
4. **कब्ज** – प्रकार, कारण, आहार ।
5. **उक्त रक्तचाप** – कारण, आहार ।

गृह विज्ञान

प्रायोगिक

पूर्णांक : 50

1. अनाज – दालें, अण्डा, दूध, मेवे, सब्जियाँ, फलों के उपयोग तैयार करना, हर भोज्य पदार्थ की कोई भी तीन पात्र विधियों के प्रायोगिक रिकार्ड बुक में लिखना । कैलोरी एवं प्रोटीन की गणना ।
2. आहार आयोजन –
   (अ) गर्भवती महिला
   (ब) कब्ज की स्थिति
   (स) मधुमेह रोग
   (द) अधिक वजन की स्थिति
3. विभिन्न आर्थिक स्थिति में आहार योजना ।
4. खाद्य संरक्षण कोई भी चार पाक विधि से बनायी जाये ।
5. सम्पूरक भोजन – आयोजन, गणना
6. व्यक्तित्व मापन विधि
7. बुद्धियापन विधि

प्रायोगिक परीक्षा अंकों का विभाजन

सेशनल	10
योजना	10
तैयारी	10
गणना	10
मौखिक प्रश्न	10
कुल अंक	**50**

REFERENCES BOOKS :

Normal & Theropentic Nutrition.

1	C.H. Robinson	-	Normal & Therapetic Nutrition.
2	F.P. Antia	-	Clinical Nutrition & Dicterics.
3	M. Swaminathon	-	Essentials of Nutrition Vol. I & II.
4	P. Rajalaxmi	-	Applied Nutrition.
5	C. Gopalan-etal	-	The Nutrition value of Indian Foods. ICHR. 1991.
6	Mangode Konge	-	Normal & Therapentic Nutrition (In Hindi).
7	Jyoti kulkarni	-	Normal & Therapentic Nutrition.
8	Geeta Pushpa Shaw	-	
9	Kreuse M.N.	-	Food Nutrition & Diet Therapy.
10.	आहार एवं पोषण विज्ञान	–	डॉ. अरूणा पल्टा, शिवा प्रकाशन, इन्दौर
11.	खाद्य परिरक्षण	–	डॉ. अमिता सहगल, शिवा प्रकाशन, इंदौर ।

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दर्शन शास्त्र

बी.ए. भाग तीन दर्शन शास्त्र विषय में कुल दो प्रश्न पत्र होंगे तथा प्रत्येक में 75 अंक होंगे । प्रत्येक प्रश्न पत्र 5 इकाईयों में विभाजित है । प्रथम प्रश्न पत्र, 'तर्कशास्त्र' अनिवार्य है । द्वितीय प्रश्न पत्र में दो विकल्प दिये गये हैं –

1. ज्ञान मीमांसा एवं तत्व मीमांसा (भारतीय एवं पाश्चात्य)
2. ग्रीक दर्शन ।

प्रश्न -पत्र प्रथम

तर्कशास्त्र (Logic)

(पेपर कोड-0259)

इकाई-1 1. तर्क शास्त्र : अर्थ, परिभाषा स्वरूप, उपयोगिता
2. आगमनात्मक एवं निगमनात्मक तर्क
3. तर्कदोष : आकस्मिक एवं अनाकारिक

इकाई-2 1. सत्यता एवं वैधता
2. विचारों के नियम
3. प्रतिज्ञप्ति - वर्गीकरण, प्रतिज्ञप्ति की बुलीय व्याख्या
4. निरपेक्ष न्याय वाक्यों के मानक आकार एवं न्याय वाक्यों के परीक्षण हेतु वेन-रेका पद्धति

इकाई-3 1. तार्किक संयोजन तथा कुछ महत्वपूर्ण तार्किक संयोजक
(अ) संयोजन, (ब) निषेधक, (स) वियोजक, (द) आपादान, (इ) द्विआपादान तुल्यता
2. संयोजकों की अंतर्परिभाषिता
3. तार्किक युक्तियों की वैधता की परीक्षा के लिए सत्यता सारिणी विधि

इकाई-4 1. वैज्ञानिक व्याख्या की प्रकृति
2. वैज्ञानिक एवं अवैज्ञानिक व्याख्या में भेद
3. विज्ञान एवं प्रकल्पना

इकाई-5 न्याय एवं बौद्ध तथा जैन परम्परा में अनुमान
1. न्याय - बौद्ध जैन दर्शन में अनुमान की परिभाषा, अवयव एवं पक्षता
2. अनुमान के प्रकार
3. हेत्वाभास

अनुशंसित ग्रंथ :

1.	रमाशंकर मिश्र	-	आधुनिक तर्कशास्त्र, एक परिचय
2.	राज्य श्री अग्रवाल	-	तर्कशास्त्र
3.	केदारनाथ	-	प्रतीकात्मक तर्कशास्त्र
4.	ब्रजनारायण शर्मा	-	अनुमान का विवेचन
5.	बी.एन. सिंह	-	भारतीय दर्शन
6.	डॉ. शोभा निगम	-	भारतीय दर्शन
7.	Copi I. M.	-	Introduction ot lagic
8.	S.C. Chattergjee	-	Nyaya theory of Knowledge
9.	Cohen & Negel	-	Introduction to logic

प्रश्न -पत्र द्वितीय (वैकल्पिक)

(अ) ज्ञान मीमांसा एवं तत्व मीमांसा (भारतीय एवं पाश्चात्य)

(पेपर कोड-0260)

इकाई-1 ज्ञान मीमांसा एवं तत्व मीमांसा : स्वरूप एवं विषय वस्तु

ज्ञान प्रमाण : प्रमा एवं अप्रमा

इकाई-2 प्रामाण्य : स्वत: प्रामाण्य एवं परत: प्रामाण्य

ख्यातिवाद : सत्ख्यातिवाद, अख्यातिवाद, अन्यथा अनिवर्चनीय ख्यातिवाद

इकाई-3 1. कारणता का सिद्धांत (कारणकार्यवाद)

अ. सत्कार्यवाद : प्रकृति परिणामवाद, ब्रह्म परिणामवाद, विवर्तवाद

ब. असत्कर्तवाद

2. सत्य के सिद्धांत

अ. संवादिता

ब. संसक्तता

स. अर्थक्रियावादी सिद्धांत

इकाई-4 1. जड़वाद

2. अध्यात्मवाद

3. वस्तुवाद

इकाई-5 1. बुद्धिवाद

2. अनुभववाद

3. कांट का परीक्षावाद

अनुशंसित ग्रंथ :

1.	दिवाकर पाठक एवं अविनाश श्रीवास्तव	:	भारतीय दर्शन की मूल समस्याएँ
2.	अर्जुन मिश्र	:	दर्शन की मूल धाराएँ
3.	डॉ. शोभा निगम	:	पाश्चात्य दर्शन के सम्प्रदाय
4.	डॉ. शोभा निगम	:	भारतीय दर्शन
5.	सुरेन्द्र वर्मा	:	भारतीय दर्शन
6.	बंदिष्टे	:	भारतीय दार्शनिक निबंध
7.	Patric	:	Introduction ot Philosophy
8.	Chhaya Rai	:	Studies in Philosophical methods
9.	ब्रजगोपाल तिवारी	:	पाश्चात्य दर्शन

प्रश्न-पत्र द्वितीय (वैकल्पिक)

ग्रीक दर्शन

(पेपर कोड-0261)

इकाई-1 ग्रीक दर्शन : मुख्य विशेषताएँ

माइलेशियन विचारक

1. थेलिस
2. एलेक्जिमेंडर
3. एनेक्जिमेनीज

इकाई-2 1. हेराक्लाइट्स

2. जेनोफीनीज
3. पार्मेनाइडीज
4. जीनो

इकाई-3 1. एम्पीडोक्लीज

2. एनेक्जागोरस
3. ल्यूगिपस
4. डेमोक्राइट्स

इकाई-4 1. सोफिस्ट विचारक : प्रोटागोरस, गार्जियस

2. सुकरात

इकाई-5 1. प्लेटो

2. अरस्तू

अनुशंसित ग्रंथ :

1.	जगदीश सहन श्रीवास्तव	:	ग्रीक एवं मध्ययुगीन दर्शन
2.	शोभा निगम	:	ग्रीक एवं मध्ययुगीन दर्शन
3.	नरेन्द्र तिवारी	:	ग्रीक दर्शन
4.	रामनाथ शर्मा	:	पाश्चात्य दर्शन का इतिहास
5.	Stace	:	Greek Philosophy
6.	Burnet	:	Greek Philosopy
7.	Gorpers	:	The Greek Thinkers

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निसाब उर्दू अदब

पहला पर्चा — नं. 75

'नस्र' (पेपर कोड-0262)

(दास्तान, ड्रामा, अफसाना)

निसाब :

दास्तान :	1.	किस्सा आजाद बख्त	इन्तेखाब बागोबहार मीर अमान ।
	2.	मुलात मलकए महन निगार	इन्तेखाब फसनए अजाइब रजब अली बेग शुरुर ।
ड्रामा	1.	डाक्टर तयकीन की उलझन	अज इब्राहीम युसुफ
	2.	आगरा बाजार	अज हवीब तनवीर
अफसाना	1.	कफन	प्रेमचंद
	2.	नया कानून	सजादत हुसैन मन्टी
	3.	यूकिलिप्टस की हाली	कृष्ण चन्द्र
	4.	लाजवंती	राजेन्द्र सिंह वैदी
	5.	दो भीगे हुए लोग	इकबाल मजीद
	6.	झूठा संच/काठ का घोड़ा	रतन सिंह
	7.	दीमक	गयास अहमद गद्दी
	8.	अफसाना	जीलानी बानो

इकाईयाँ :

इकाई-1	शामिले निसाब असनाप पर सवालात	नं. 15
इकाई-2	दास्तान निगारो पर सवालात	नं. 15
इकाई-3	ड्रामा निगारों पर सवालात	नं. 15
इकाई-4	अफसाना निगारों पर सवालात और अफसानों का खुलासा और जायजा	नं. 15
इकाई-5	दस्तान और अफसानों से तशरीह	नं. 15

दूसरा पर्चा (शायरी) (पेपर कोड-0263)

(कसायूद, मरासी और मजमून निगारी) — नं. 75

निसाब :-

कसाइद :	1.	फज्र होते जो गई आज मेरी आँख झपकअज सौदा देहलबी	
	2.	सावन में दिया फिर महे शव्वाल दिखाईअज जौक देहलवी	
	3.	समते काशी से जानिबे मथुरा बादल अज मोहसिन काकोरवी	
मरासी :	1.	किस शेर की आमद है के रन कॉफ रहा हैअज दबीर	(15 बंद)
	2.	ब खुदा फारसे मैदाने तहव्वुर या हुर अज अनील	(15 बंद)

मजमून निगारी : किसी अदबी मोजू पर मजनून

इकाईया :

इकाई-1	शामिले निसाब असनाफ पर सवालात	नं. 15
इकाई-2	कसोदा निगारों पर सवालात	नं. 15
इकाई-3	मर्तिया निगारों पर तन्कीदी सवालात	नं. 15
इकाई-4	तशरीहजशारे कसाइद और गरासी	नं. 20
इकाई-5	अदबी मोजू पर मजमून	नं. 10

MANAGEMENT (प्रबंध)

PAPER - I

MONEY, BANKING TRADE & FOREIGN EXCHANGE M.M. : 75

(Paper Code-0269)

UNIT-I Difination of Money : Functions, impoertance & types Value of money, quantity theory. Cast transactions approach case balance approach & income approach.

UNIT-II Inflation : Cost push demand pull-effects of inflation and methods of control, deflation measures against deflation monetary standards gold and paper standards.

UNIT-III Banking types and their function : Credit creation & methods of control nationalisation of commercial books - R.B.I. and its functions financing.

UNIT-IV International and inter regional trade theory of comparative costs general equalibrium theory. Terms of trade, free trade versus protection. Dumping balance of trade and balance of payments.

UNIT-V Foreign exchange : Meaning, rate of exchange, its determination mint per theory, purchasing power parity theory Balance of payment theory Exchage control objects and methods of IMI.

BOOKS RECOMMENDED :

1. K.P.M. Sundram : Money, Banking & International Trade.
2. K.R. Gupta : International Economics.
3. Charies. P. : International Economics.
4. हरिश्चंद्र शर्मा : मुद्रा एवं बैंकिंग

PAPER - II

AUDITING, COSTING AND INCOME TAX M.M. : 75

(Paper Code-0270)

UNIT-I Principles of auditing :

Origin of Audit, the nature & definition of audit objects of audit, various class of audits and their advantages, audit under statute. The accounts of private firms, the audit of the accounts of private individuals the audit of the trust accounts.

UNIT-II Audit procedure and conduct of an audit :

Internal audit the qualities required of an auditor. Continuous and final or completed audit, consideration of the commencement of a new audit, audit note book methods of work.

UNIT-III The audit of cash transactions :

Audit of bank transections : Audit of petty of cash book : Audit of trading transctions. Internal check as regards cash, vouching, Internal check as regards wages. Audit of trading transaction : Purchases Purchases returns,. sales, sales returns, sales ledger.

UNIT-IV Fundamental of cost accountancy. Definition, Advantages, disadvantage and

functions. Methods of cost accounting Unit costing. departmental costing. process costing. contract costing.; Elementary know ledger of Break even Analysis.

UNIT-V Income : tax on salary and capital gains, tax deduction at source, Rates of income tax and surcharge on income tax. Deduction in respect of C.P.F., L.I.C. premiums and commulative time deposits short term capital gains and long term capital gains deduction in respect of capital gains.

BOOKS RECOMMENDED :

1.	Agrawal & Khanuja	:	Cost Accounting
2.	Grewal & Shukla	:	Advanced Accounts
3.	Dr. R. R. Gupta	:	Cost Accounting
4.	D. N. Agarwal	:	The Higher Science of Accountancy.
5.	Bhagwati Prasad	:	Income Tax-Law & Practice
6.	Choudhary & Patel	:	Income Tax
7.	Dr. B. K. Agarwal	:	Income Tax
8.	Dr. S. M. Shukla	:	Auditing
9.	मेहरोत्रा	:	आयकर विधान एवं लेखे ।

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FUNCTIONAL ENGLISH

PAPER - I

COMMUNICATION SKILL AND BROADCASTING M.M. 50

(Paper Code-0271)

I Oral Communication

(1) Interview (2) Dictation

(3) Meetings (4) Seminars and Conference

(5) Group Discussion (6) Audio Visual Aids

II. Writing Skill

(1) Business Corrsepondance. (2) Agenda and Minutes.

(3) Advertising. (4) Reports

III. Broadcasting.

(1) Fundamentals, of Broadcasting

(2) Radio as a medium of Broadcasting.

(3) T.V. as a medium of Broadcasting.

(4) Current affairs of general Knowledge.

PAPER - II

ADVANCED GRAMMER

(Paper Code-0272)

Section A

(1) Constituent-
Students will be requised to devide each Sentence into its Constituent and label eachA,V,C,O, or E.

(2) Use of dynamic and stative verb :-

(3) Use of Adjective and Adverb :-

(4) use of Prepositions :-

(5) Question Tag :-

(6) Nodal verb :-

(7) Introducting word 'it' There '

(8) Use of Sentence in the Passive.

Section - B 20

(1) Use of Redio and its Sentance.

(2) Use & Function of T.V.

(3) Importance of Non Communication.

(4) Importance of News papers in the modern context.

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PRINCIPAL OF INSURANCE & PRACTICE

PAPER- I

PROPERTY AND LIABILITY INSURANCE **50 Marks**

(Paper Code-0273)

UNIT-I INTRODUCTION

Risk and Insurance; Insurable andnon-Insurable; Nature of Property and liability insurance, crop and cattle insurance, types of liability insurance reinsurance.

UNIT-II Basic concepts of Liability Insurance

(a) Basic concepts :- Specific and all risk insurance; valuation of risk; Indemnity contracts and specific value contracts; Average and contribution; Excess and short insurance careers.

(b) Liability Insurance:- Procedure for obtaining liability insurance. Legal position of insurance agent; construction and issue of policy; Records of liability insurance; policy conditions.

UNIT-III Types of liability Insurance policy-

Mandatory public Liability Insurance.

Dwelling Property losses; Business interruption and related losses, Theft Insurance contracts, Budgetory covers,m Auto Insurance,Medical Benefit Insurance; Dishonesty, disappearance and destruction insurance; Employer's Liability; Aviation Insurance Personal and residential Insurance; Boiler Machinery insurance; commerical enterprises and industrial property insurance.

UNIT-IV Insurance Problems of Institutions

Insurance Problems of educational and religious institutions hospitals, clubs and assoriation; Professional package contracts; Errors and omissions insurance; professional liability insurance; Accountants liability insurance; Limits on amount of insurance Marketing and underwriting of liability insurance; Finance of liability insurance.

UNIT-V Adjustment of Losses and claims compensation:-

Nature of Losses and their adjustment: Procedure of adjustment Functions of adjuster's; Responsibilities of adjuster's; survey of losses; Procedure for preparing claims statements; Documents in use in claim settlements. Requirement of the insured in the event of loss. Apportionment and loss valuation; statutory control over liability insurance in India.

Liability policies by General Insurance Corporation of India.

PAPER - II

GROUP INSURANCE ANDRETIREMENT BENEFIT SCHEMES

(Paper Code-0274)

50 Marks

UNIT - I Introduction

Superannuation Schemes I

Superannuation Schemes II

UNIT-II Superannuation Schemes III

Gratuity Schemes

UNIT-III Group Life Insurance Schemes I

Group Life Insurance Schemes II

UNIT-IV Provident Fund & Employees Family, Pension and Deposit linked insurance Schemes.

Taxation Treatment of provisions for retirement Benefits-I

UNIT-V Taxation Treatment of Provisions for Retirement Benefits II

Group Schemes and Data Processing.

THEORY

HISTORY OF INDIAN PAINTING (Paper Code-0286)

(Bangal School to Modern age) **50 Marks**

Bangal School - Abanendra Nath Tagor

Rabindra Nath Tagor

Gaganendra Nath Tagor

Nandalal Bose

Modern Age - Raja Ravi Varma

Amrita Sher Gil

Yamini Ray

Progresive Art Group

Souza - M.F. Husain

S.H. Raza

N.S. Bendra

K.K. Hebber

List of Book Recomended for theory :

- Bharatiya Chitrakala Ke Itihas - Shym Bihari Agrawal
- Kala Vilas - R.A. Agrawal

PRACTICAL

There will be two practical paper. Evalution will be made by the external and the internal examiners togather, and sessional marking is made by the class teacher.

The time of each paper is four hour's and there will be a half hour's recess in between.

PAPER - I

Copy from Indian meniature painting Total Mark - 50

Scheme of examination Examination - 40

Time - 4 Hours Sessional - 10

Paper - 1/4 Imp size

Medium - Water colour or poter colour

Sessional mark - 10

Minimum class work to be submitted five painting size 1/4 Imp paper

Copying from the Indian miniature painting style Mugal. Pahadi, Rajsthani.

PAPER - II

CREATIVE COMPOSITION

Scheme of examination Total Mark - 50

Time Four hour's Examination - 40

Size 1/2 Imp. paper Sessional - 10

Medium - Water, Oil, acrylic or any

Sessional mark - 10

Minimum Class work to be submitted -

Five painting size 1/2 Imp.

Student will be experimented ith any media and form.

Above syllabus based on the syllabus of following Universities.

1. Vikram University, Ujjain
2. Rani Durgavati Vishwavidyalaya, Jabalpur.
3. Indira Kala Sangeet Vishwavidyalaya, Khairagarh.

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DEFENCE STUDIES

PAPER-I

PROBLEMS OF WAR AND PEACE (Paper Code-0277)

Aim : The objective of this paper is to acquaint the students about the multidimensional problems of war and peace.

Note : Question will be set from each unit, there will be only internal choice.

Unit-I U.N.O. AND WORLD PEACE

1. Organs and its role.
2. Main specialized agencies of U.N.O.
3. Role of U.N.O. in world peace.
4. Peace keeping forces of the U.N.O.
5. Veto power and Security Council.

Unit-II WAR AND PEACE

1. Sattlement of International Disputes.
2. Diplomatic agents and Consuls.
3. War Crimes.
4. Neutrality.
5. Intervention.

Unit-III HUMANITARIAN LAW

1. Basic concepts and development of Humanitarian law.
2. UN General Assembly declaration of human rights on Dec. 10, 1948.
3. Protection of Victims and defenceless in armed conflict, POWs, wounded and civilians in Armed Forces.
4. Central Human Right Commission : Organisation and Function.
5. State Human Right Commission : Organisation and Function.

Unit-IV REFUGEE LAW

1. Meaning, Concept and causes of Refugee.
2. Refugee and IDPs.
3. Refugee law in India.
4. Refugee Problem in South Asia.
5. Role of International Committee of Red Cross and UNO in Refugee Problems.

Unit-V LAWS OF WAR

1. Law of Land war.
2. Law of Sea war.
3. Law of Air war.
4. Space law.
5. The International Court of Justice.

SELECTED READINGS :

1. Maunce clark, J : Readings in the Economics of War.
2. International Security : Modern political Science series.
3. Rajani Kothari : Word order.
4. Openhem, I : Use of Forces by states and International law.

PAPER - II

MODERN WARFARE (Paper Code-0278)

Aim : To enable students to appreciate the impact of Political, economic and technological developments on the patterns of conflicts between nations.

Note : Question will be set from each unit, there will be only internal choice.

UNIT-I

1. Development of Nuclear weapons.
2. Effects of Nuclear Explosion.
3. Spread of Nuclear Weapons.
4. Missile and their characteristics.
5. Type of Missiles.

UNIT-II

1. Trends in Science and Technology and their impact on war.

2. Role of Research and Development.
3. Development of Weapons and their impat on tactics
4. Command, Control, Communication and Intelligence (C^3 I) in Modern Warfare.
5. Elements of National Power.

UNIT-III 1. Military Satellites. 2. Explosive Bombs.
3. War Gases. 4. Micro Organs : as a weapons.
5. Smart Weapons.

UNIT-IV 1. Rocket Technology and India.
2. Missile Technology and India.
3. Nuclear Technology and India.
4. Atomic Minerals and India.
5 Space Technology and India.

UNIT-V 1. New word order - Political, Social and Economical.
2. Alliance and Regional co-operation.
3. Mobilisation of resources for war.
4. War time economics. 5. New trends.

SELECTED READINGS :

1. Halailan Morton : Coutemporary Military strategy
2. Brodue, Y. : Strategy in the Missile Age.
3. Markabi, Y. : Nuclear war and Nuclear peace
4. Osanka. F.M. : Modern Guerilla warfare
5. Gerald. J. : Defence Psychology
6. Know Kalus : Science and Defence
7. Pandey Girish Kant : Yudh mein Vigyan avem Tackniki

PRACTICALS

There shall be practical examination of 3.5 hours duration carrying. 50 marks
The division of marks shall be as follows :

(1) Plain Table Survey : 15 Marks.
(2) Experimental Military Psychology : 15 Marks.
(3) Group Descussion & Lectring : 05 Marks.
(4) Viva-Voce : 05 Marks.
(5) Sessional work & Record : 10 Marks.

SECTION - A

Plain Table Survey by inter section methods.
(Ateast ten exercises in a session).

SECTION - B

Military psychology Experiment :
(1) Muller-Layer-IIlusion test.
(2) Koh's Block Design Test.
(3) Allexander Pass Along Test.

SECTION - C

Group Discussion and Lectures based on current topic on any international Problems as issue.

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EDUCATION

PAPER - I

EDUCATIONAL MANAGEMENT AND EDUCATIONAL TECHNOLOGY

(Paper Code-0255)

COURSE OBJECTIVES

1. To develop knowledge and understanding of the meaning, scope process and types of management.
2. To develop the ability to identify the roles of participating members (individual or collective) and to plan various institutionalized managerial activities.
3. To develop the ability of making objective decisions in educational management.
4. To enable the students to understand about the concept, nature and acope of educational technology.
5. To expose the students to the basic developments in Educational Technology.

COURSE CONTENTS

UNIT-I - Concept of Educational Management : Meaning, nature, need and scope.

- Types of Educational Management : Centralized and decentralized, external and internal. Authoritarian / autocratic and democratic, dynamic / creative and Laissez-faire.

UNIT-II - Managerial Behaviour : Factors affecting managerial behaviours; personal, social, cultural, political, institutional etc.

- Aspects of institutional management : Curricular and co-curricular programmes; student welfare auxiliary services including school health services; school plant including equipment and assets; sanitation and beautification; institutional planning; time table; interpersonal relationship; institutional climate and discipline; hostel and staff accommodation; management of finance; home, school and community relationships; evaluation of students achievement and promotion; admission, office management etc.

UNIT-III - Educational planning : Meaning, need and significance of educational planning; types of educational planning, strategies in educational planning; steps in educational planning.

UNIT-IV - Communication Process : theory, concept, nature, process, components, types of classroom communication, mass media approach in educational technology.

UNIT-V - System Approach to Instruction : System approach in instructional process, instructional system designing : concept, components, physical and human resources, steps.

- Innovations in Educational Technology : Programmed learning, micro and macro teaching, team teaching.
- Personalized system of instruction, computer assisted instruction, simulated teaching distance teaching.

BOOKS :

1. Educational Technology. R.A. Dhaowa, Lall Book Depot, Mearut.
2. शैक्षिक तकनीकी, आर.ए. शर्मा, लाल बुक डिपो मेरठ ।

PAPER - II

PHILOSOPHY OF EDUCATIONAL

(Paper Code-0256)

UNIT-I - Naturatism
- Progmation

UNIT-II - Realism
- Ideatims

UNIT-III - Dayanand
- Gandhi
- Tagore

UNIT-IV - Aurbindo
- Vivekanand
- Azkir Hussan

UNIT-V - Montesson
- Froebel
- Festalloggi.

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ORDINANCE NO.-12

BACHELOR OF ARTS - CLASSICS

1. The three year course has been broken up into three Parts, Part-I known as B.A.Classics Part-I Examination at the and of the First year, Part-II known as B.A. Classics Part-II examination at the end of the Second year and Part-III known as B.A. Classics Part-III examination at the end of the Third year.

2. A candidate who, after passing (10+2) or Intermediate Examination of C.G. Board of Secondary, Education, Raipur or any other Examination recongnised by the University or C.G. Board of Secondary Education as equivalent there to has attended a regular course of study in an affiliated College or in the teaching department of the University for one academic year, shall be eligible for appearing at B.A. Classics Part-I examination.

3. A candidate who, after passing B.A. Classics Part I examination of the University, has attended a regular course of study for one academic year in an affiliated college or in the teaching department of the University, shall be eligible for appearing at the B.A. Classics Part-II Examination.

4. A candidate who, after passing the B.A. Classics Part-II examination of the University, has completed a regular course of study for one academic year in an affiliated college or in the Teaching department of the University, shall be eligible for appearing at the B.A. Classics Part-III examination.

5. Besides regular students and subject to their compliance with this Ordinance, ex-students and non-collegiate candidates shall be eligible for admission to the examination as per provisions of Ordinance No. 6 relating to Examinations (General). Provided that non-collegiate candidate shall be permitted to offer only those subjects/papers as are taught to the regular students at any of the University Teaching Department or College.

6. Every candidate for the Bachelor of Arts classics Examination shall be examined in :

A- Foundation Course :

(1) Hindi Language

(2) Sanskrit Language or English Language.

B- Compulsory-Vyakaran Sahitya

C- Any one of the following branches of studies-

1-	Veda	2-	Vyakaranam
3-	Sahityam	4-	Darshanam
5-	Puranam	6-	Jyotisham
7-	Dharmashastram	8-	Niruktam

D- Any one of the following branches of studies :

1.	English Literature	2.	Hindi Literature
3.	Economics	4.	History
5.	Political Sicence.		

E- Viva voce in Sanskrit subject at the final examination (i.e. Part-III)

NOTE : Syllabus (E) will be common as prescribed by UGC (Part I,II,III)

7. Any candidate who has passed B.A. Classics Examination of the University shall be allowed to present himself for examination in any of the additional subjects prescribed for B.A. Classics examination and not taken at the Degree examination. Such candidate will have to first appear and pass B.A. Classics Part I & Part-II examination in the subject which he proposes to offer and then the B.A. Classics Part-III examination in the same subject. Successful candidates will be given a certificate to that effect.

8. In order to pass at any part of the three year degree course examination an examinee must obtain not less than 33% of the total marks in each subject/group of subjcets. In groups where both theory and practical examinations are provided an examinee must pass in both theory and practical part of the examination separately.

9. Candidates will have to pass separately to the B.A. Classies Part-I, Part-II and Part-III examinations. No division shall be assigned on the result of Part-I and II examinations. The division in which a candidate is placed at the Part-III examination shall be determined on the basis of the aggregate of total marks obtained in the part I, II and III examinations.

Provided in case a candidate who has passed the B.A. Classics Part I &II examination through the Supplementary Examination having failed in one subject only, the total aggregate marks for being carried over for determining the division shall include actual marks obtained in the subject in which he appeared at Supplementary examination.

10. Successful examinees at the Part-III examination obtaining 60% or more marks shall be placed in the First Division. Those obtaining less than 60% but not less than 45% marks in the Second Division and other successful examinees in the Third Division.

USE OF CALCULATORS

The Students of Degree/P.G. Classes will be permitted to use Calculators in the examination hall from annual 1986 examnination on the following conditions as per decision of the standing committee of the Academic Council at its meeting held on 31-1-1986-

1. Student will bring their own Calculators.

2. Calculators will not be provided either by the university or examination centres.

3. Calculators with, memory and following variables be permitted +, —, x, ÷, square, reciprocal, expotentials log, square root, trignometric functions, wize, sine, cosine, tangent etc. factiorial summation, xy, yx and in the light of objective approval of merits and demerits of the viva only will be allowed. F-Practical (if necessary) for each core subject.

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बी.ए. क्लासिक्स (प्राच्य पद्धति) भाग-३

अनिवार्य विषय : प्रथमः

प्रथमं प्रश्न-पत्रम्

आधार पाठ्यक्रम

(१) हिन्दी भाषा ७५

(२) अंग्रेजी अथवा संस्कृत भाषा ७५

द्वितीयं प्रश्न-पत्रम्

संस्कृत भाषा

(पेपर कोड-0731)

(१) मनुस्मृतिः अध्याय - १, श्लोकाः १-१०० पर्यन्तम् अंका : ३०

(२) प्रारंभिक रचनानुवाद कौमुदी (पाठाः २१-३० पर्यन्तम्) अंका : ३०

(३) संस्कृत-साहित्येतिहासः (रामायण-महाभारत-पुराणानि) अंका : १५

सहायक ग्रन्था :

(१) संस्कृत साहित्य का इतिहास - पं. बलदेव उपाध्याय

(२) संस्कृत साहित्य का इतिहास - चंद्रशेखर पाण्डेय/बाबू राम व्यास

अनिवार्य विषयः द्वितीयः

प्रथमं प्रश्न-पत्रम्

साहित्यम्

अंका : ७५

(पेपर कोड-0732)

(१) उत्तर-रामचरितम् (भवभूति विरचितम्) अंका : ३०

(२) मेघदूतम् (कालीदास विरचितम्) अंका : ३०

(३) काव्य मीमांसा (अध्याय १, २, ३) अंका : १५

द्वितीयं प्रश्न-पत्रम्

व्याकरणम् अनुवादश्च

अंका : ७५

(पेपर कोड-0733)

(1) मध्य सिद्धान्त कौमुदी-वरदराज प्रणीता अंका : ६०
(पूर्व कृदन्ततः ग्रन्थ समाप्ति-पर्यन्तम् (उणादिवर्जम्)

(2) रचनानुवाद कौमुदी (पाठाः ४१-६० पर्यन्तम्) अंका : १५
लेखक - कपिलदेव द्विवेदी

तृतीयं प्रश्न-पत्रम्

प्रायोगिकी/मौखिकी

अंका: ५०

(१) गृहीतेषु वैकल्पिक-विषयेषु प्रश्ना: अंका : ४०

(२) कला-संस्कृति-विषयका: प्रश्ना: अंका : १०

वैकल्पिक विषया:

(क) वेद:

प्रथमं प्रश्न-पत्रम् **अंका : ७५**

(पेपर कोड-0734)

(१) ऋग्वेद-मण्डलं - १ सूक्तम् १-१५ अंका : ३५
(सायणभाष्यानुसारम्)

(२) ऋग्वेदभाष्य भूमिका - सायणरचिता (सम्पूर्णम्) अंका : ४०

द्वितीयं प्रश्न-पत्रम् **अंका : ७५**

(पेपर कोड-0735)

(१) निरूक्तम् - यास्काचार्य प्रणीतम् (पंचमषष्ठाध्यायौ) अंका : ४०

(२) धन्द: सूत्रम् - पिङ्गलाचार्य प्रणीतम् (सम्पूर्णम्) अंका : ३५

(ख) व्याकरणम्

प्रथमं प्रश्न-पत्रम् **अंका : ७५**

(पेपर कोड-0736)

(१) वैयाकरण सिद्धान्त कौमुदी (कारक-अव्ययीभाव - तत्पुरुष बहुब्रीहि द्वंन्द्वसमास, प्रकरणानि) अंका : ६०

(२) प्रौढ़ रचनानुवाद कौमुदी (पाठा: ४१-६० पर्यन्तम्) अंका : १५
लेखक - कपिलदेव द्विवेदी, प्रकाशक - विश्वविद्यालय प्रकाशन - वाराणसी ।

द्वितीयं प्रश्न-पत्रम् **अंका : ७५**

(पेपर कोड-0737)

(१) महाभाष्यम् (पतञ्जलि विरचितम्) आह्निका: १, २, ३) अंका : ६०

(२) शुद्धाशुद्धि विवेचनम् अंका : १५

सहायक ग्रन्था :

(१) काशिका - न्याय पदमञ्जरी सहिता - प्राच्य भारती प्रकाशनम्, वाराणसी

(२) गुप्ता-शुद्धि-प्रदर्शनम् - पं. अम्बिकादत्त व्यास:, पण्डित पुस्तकालय, वाराणसी

(ग) साहित्यम्

प्रथम् प्रश्न-पत्रम् **अंका : ७५**

(पेपर कोड-0738)

(१) काव्य प्रकाश:-मम्मट प्रणीत: अंका : ४०
(१, २, ३, ४, ९, १० उल्लासा:)

(२) दशरूपकम् - धनंजय प्रणीतम् अंका : ३५
(१, २, ३ प्रकाशा:)

द्वितीयं प्रश्न-पत्रम् **अंका : ७५**

(पेपर कोड-0739)

(१) कादम्बरी - बाणभट्ट विरचिता (कथा मुखान्ता) अंका : ४०

(२) नैषधीयचरित महाकाव्यम् - श्री हर्ष प्रणीतम् अंका : ३५
(प्रथम-द्वितीय-सर्गौ)

सहायक ग्रन्था :

(१) संस्कृत साहित्य विमर्श: - पं. द्विजेन्द्रनाथ शुक्ल
(२) संस्कृत साहित्य का इतिहास - पं. बलदेव उपाध्याय
(३) संस्कृत साहित्य की रूपरेखा - चंद्रशेखर पांडेय

(घ) दर्शनम्

प्रथमं प्रश्न-पत्रम् **अंका : ७५**

(१) न्याय सिद्धान्त मुक्तावली - विश्वनाथ कृता (प्रत्यक्ष खण्डे आत्मनिरुपणान्तम्) अंका : ४५

(२) सर्वदर्शन संग्रह: - माधवाचार्य विरचित: (चार्वाक, जैन, बोद्ध दर्शनानि) अंका : ३०

द्वितीयं प्रश्न-पत्रम् **अंका : ७५**

(१) ब्रह्मसूत्रम् - वादरायणप्रणीतम्-शाङ्कर भाष्य सहितम्, चतु: सूत्र्यन्तम् अंका : ४०

(२) ईशावास्योपनिषद् (शाङ्कर भाष्यसंहिता) अंका : ३५

सहायक ग्रन्था :

(१) भारतीय दर्शनशास्त्र का इतिहास - देवराज तथा रामजन्द्र तिवारी

(ङ) ज्यौतिषम्

प्रथमं प्रश्न-पत्रम् **अंका : ७५**

(पेपर कोड-0740)

(१) ग्रहलाघवम् (पञ्चतारास्पष्टीकरणमात्रम्) अंका : ४५

(२) चमत्कार चिन्तामणि: अंका : ३०

द्वितीयं प्रश्न-पत्रम् **अंका : ७५**

(पेपर कोड-0741)

(१) मुहूर्तचिन्तामणि: (संस्कार प्रकरणादारभ्य विवाहप्रकरणं यावत्) अंका : ४५

(२) अर्वाचीनं ज्योतिर्विज्ञानम् (१-३ अध्याया:) अंका : ३०

(च) पुराणेतिहासः

प्रथमं प्रश्न-पत्रम् **अंका : ७५**

(१) मार्कण्डेय पुराणम्-अध्याया १-३, ५ अंका : ४५

(२) ईशकेन-कठोपनिषद् अंका : ३०

द्वितीय प्रश्न-पत्रम् **अंका : ७५**

(१) शिवपुराणम् (वायवीय संहिता १-७) अंका : २०

(२) महाभारतम् शान्ति पर्वणि राजधर्मे अध्याया: ५९-८० अंका : २५

(३) श्रीमद्भागवत पुराणम् (रासपञ्चाध्यायीमायम्) अंका : ३०

(छ) धर्मशास्त्रम्

प्रथमं प्रश्न-पत्रम् **अंका : ७५**

(१) आपस्तम्ब धर्मसूत्रम् अंका : ४५

(२) धर्मशास्त्रस्येतिहास: अंका : ३०

सहायक ग्रन्था :

(१) धर्मशास्त्र का इतिहास - म.म.पी.व्ही. काणे

द्वितीयं प्रश्न-पत्रम् **अंका : ७५**

(१) प्रायश्चित्त विवेक: (पञ्च महापातकानां प्रायश्चितान्तम्) अंका : ६०

(२) धर्मशास्त्री ग्रन्थानां ऐतिहासिक महत्वम् अंका : १५

सहायक ग्रन्था :

(१) धर्मशास्त्र का इतिहास - म.म.पी.व्ही. काणे

(ज) कर्मकाण्डम्

प्रथमं प्रश्न-पत्रम् **अंका : ७५**

(१) श्राद्ध विवेक-म.म. रुद्रधर कृत: अंका : ४५

(२) अनुष्ठान प्रकाश:-चतुर्थीलाल कृत: अंका : १५

(३) उपाकर्म पद्धति:-दुर्गादत्त अंका : १५

द्वितीयं प्रश्न-पत्रम् **अंका : ७५**

(१) श्रौत पदार्थनिर्वचनम् - प्रभुदत्त अग्निहोत्रकृतम् अंका : ४५

(२) नित्यकर्म विधि: - पं. माया प्रसाद शास्त्रिकृत: अंका : १५
प्रकाशक - रतन लाल सुरेका (नित्यहोमविधि पर्यन्तम्)

(३) वर्ष क्रिया कौमुदी - गोविन्दानन्द कृत: अंका : १५

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पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़)

पाठ्यक्रम

बी.काम. भाग-1 (कोड-601)

B. Com. Part - I (Code - 601)

परीक्षा : **2016-17**

कुलसचिव पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़) की ओर से

B.Com. - I

INDEX

REVISED ORDINANCE NO.-23

(As per State U. G. C. Scheme)

BACHELOR OF COMMERCE

1. The three year course has been broken up into three Parts.

   Part-I known as B. Com. Part-I Examination at the end of first year.

   Part-II Examination at the end of the second year, and,

   Part-III Examination at the end of the third year.

2. A candidate who after passing (10+2) Higher Secondary or Intermediate examination of Chhattisgarh Board of Secondary Education, Raipur or any other examination recognised by the University or Chhattisgarh Board of Secondary Education as equivalent there to has attended a regular course of study in an affiliated college or in the Teaching Department of the University for one academic year, shall be eligible for appearing at the B.Com. Part-I examination.

3. A candidate who after passing B.Com. Part-I examination of the University or any other examination recognised by the University as equivalent thereto has attended a regular course of study for one academic year in an affiliated College or in the Teaching Department of the University, shall be eligible for appearing at the B.Com. Part-II Examination.

4. A candidate who after passing B.Com. Part-II examination of theUniversity has completed a regular course of study for one academic year in an affiliated College or in the Teaching Department of the University, shall be eligible for appearing at the B.Com. Part-III examination.

5. Besides regular students, subject to their compliance with this ordinance, ex-students and non-collegiate students shall be eligible for admission to the examination as per provision of Ordinance No. 6 relating to examinations (General).

   Provided that non-collegiate candidates shall be permitted to offer only such subject/ papers as are taught to the regular students at any of the University Teaching Department or College.

6. Every candidate for B.Com. Examination shall be examined in subjects as mentioned in the marking scheme and course or studies.

7. A candidate who has passed the B.Com. Part-III examination of the University shall be allowed to present himself of examination in any of the additional subjects prescribed for the B.Com. examination and not taken by him at the degree examination. Such candidate will have to first appear and pass the B. Com. Part-I examination in the subject which he proposes to offer then the B.Com. Part-II and Part-III examination in the same subject. Successful candidates will be given a certificate to that effect.

8. In order to pass at any part of the three year degree course examination, an examinee must obtain not less than 33% of the total marks in each paper/group of subjects. In group where both theory and practical examinations are provided an examinee must pass in both theory and practical parts of examination separately.

9. Candidate will have to pass separately at the Part-I, Part-II and Part-III examination. No division shall be assigned on the result of the Part-I and Part-II examinations In determining the division of the Final examination, total marks obtained by the examinees in their Part-I, Part-II and Part-III examination in the aggregate shall be taken into account. Candidate will not be allowed to change subjects after passing Part-I examination.

   Provided in case of candidate who has passed the examination through the supplementary examination having failed in one subject/group only, the total aggregate mark being carried over for determining the division, shall include actual marks obtained in the subject/group in which he appeared at the supplementary examination.

10. Successful examinees at the Part - III examination obtaining 60% or more marks shall be placed in the First Division, those obtaining less than 60% but not less than 45% marks in the Second Division and other successful examinees in the Third Division.

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B.COM. PART-I

SCHEME OF EXAMINATION

Subject			Max. Marks	Min. Marks
i	Environmental Studies	75	100	33
	Field Work	25		
A.	**FOUNDATION COURSE**			
i	Hindi Language - I		75	26
ii	English Language - II		75	26
नोट : प्रत्येक खंड में से 2 (दो) प्रश्न हल करने होगे । सभी प्रश्न समान अंक के होंगे ।				
B.	**THREE COMPULSORY GROUPS**			
GROUP - I				
	Accounting :			
i	Financial Accounting-I	75	150	50
ii	Business Mathematics-II	75		
GROUP - II				
	Business Management :			
i	Business Communication-I	75	150	50
ii	Business Reg. Framework-II	75		
GROUP - III				
	Applied Economics :			
i	Business Environment-I	75	150	50
ii	Business Economics-II	75		

USE OF CALCULATORS

The students of Degree/P.G. Classes will be permitted to use of Calculators in the examination hall from annual 1986 examination on the following conditions as per decision of the standing committee of the Academic Council at its meeting held on 31-1-1986.

1. Student will bring their own Calculators.
2. Calculators will not be provided either by University or examination centres.
3. Calculators with, memory and following variables be permitted +, −, x, ¸, square reciprocal, expotentials, log squares, root, trignometric functions viz, sine, cosine tangent etc. factorial summation, xy, yx and in the light of objective approvial of marits and demerits of the viva only will be allowed.

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Part - I

SYLLABUS FOR ENVIRONMENTAL STUDIES AND HUMAN RIGHTS

(Paper code-0828)

MM. 75

इन्वारमेंटल साईंसेस के पाठ्यक्रम को स्नातक स्तर भाग–एक की कक्षाओं में विश्वविद्यालय अनुदान आयोग के निर्देशानुसार अनिवार्य रूप से शिक्षा सत्र 2003–2004 (परीक्षा 2004) से प्रभावशील किया गया है। स्वशासी महाविद्यालयों द्वारा भी अनिवार्य रूप से अंगीकृत किया जाएगा।

भाग 1, 2 एवं 3 में से किसी भी वर्ष में पर्यावरण प्रश्न–पत्र उत्तीर्ण करना अनिवार्य है। तभी उपाधि प्रदाय योग्य होगी।

पाठ्यक्रम 100 अंकों का होगा, जिसमें से 75 अंक सैद्धांतिक प्रश्नों पर होंगे एवं 25 अंक क्षेत्रीय कार्य (Field Work) पर्यावरण पर होंगे।

सैद्धांतिक प्रश्नों पर अंक – 75 (सभी प्रश्न इकाई आधार पर रहेंगे जिसमें विकल्प रहेगा)

(अ) लघु प्रश्नोंत्तर – 25 अंक

(ब) निबंधात्मक – 50 अंक

Field Work – 25 अंकों का मूल्यांकन आंतरिक मूल्यांकन पद्धति से कर विश्वविद्यालय को प्रेषित किया जावेगा। अभिलेखों की प्रायोगिक उत्तर पुस्तिकाओं के समान संबंधित महाविद्यालयों द्वारा सुरक्षित रखेंगे।

उपरोक्त पाठ्यक्रम से संबंधित परीक्षा का आयोजन वार्षिक परीक्षा के साथ किया जाएगा।

पर्यावरण विज्ञान विषय अनिवार्य विषय है, जिसमें अनुत्तीर्ण होने पर स्नातक स्तर भाग–एक के छात्र/छात्राओं को एक अन्य विषय के साथ पूरक की पात्रता होगी। पर्यावरण विज्ञान के

सैद्धांतिक एवं फील्ड वर्क के संयुक्त रूप से 33% (तैंतीस प्रतिशत) अंक उत्तीर्ण होने के लिए अनिवार्य होंगे।

स्नातक स्तर भाग–एक के समस्त नियमित/भूतपूर्व/अमहाविद्यालयीन छात्र/छात्राओं को अपना फील्ड वर्क सैद्धांतिक परीक्षा की समाप्ति के पश्चात् 10 (दस) दिनों के भीतर संबंधित महाविद्यालय/परीक्षा केन्द्र में जमा करेंगे एवं महाविद्यालय के प्राचार्य/केन्द्र अधिक्षक, परीक्षकों की नियुक्ति के लिए अधिकृत रहेंगे तथा फील्ड वर्क जमा होने के सात दिनों के भीतर प्राप्त अंक विश्वविद्यालय को भेजेंगे।

UNIT-I THE MULTI DISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES

Definition, Scope and Importance

Natural Resources:

Renewable and Nonrenewable Resources

(a) Forest resources: Use and over-exploitation, deforestation, Timber extraction, mining, dams and their effects on forests and tribal people and relevant forest Act.

(b) Water resources: Use and over-utilization of surface and ground water, floods drought, conflicts over water, dams benefits and problems and relevant Act.

(c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.

(d) food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging , salinity.

(e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources.

(f) Land resources: Land as a resource, land degradation, man induced landslides soil erosion and desertification.

(12 Lecture)

UNIT-II ECOSYSTEM

(a) Concept, Structure and Function of and ecosystem

- Producers, consumers and decomposers.
- Energy flow in the ecosystem

- Ecological succession
- Food chains, food webs and ecological pyramids.
- Introduction, Types, Characteristics Features, Structure and Function of Forest, Grass, Desert and Aquatic Ecosystem.

(b) Biodiversity and its Conservation

- Introduction - Definition: genetic. species and ecosystem diversity
- Bio-geographical classification of India.
- Value of biodiversity: Consumptive use. productive use, social ethics, aesthetic and option values.
- Biodiversity at global, National and local levels.
- India as mega-diversity nation.
- Hot spots of biodiversity.
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wild life conflict.
- Endangered and endemic species of India.
- Conservation of biodiversity: In situ and Ex-situ conservation of biodiversity.

(12 Lecture)

UNIT- III

(a) Causes, effect and control measures of

- Air water, soil, marine, noise, nuclear pollution and Human population.
- Solid waste management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Disaster Management : floods, earthquake, cyclone and landslides.

(12 Lecture)

(b) Environmental Management

- From Unsustainable to sustainable development.
- Urban problems related to energy.

- Water conservation, rain water harvesting, watershed management.
- Resettlement and rehabilitation of people, its problems and concerns.
- Environmental ethics: Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.
- Wasteland reclamation
- Environment protection Act: Issues involved in enforcement of environmental legislation.
- Role of Information Technology in Environment and Human Health.

UNIT- IV

General background and historical perspective- Historical development and concept of Human Rights, Meaning and definition of Human Rights, Kind and Classification of Human Rights.

Protection of Human Rights under the UNO Charter, protection of Human Rights under the Universal Declaration of Human Rights, 1948.

Convention on the Elimination of all forms of Discrimination against women.

Convention on the Rights of the Child, 1989.

UNIT- V

Impact of Human Rights norms in India, Human Rights under the Constitution of India, Fundamental Rights under the Constitution of India, Directive Principles of State policy under the Constitution of India, Enforcement of Human Rights in India.

Protection of Human Rights under the Human Rights Act, 1993- National Human Rights Commission, State Human Rights Commission and Human Rights court in India.

Fundamental Duties under the Constitution of India.

Reference/ Books Recommended

1. SK Kapoor- Human rights under International Law and Indian Law.
2. HO Agrawal- Internation Law and Human Rights
3. एस.के. कपूर – मानव अधिकार
4. जे.एन. पान्डेय – भारत का संविधान
5. एम.डी. चतुर्वेदी – भारत का संविधान
6. J.N.Pandey - Constitutional Law of India
7. Agarwal K.C. 2001 Environmental Biology, Nidi pub. Ltd. Bikaner

8. Bharucha Erach, the Biodiversity of India, Mapin pub. Ltd. Ahmedabad 380013, India, Email: mapin@icenet.net(R)
9. Bruinner R.C. 1989, Hazardous Waste Incineration. McGraw Hill Inc.480p
10. Clark R.S. Marine pollution, Clanderson press Oxford (TB)
11. Cuningham, W.P.Cooper. T.H.Gorhani, E & Hepworth. M.T,200
12. Dr. A.K.- Environmental Chemistry. Wiley Eastern Ltd.
13. Down to Earth, Center for Science and Environment (R)
14. Gloick, H.P. 1993 Water in crisis. pacific institute for studies in Deve. Environment & Security. Stockholm Eng. Institute. Oxford University, Press. m 473p.
15. Hawkins R.E. Encyclopedia of Indian Natural History, Bombay Natural History Society, Mumbai (R)
16. Heywood, V.H. & Watson, T.T.1995 Global Biodiversity Assessment, Cambridge Univ. Press 1140p
17. Jadhav H. & Bhosale, V.H. 1995 Environmental Protection and Law. Himalaya pub. House, Delhi 284p
18. Mckinney M.L.& School R.M.1996, environmental Science systems & solutions, web enhanced edition, 639p
19. Mhadkar A.K. Matter Hazardous, Techno-Science publication(TB)
20. Miller T.G.Jr. Environment Science, Wadsworth publication co. (TB)
21. Odum E.P.1971, Fundamentals of Ecology, W.B. Saunders Co. USA,574p
22. Rao M.N. & Datta, A.K. 1987, Waste water treatment. Oxford & IBH pub.co.pvt. Ltd 345p
23. Sharma B.K. 2001, Environmental chemistry, Goel pub. House, Meerut
24. Survey of the Environment, The Hidu(M)
25. Townsend C. Harper J. And Michael Begon, Essentials of Ecology, Blackwell Science(TB)
26. Trivedi R.K.Handbook of Environment Laws, Rules, Guidlines, Compliances and Standards, Vol land II, Environment Media(R)
27. Trivedi R.K. and P.K. Goel, Introduction to air pollution, Techno-Science publication (TB)
28. Wanger K.D.1998, Environmental Management. W.B. Saunders Co. Philadelphia, USA 499p

आधार पाठ्यक्रम

प्रश्न पत्र - प्रथम

हिन्दी भाषा

पूर्णांक - 75

(पेपर संख्या 1111)

नोट :

1. प्रश्न पत्र 75 अंक का होगा ।
2. प्रश्न पत्र अनिवार्य होगा ।
4. इसके अंक श्रेणी निर्धारण के लिए जोड़े जावेंगे ।
5. प्रत्येक इकाई के अंक समान होंगे ।

पाठ्य विषय -

इकाई-1 पल्लवन, पत्राचार तथा अनुवाद एवं पारिभाषिक शब्दावली ।

इकाई-2 मुहावरे-लोकोक्तियाँ, शब्दशुद्धि, वाक्य शुद्धि, शब्द ज्ञान-पर्यायवाची, विलोम, अनेकार्थी, समश्रुत (समानोचरित) अनेक शब्दों के लिए एक शब्द ।

इकाई-3 देवनागरी लिपि की विशेषता, देवनागरी लिपि एवं वर्तनी का मानक रूप ।

इकाई-4 कम्प्यूटर में हिन्दी का अनुप्रयोग, हिन्दी में पदनाम ।

इकाई-5 हिन्दी अपठित, संक्षेपण, हिन्दी में संक्षिप्तीकरण ।

पाठ्य क्रम के लिए पुस्तकें -

1. भारतीयता के स्वर साधन धनंजय वर्मा - म. प्र. ग्रंथ अकादमी ।
2. नागरी लिपि और हिन्दी - अनंत चौधरी - ग्रंथ अकादमी पटना ।
3. कम्प्यूटर और हिन्दी - हरिमोहन - तक्षशिला प्रकाशन, दिल्ली ।

FOUNDATION COURSE

PAPER - II

ENGLISH LANGUAGE (Paper Code-1112)

M.M. 75

UNIT-1 **Basic Language skills : Grammar and Usage.**

Grammar and Vocabulary based on the prescribed text.
To be assessed by objective / multiple choice tests.

(Grammar - 20 Marks
Vocabulary - 15 Marks)

UNIT-2 **Comprehension of an unseen passage.** 05

This should imply not only (a) an understanding of the passage in question, but also (b) a grasp of general language skills and issues with reference to words and usage

within the passage and (c) the Power of short independent composition based on themes and issues raised in the passage.

To be assessed by both objective multiple choice and short answer type tests.

UNIT-3 **Composition :** Paragraph writing 10

UNIT-4 **Letter writing** (The formal and one Informal) 10

Two letters to be attempted of 5 marks each. One formal and one informal.

UNIT-5 **Texts :** 15

Short prose pieces (Fiction and not fiction) short poems, the pieces should cover a range of authors, subjects and contexts. With poetry if may sometimes be advisable to include pieces from earlier periods, which are often simpler than modern examples. In all cases, the language should be accessible (with a minimum of explanation and reference to standard dictionaries) to the general body of students schooled in the medium of an Indian language.

Students should be able to grasp the contents of each piece; explain specific words, phrases and allusions; and comment on general points of narrative or argument. Formal Principles of Literary criticism should not be taken up at this stage.

To be assessed by five short answers of three marks each.

BOOKS PRESCRIBED -

English Language and Indian Culture - Published by M.P. Hindi Granth Academy Bhopal.

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GROUP - I

FINANACIAL ACCOUNTING

(Paper Code-1113)

PAPER - I **M.M. 75**

OBJECTIVE

To Impart basic accounting knowledge as applicable to business.

COURSE INPUTS

UNIT-I Meaning and Scope of Accounting : Need, development, and definition, objectives of accounting, difference between Book-keeping and accounting; Branches of accounting; Accounting Principles,

Accounting Standard : International accounting Standard only outlines, Accounting standard in India.

Accounting Transaction : Accounting cycles Journal Rules of debit & Credit, Compound Journal Entry opening Entry Relationship between Journal & ledger, Capital & Revenue: Classification of Income & Expenditure and Receipt.

UNIT-II Final accounts; Trial balance; Manufacturing account; Trading account; Profit and loss account; Balance sheet; Adjustment entries.

Rectification of errors; Classification of errors; Location of errors; Rectification of errors; Suspense account; Effect on profit.

UNIT-III Depreciation, Provisions, and Reserves: Concept of depreciation; Causes of depreciation; Depreciation, depletion amortization, Depreciation accounting; Methods of recording depreciation; Methods for providing depreciation; Depreciation of different assets; Depreciation of replacement cost; Depreciation policy; as per Indian accounting Standard : Provisions and Reserves. Accounts of Non-Trading Institutions

UNIT-IV Special Acconting Areas :

Branch Accounts : Dependent branch : Debtors system, stock and debtor system ; Hire-purchase and instalment purchase system ; Meaning of hire-purchase contract; Legal provision regarding hire-purchase contract; Accounting records for goods of substantial sale values, and accounting records for goods of small values; Instalment purchase system ; After sales service.

UNIT-V

a. Partnership Accounts : Essential characteristics of partnership ; Partnership deed : Final accounts; Adjustments after closing the accounts ; Fixed fluctuating capital ; Goodwill ; AS-10 ; Joint Life Policy ; Change in Profit Sharing Ratio.

b. Reconstitution of a partnership firm-Admission of a partner ; Retirement of a partner; Death of a partner; Dissolution of a firm; Accounting Entries; Insolvency of partnership firm-Modes of dissolution of a firm;Accounting entries; Insolveney of parters distribution.

SUGGESTED READINGS :

1. Anthony, R.N. and Reece, J.S.: Accounting Principles; Richard Irwin Inc.
2. Gupta, R.L. and Radhaswamy, M: Financial Accounting ; Sultan chand and Sons, New Delhi.
3. Monga J.R. Ahuja Girish, and Sehgal Ashok : Financial Accounting ; Mayur Paper Back, Noida.

4 Shukla. M.C., Grewal T.S., and Gupta, S.C.: Advanced Accounts; S.Chand & Co. New Delhi.
5 Compendium of Statement and Standards of Accounting : The Institute of Chartered Accountants of India, New Delhi.
6 Agrawala A.N. Agrawala K.N.: Higher Sciences of Accountancy : Kitab Mahal, Allahabad.
7. उच्चतर लेखांकन : राणा एवं अन्य : म.प्र. हिन्दी ग्रंथ अकादमी, भोपाल
8. उच्चतर लेखांकन : वसु एवं दास : (अंग्रेजी)
9. उच्चतर लेखांकन : हनीफ एवं मुखर्जी (अंग्रेजी)
10. वित्तीय लेखांकन : अग्रवाल एवं मंगल : यूनिवर्सल पब्लिकेशन
11. वित्तीय लेखांकन : एस.एम. शुक्ला : साहित्य भवन आगरा

BUSINESS MATHEMATICS

(Paper Code-1114)

PAPER - II **M.M. 75**

OBJECTIVE

The objective of this course is to enable the students to have such minimum knowledge of Mathematics as is applicable to business and economic situations.

COURSE INPUTS

UNIT-I Calculus (Problems and theorems involving trigonometrical ratios are not to be done).

Differentiation : Partial derivatives up to second order; Homogeneity of functions and Euler's theorem;

Maxima and Minima; Cases of one variable involving second or higher order derivatives; logarithm's.

UNIT-II Matrices and Determinants : Definition of a matrix; Types of matrices; Algebra of matrices; Properties of determinants; Calculation of values of determinants upto third order; Adjoint of a matrix, elementary row or column operations; Finding inverse of a matrix through adjoint and elementary row or column operations; Solution of a system of linear equations having unique solution and involving not more than three variables.

UNIT-III Linear Programming-Formulation of LPP : Graphical method of solution ; Problems relating to two variables including the case of mixed constraints; Cases having no solution, multiple solutions, unbounded solution and redundant constraints.

Transportation Problem, Ratio & Proportion.

UNIT-IV Compound interest and Annuities : Certain different types of interest rates; Concept of present value and amount of a sum ; Types of annuities; Present value and amount of an annuity, including the case of continuous compounding ; Valuation of simple loans and debentures; Problems relating to sinking funds.

UNIT-V Averages, Percentages, Commission Brokerage, Profit and loss.

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GROUP - II

BUSINESS COMMUNICATION (Paper Code-1115)

PAPER - I **M.M. 75**

OBJECTIVE

The Objective of this course is to develop effective business communication skills among the students.

COURSE INPUTS

UNIT-I Introducing Business Communication : Definitions, concept and Significance of communication, Basic forms of communicating; Communication models and process principles of effective communication; Theories of communication; Audience analysis.

Self-Development and Communication : Development of positive personal attitudes, SWOT analysis; Vote's model of interdependence; Whole communication.

UNIT-II Corporate Communication : Formal and informal communication networks; Grapevine; Miscommunication (Barriers) ; Improving communication.

Practices in business communication : Group discussions; Mock interviews; Seminars; Effective listening exercises; Individual and group presentations and reports writing.

UNIT-III Writing Skills : Planning business messages; Rewriting and editing; The first draft; Reconstructing the final draft; Business letters and memo formats; Appearance request letters; Good news and bad new letters; Persuasive letters; Sales letters; Collection letters; Office memorandum.

UNIT-IV Report Writing : Introduction to a proposal, short report and formal report, report preparation.

Oral Presentation : Principles of oral presentation, factors affecting presentation, sales presentation, training presentation, conducting surveys, speeches to motivate, effective presentation skills.

UNIT-V Non-Verbal Aspects of Communicating.

Body language : Kinesics, Proxemics, Para language..

Effective listening : Principles of effective listening; Factors affecting listening exercises; Oral, written, and video sessions.

Interviewing Skills : Appearing in interviews; Conducting interviews; Writing resume and letter of application.

Modern Forms of Communicating : Fax; E-mail; Video conferencing; etc.

International Communication : Cultural sensitiveness and cultural context; Writing and presenting in international situations; Inter-cultural factors in interactions; Adapting to global business.

SUGGESTED READINGS :

1 Bovee and Thill : Business Communication Today ; Tata McGraw Hill, New Delhi.

2 Ronald E. Dulek and John SFielder : Principles of Business Communication; Macmillan Publishing Company, London.

3 Randall E. Magors; Business Communication : Harper and Row New York.

4. Webster's Guide to Effective letter writing ; Harper and Row, New York.
5. Balasubramanyam : Business Communications ; Vikas Publishing House, Delhi.
6. Kaul : Business Communication ; Prentice Hall, New Delhi.
7. Kaul : Effective Business Communication : Prentice Hall, New Delhi.
8. Patri VR : Essentials of Communication ; Greenspan Publications, New Delhi.
9. Senguin J : Business Communication ; The Real World and Your Career, Allied Publishers, New Delhi.
10. Robinson, Netrakanti and Shintre : Communicative Competence in Business English ; Orient Longman, Hyderabad.

BUSINESS REGULATORY FRAMEWORK (Paper Code-1116)

PAPER - II **M.M. 75**

OBJECTIVE

The objective of this course is to provide a brief idea about the framework of Indian business laws.

COURSE INPUTS

UNIT-I Law of Contract (1872) : Nature of contract ; Classification; Offer and acceptance; Capacity of parties to contract, free consent, Considerations, Legality of object; Agreement declared void; Performance of contract; Discharge of contract; Remedies for breach of contract.

UNIT-II Special Contracts : Indemnity ; Guarantee; Bailment and pledge; Agency.

UNIT-III Sale of Goods Act 1930 : Formation of contracts of sale; Goods and their classification, price, Conditions, and warranties; Transfer of property in goods; Performance of the contract of sales; Unpaid seller and his rights, sale by auction; Hire purchase agreement.

UNIT-IV Negotiable Instrument Act 1881 : Definition of negotiable instruments; Features; Promissory note; Bill of exchange & cheque; Holder and holder in the due course; Crossing of a cheque, types of crossing; Negotiation; Dishonuor and discharge of negotiable instrument.

UNIT-V The Consumer Protection Act 1986 : Sailent features; Definition of consumer; Grievance redressal machinery;

Foreign Exchange Management Act 2000 : Definitions and main provisions, Right to Information Act 2005 (Main Provisions).

SUGGESTED READINGS :

1. Desai T.R. Indian Contract Act, Sale of Goods Act and Partnership Act; S.C. Sarkar & Sons Pvt. Ltd. Kolkata.
2. Khergamwala J.S.: The Negotiable Instruments Act; N.M.Tripathi Pvt. Ltd. Mumbai.
3. Singh Avtar : The Principles of Mercantile Law; Eastern Book Company, Lucknow.
4. Kuchal M.C. Business Law; Vikas Publishing House, New Delhi.
5. Kapoor N.D. Business Laws, Sultan Chand & Sons, New Delhi.
6. Chandha P.R. : Business Law; Galgotia, New Delhi.

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GROUP - III

BUSINESS ENVIRONMENT (Paper Code-1117)

PAPER - I **M.M. 75**

OBJECTIVE

This course aims at acquainting the students with the emerging issues in business at the national and international level in the light of the policies of liberalization and globalization.

COURSE INPUTS

UNIT-I Indian Business Environment : Concept, components, and importance

Economic Trends (overview) : Income ; Savings and investment ; Industry ; Trade and balance of payments, Money ; Finance ; Prices.

UNIT-II Problems of Growth : Unemployment ; Poverty; Regional imbalances ; Social injustice; Inflation ; Parallel economy ; Industrial sickness.

UNIT-III Role of Government : Monetary and fiscal policy ; Industrial policy ; Industrial licensing. Privatization; Devaluation; Export-Import policy; Regulation of foreign investment; Collaborations in the light of recent changes.

UNIT-IV Review of Presious Plans, the current five Year Plan, major Policy, Resources Allocation.

UNIT-V International Environment : international trading environment (overview); Trends in world trade and the problems of developing countries; Foreign trade and economic growth; International economic groupings; International economic institutions - GATT, WTO World Bank, IMF; FDI, Counter trade.

SUGGESTED READINGS :

1. Sundaram & Black : The International Business Environment ; Prentice Hall, New Delhi.
2. Agrawal A.N. : Indian Economy ; Vikas Publishing House, Delhi.
3. Khan Farooq A : Business and Society : S. Chand., Delhi.
4. Dutt R. and Sundaram K.P.M. ; Indian Economy : S. Chand, Delhi.
5. Misra S.K. and Puri V.K. : Indian Economy : Himalaya Publishing House, New Delhi.
6. Hedge Lan : Environmental Economics; Macmillan, Hampshire.
7. Dutt Ruddar : Economic Reforms in India - A Critique : S. Chand, New Delhi.

BUSINESS ECONOMICS (Paper Code-1118)

PAPER - II **M.M. 75**

OBJECTIVE

This course is meant to acquaint the students with the principles of Business Economics as are applicable in business.

COURSE INPUTS

UNIT-I Introduction : Basic problems of an economy ; Working of price mechanism.

Elastcity of Demand : Concept and measurment of elasticity of demand ; Price, income

and cross elasticities; Average revenue, marginal revenue, and elasticity of demand; Determinants of elasticity of demand; Importance of elasticity of demand.

UNIT-II Production Function : Law of variable proportions ; Iso-quants; Expansion path; Returns to scale; Internal and external economies and diseconomies.

UNIT-III Theory of Costs : Short-run and long-run cost curves - traditional and modern approaches.

Market Structures I Market structures and business decisions ; Objectives of a business firm.

a Perfect Competition : Profit maximization and equilibrium of firm and industry ; Short-run and long run supply curves; Price and output determination. Practical applications.

b Monopoly : Determination of price under monopoly ; Equilibrium of a firm ; Comparison between perfect competition and monopoly; Multi-plant monopoly; Price discrimination. Practical applications.

UNIT-IV Market Structures

a. Monopolistic Competition : Meaning and characterstics; Price and output determination under monopolistic competition; Product differentiations ; Selling costs; Comparison with perfect competition; Excess capacity under monopolistic competition.

b Oligopoly : Characteristics, indeterminate pricing and output ; Classical models of oligopoly ; Price leadership ; Collusive oligopoly.

UNIT-V Factor Pricing-I : Marginal Productivity theory and demand for factors; Nature of supply of factor inputs; Determination of wage rates under perfect competition and monopoly; Exploitation of labour.

Factor pricing-II : Rent concept, Recardian and modern theories of Rent quasirent.

Interests-concept and theories of interest ; Profit-nature, concepts and theoris of profit.

SUGGESTED READINGS :

1. John P.Gould, Jr. and Edward P.Lazear : Micro economic Theory; All India Traveller, Delhi.
2. Browning Edger K, and Browning Jacquenience M : Microeconomic Theory and Applications ; Kalyani, New Delhi.
3. Watson Donald S. and Getz Molcolm : Price Theory and its Uses ; Khosla Publishing House, New Delhi.
4. Koutsoyianni A.: Modern Microeconomics : Macmillan, New Delhi.
5. Rechard G, Lipsey : An Introduction to Positive Economics ; ELBS, Oxford.
6. Stigler G : The Theory of Price ; Prentice Hall of India.
7. Nellis & Parker : The Essence of Business Economics; Prentice Hall, New Delhi.
8. Forguson P.R. and Rothschild R., and Forguson G.J. : Business Economics; MacMillan Hampshire.
9. Ahuja H.l.: Business Economics ; S.Chand & Co., New Delhi.

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B. COM.-I YEAR (COMPUTER APPLICATION)

MARKS DISTRIBUTION

THEORY PAPER	PAPER - I	TOTAL MARKS - 50
	PAPER - II	TOTAL MARKS - 50

Every unit of theory paper will consists of 10 marks.

PRACTICAL PAPER	TOTAL MARKS - 50
Practical Marks Distribution	VIVA - 10
	INTERNAL - 15
	PRACTICAL - 25
Practical Test will consist of 3 hrs.	TOTAL MARKS - 150

Syllabus of B. Com - I (Computer Application)

PAPER - I

(COMPUTER FUNDAMENTALS AND OFFICE AUTOMATION) (Paper Code-1119)

UNIT-I Introduction to Computers

Computer System Characteristics and Capabilities : Speed, Accuracy, Reliability, Memory capability, Repeatability. *Computer Hardware and Software :* Block Diagram of Computer, Different Types of Software. *Data Processing :* Data, Data Processing System, Storing Data, Processing Data. *Types of Computers :* Analog, Digital, Hybrid General and Special Purpose Computers. *Computer Generations :* Chatacteristics of Computer Generations Computer Systems - Micro, Minis & Main-Frames. *Introduction to a PC :* The IBM Personal Computer Types of PC systems PC, XT & AT Pentium PC's. Prevailing computer configurations. Various types of computer peripherals and memory devices. Limitations of Micro Computer.

UNIT-II Computer Software and Application

System Software : System software Vs. Application Software, Types of System Software, Introduction and Types of Operating Systems programs, Booting Loader, Diagnostic Tests, BIOS, Utility Programs, File Maintenance, Language Processors, Assembler, Compiler & Interpreter. Types of operating systems- MS DOS, WINDOWS, UNIX/Linux. *Application Software :* Microcomputer Software, Interacting with the System, Trends in PC software, Types of Application Software, Difference between Program and Packages.

UNIT-III Operating System

Fundamentals of DOS : Physical Structure of the Disk, Compatibility of drives, Disks & DOS versions, Preparing Disks for use, Device Names. *Getting Started with DOS :* Booting Process, System Files and Command com, Internal DOS Commands - DIR, MD, CD, COPY, DEL, REN, VOL, DATE, TIME, CLS, PATH, TYPE. Files & Directories, Elementary External DOS Commands - CHKDSK, MEM, XCOPY, PRINT, DISKCOPY, DISKCOMP, DOSKEY, HELP, TREE, SYS, LABEL, ATTRIB, Creating a Batch Files, Additional Commands - ECHO, PROMPT, MODE, GRAPHICS, EDIT, FORMAT, FDISK, BACKUP, RESTORE, MORE, SORT, APPEND.

Windows Concepts, Features, Structure, Desktop, Taskbar, Start Menu, My Computer, Recycle bin, Accessories : Calculator, Notepad, Paint, WordPad, Character

Map. Explorer : Creating folders and other Explorer facilities. Internet explorer basics, navigating the web.

UNIT-IV **Ms Word -** Creating & editing word documents, Formatting documents - aligning documents, indenting paragraphs, changing margin, formatting pages, formatting paragrtaph, printing labels, working with tables, formatting text in tables, inserting & deleting cells, rows & Columns, use Bulleted & numbering. Checking spelling & Grammar, Finding synonyms, Working with long documents, working with header & Footer, adding page no & footnote, working with Graphics, inserting ClipArt, working templates, Creating templates, working with Mail - Merge, Writing the Form letter, Merging Form documents, Merging to label, Working with Mailing lists and Data Sources, Selecting Merge Records, Creating Macro, Running Macro.

Presenting with power point : Creating presentation, working with slides, Different type of slides, setting page layout, selecting background & applying design, adding Graphics to slide, adding sound & Movie, working with table, crating chart & Graph, playing a slide show, slide transition, advancing slides, setting time, rehearsing timing, animating slide, animating objects, running the show from windows.

UNIT-V **Working with Excel -** Introducing Excel, Use of Excel sheet, saving, opening & printing workbook, Apply formats in cell & text, Divide worksheet into pages, setting page layout, adding Header & Footer. Using multiple documents, arranging windows i.e. (Cascade, Tiled, Split), protecting your work, password protection. Working with Functions & Formulas, using absolute reference, referencing cell by name, using cell label, Giving name to cell and ranges, working with formulas (Mathematical & Trigonometric, Statistical, Date time, Most recently used), Working with Excel Graphics, creating chart & graphs. Working with lists & database, sorting a database, Filtering a database, using auto filter, Criteria Range, Calculating total & Subtotal, Creating Pivot table, Goal seek, Recording & Playing Macros, Deleting & Selecting Macro location, Use of Freeze option.

SUGGESTED BOOKS:

1. Office 2000 Made Easy - Alan Neibauer, Tata McGraw Hill.
2. Operating System (Incl. DOS & UNIX) : C. Ritchie [BPB]

PAPER - II

COMPUTERIZED FINANCIAL ACCOUNTING (Paper Code-1120)

UNIT-I Introduction to Data Base Management System, Introduction to Foxpro. Creating Data Base Files, list, display, edit browse replace, delete, pack, recall, locate-continue seek and find, sort, index, display structure, modify structure, memo field.

UNIT-II Memory variables, store, date and time function, prinitng reports and labels, mathematicl function - sum, average, count, sqrt(), min(), max(), betweem(), len(), Floor(), int(), log(), sign(), character function - left(), right(), at(), stuff(), isupper(0, islower(), isalpha(), isdigit(), replicate(). Greation of Macros, Array.

UNIT-III Programming with foxpro : modify command, using do while-enddo, making decision with if-endif, scan-end, text-endtext, do...case-end...case, for-endfor, accept, input, wait, set relation, update, join, @ say, get command with read, pictures and functions with @.

Windows, menus and popus-creating menu define menu, defining and using popups and popups features, creating simple menu with @ prompt, defining and using windows.

UNIT-IV Introduction to Accounting Software [Ex.-Tally], Creation of Company, Ledgers & Groups. Advance features of Accounitng Software.

Accounting Transactions : Operating Cycle, Journal, Concept of Accounts Receivable and payable, Compound Journal entry, Opening entry of Ledger.

UNIT-V Voucher Entry : Types of Voucher, Capital and Revenue, Income, Expenditure, Receipts Preparation of Trial Balance, Profit & Loss Account & Balance Sheet.

Depreciation, Provisions and Reserves, Methods of Depreciation, Depreciation of assets, Depreciation of replacement cost.

SUGGESTED REFERENCES :

1. Foxpro made simple by R.K. Taxali.
2. Foxpro 2.5 by Charies Seigal.
3. Tally 5.4 by Vishupuriya Singh.
4. Implementry tally 1.4 by K.K. Nadhni.

PAPER - III

PRACTICAL EXERCISES BASED ON PAPER I&II

Following practicals (from s.no. 1 to 7) to be done using any financial accounting S/w (like Tally)

1. Setting up Ledger & Groups.
2. Study of recording of transactions in the 'Voucher'. (According to Golden rules)
3. Study of 'Final A/C preparation & displaying in different mode/format.
4. Study of alteration & Deletion of ledger/Groups.
5. Study of cash & find flow, day book, sales register, purchase register, bills receivable/ Payable etc.
6. Study of data security & backing up data.
7. Outline of entry of Income Tax, ED, VAT, ST/CST, PF, Gratuity, Bonus, Loans & Depreciation etc.
8. Creating label, report and screen files using database file with all types of fields.
9. Making of Macros for creating new data base functions.
10. Programming in foxpro which covers menus, Conditional branching & looping, array, memory variable, hyperlink.
11. Study of working with two or more data bases using join, Set relation, update.
12. Sending circular letter to all organization using mail merge.
13. Practical that cover all Graphs.
14. Create conditional Batch file for selection of copying, deleting, renaming & exit file.
15. Practice of all internal & External Dos commands.
16. Creating Sheet which covers sorting. grouping, Freeze, auto sum, subtotal, Max, Min, Goal seek function.

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पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़)

पाठ्यक्रम

बी.काम. भाग-2 (कोड-602)

B. Com. Part - II (Code - 602)

परीक्षा : **2016-17**

कुलसचिव पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़) की ओर से

बी.काम. भाग-2

B. Com. - II

INDEX

(विषय-सूची)

REVISED ORDINANCE NO. - 23
(As per State U. G. C. Scheme)
BACHELOR OF COMMERCE

1. The three year course has been broken up into three Parts.
   Part-I known as B. Com. Part-I Examination at the end of first year.
   Part-II Examination at the end of the second year, and
   Part-III Examination at the end of the third year.
2. A candidate who after passing (10+2) Higher Secondary or Intermediate examination of C.G. Board of Secondary Education, C.G. or any other examination recognised by the University or C.G. Board of Secondary Education as equivalent thereto has attended a regular course of study in an affiliated college or in the Teaching Department of the University for one academic year, shall be eligible for appearing at the B.Com. Part-I examination.
3. A candidate who after passing B.Com. Part-I examination of the University or any other examination recognised by the University as equivalent thereto has attended a regular course of study for one academic year in an affiliated College or in the Teaching Department of the University, shall be eligible for appearing at the B.Com. Part-II Examination.
4. A candidate who after passing B.Com. Part-II examination of the University has completed a regular course of study for one academic year in an affiliated College or in the Teaching Department of the University, shall be eligible for appearing at the B.Com. Part-III examination.
5. Besides regular students, subject to their compliance with this ordinance, ex-students and non-collegiate students shall be eligible for admission to the examination as per provision of Ordinance No. 6 relating to examinations (General).
   Provided that non-collegiate candidates shall be permitted to offer only such subject/ papers as are taught to the regular students at any of the University Teaching Department of College.
6. Every candidate for B.Com. Examination shall be examined in subjects as mentioned in the marking scheme and course or studies.
7. A candidate who has passed the B.Com. Part-III examination of the University shall be allowed to present himself of examination in any of the additional subjects prescribed for the B.Com. examination and not taken by him at the degree examination. Such candidate will have to first appear and pass the B. Com. Part-I examination in the subject which he proposes to offer then the B.Com. Part-II and Part-III examination in the same subject. Successful candidates will be given a certificate to that effect.
8. In order to pass at any part of the three year degree course examination, an examinee must obtain not less than 33% of the total marks in each paper/group of subjects. In group where both theory and practical examinations are provided an examinee must pass in both theory and practical parts of examination separately.
9. Candidate will have to pass separately at the Part-I, Part-II and Part-III examination. No division shall be assigned on the result of the Part-I and Part-II examinations In determining the division of the Final examination, total marks obtained by the examinees in their Part-I, Part-II and Part-III examination in the aggregate shall be taken into account. Candidate will not be allowed to change subjects after passing Part-I examination.

Provided in case of candidate who has passed the examination through the supplementary examination having failed in one subject/group only, the total aggregate mark being carried over for determining the division, shall include actual marks obtained in the subject/group in which he appeared at the supplementary examination.

10. Successful examinees at the Part - III examination obtaining 60% or more marks shall be placed in the First Division, those obtaining less than 60% but not less than 45% marks in the Second Division and other successful examinees in the Third Division.

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B.COM. PART - II

SCHEME OF EXAMINATION

Subject		Max. Marks	Min. Marks
i) Environmental Studies	75	100	33
Field Work	25		
A. FOUNDATION COURSE			
i) Hindi Language - I		75	26
ii) English Language - II		75	26
B. THREE COMPULSORY GROUPS :			
GROUP - I			
Accounting :			
i) Corporate Accounting	75	150	50
ii) Cost Accounting	75		
GROUP - II			
Business Management :			
i) Principles of Business Mangement	75	150	50
ii) Company Law	75		
GROUP - III			
Applied Economics :			
i) Business Statisitics	75	150	50
ii) Fundamentals of Entrepreneuship	75		

USE OF CALCULATORS

The students of Degree/P.G. Classes will be permitted to use of Calculators in the examination hall from annual 1986 examination on the following conditions as per decision of the standing committee of the Academic Council at its meeting held on 31-1-1986.

1. Student will bring their own Calculators.
2. Calculators will not be provided by University or examination centres.
3. Calculators with, memory and following variables be permitted +, −, ×, ÷ square reciprocal, expotentials, log squares, root, trignometric functions viz, sine, cosine tangent etc. factorial summation, xy, yx and in the light of objective approvial of marits and demerits of the viva only will be allowed.

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हिन्दी भाषा

भाग-दो, आधार पाठ्यक्रम

प्रश्न पत्र - प्रथम

(पेपर कोड 1131) पूर्णांक - 75

खण्ड-क

निम्नलिखित 5 लेखकों के एक-एक निबंध पाठ्यक्रम में सम्मिलित होंगे - अंक-30

1.	महात्मा गांधी	-	सत्य और अहिंसा
2.	विनोबा भावे	-	ग्राम सेवा
3.	आचार्य नरेन्द्र देव	-	युवकों का समाज में स्थान
4.	वासुदेव शरण अग्रवाल	-	मातृ-भूमि
5.	भगवतशरण उपाध्याय	-	हिमालय की व्युत्पत्ति
6.	हरि ठाकुर	-	डॉ. खूबचंद बघेल

खण्ड-ख

हिन्दी भाषा और उसके विविध रूप अंक-20

- कार्यालयीन भाषा
- मीडिया की भाषा
- वित्त एवं वाणिज्य की भाषा
- मशीनी भाषा

खण्ड-ग

अनुवाद व्यवहार : अंग्रेजी से हिन्दी में अनुवाद अंक-25

हिन्दी की व्यवहारिक कोटियाँ-

रचनागत प्रयोगगत उदाहरण, संज्ञा, सर्वनाम, विशेषण, क्रिया विशेषण, समास, संधि एवं संक्षिप्तियां, रचना एवं प्रयोगगत विवेचन ।

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ENGLISH LANGUAGE (Paper Code-1132)

B.A. / B.Sc. / B.COM. / B.H.Sc. - II

M.M.75

The question paper for B.A./B.Sc./B.Com./B.H.Sc., English Language and cultural valuers shall comprise the following units :

UNIT-I Short answer questions to be assed by (Five short answer questions of three marks each) 15 Marks

UNIT-II (a) Reading comprehension of an unseen passage 05 Marks

(b) Vocabulary

UNIT-III Report-Writing 10 Marks

UNIT-IV Expansion of an idea 10 Marks

UNIT-V Grammar and Vocabulary based on the prescribed text book. 20+15 Marks

Note : Question on all the units shall asked from the prescribed text which will comprise specimens of popular creative/writing and the following it any

(a) Matter & technology

(i) State of matter and its structure

(ii) Technology (Electronics Communication, Space Science)

(b) Our Scientists & Institutions

(i) Life & work of our eminent scientist Arya Bhatt. Kaurd Charak Shusruta, Nagarjuna, J.C. Bose and C.V. Raman, S. Rmanujam, Homi J. Babha Birbal Sahani.

(iii) Indian Scientific Institutions (Ancient & Modern)

Books Prescribed :

Foundation English for U.G. Second Yaer - Published by M.P. Hindi Granth Academy, Bhopal.

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COMPULSORY

Group - I - Accounting

PAPER - I

CORPORATE ACCOUNTING

(Paper Code-1133)

Max. M. 75

Min. M. 25

OBJECTIVE

This course enable the students to develop awareness about corporate accounting in conformity with the provisions of companies Act.

COURSE INPUTS

UNIT-I Issue, Forfeiture, and Re-issue of Shares : Redemption of preference shares; Issue and redemption of debentures.

UNIT-II Final Accounts; Excluding computation of managerial remuneration, and disposal of profit, Liquidation of Company.

UNIT-III Valuation of Goodwill and Shares.

UNIT-IV Accounting for Amalgamation of Companies as per Indian Accounting Standard 14; Accounting for internal reconstruction - excluding intercompany holdings and re-construction schemes.

UNIT-V Consolidated Balance Sheet of holding companies with one subsidiary only. Final Account of Banking Companies.

SUGGESTED READINGS :

1. Gupta R.L., Radhaswamy M; Company Accounts; Sultan Chand & Sons, New Delhi.
2. Maheshwari S.N. Corporate Accounting; Vikas Publishing House, New Delhi.
3. Monga J.R., Ahuja, Girish and Sehgal Ashok : Financial Accounting; Mayur Paper Backs, Noida.
4. Shukla M.C., Grewal T.S. and Gupta S.C. : Advanced Accounts; S. Chand & Co., New Delhi.
5. Moore C.L. and Jaedicke R.K. : Managerial Accounting; South Western Publishing Co. Cincinati, Ohio.
6. Dr. S.M. Shukla, Sahitya Bhawan Agra.
7. Dr. Hanif & Mukerjee - Published Mac Millan.
8. Dr. Mangal Mehta & Agrawal Published - Indore.
9. Dr. Karim Khanuja - Published - Agra.

COMPULSORY

Group - I - Accounting

PAPER - II

COST ACCOUNTING (Paper Code-1134)

Max. M. 75

OBJECTIVE

This course exposes the students to the basic concepts and the tools used in cost accounting.

COURSE INPUTS

UNIT-I Introduction : Nature and scope of cost accounting ; Cost concepts and classfication; Methods and techniques; Installation of costing system; Concept of cost audit. Accounting for Material : Material Control; Concept and techniques; Pricing of material issues; Treatment of material losses.

UNIT-II Accounting for Labour : Labour cost control procedure; Labour turnover; Idle time and overtime; Methods of wage payment - time and piece rates; Incentive schemes. Accounting for overheads; Classification and departmentalization; Absorption of overheads; Determination of overhead rates; Under and over absorption, and its treatment.

UNIT-III Cost Ascertainment : Unit costing; Job, batch and contract costing.

UNIT-IV Operating costing; Process Costing - excluding inter - process profits, and joint and by - products.

UNIT-V Cost Records : Intergal and non - integral system; Reconciliation of cost and financial accounts; Break Even Point.

SUGGESTED READINGS :

1. Arora M.N. : Cost Accounting - Principles and Practice; Vikas, New Delhi.
2. Jain S.P. and Narang K.L. : Cost Accounting; Kalyani New Delhi.
3. Anthony Robert, Reece, et al : P:rinciples of Management Accounting; Richard D. Irwin Ine. Illinois.
4. Horngren, Charles, Foster and Datar : Cost Accounting - A Mangerial Empasis; Prentice - Hall of India, New Delhi.
5. Khan M.Y. and Jain P.K; Management Accounting; Tata McGraw Hill.
6. Kaplan R.S. and Atkinson A.A. : Advanced Management Accounting; Prentice India International.
7. Tulsian P.C.; Practical costing : Vikas, New Delhi.
8. Maheshwari S.N. : Advanced Problems and Solutions in Cost Accounting; Sultan Chand, New Delhi.
9. M.L. Agrawal : Sahitya Bhawan Agra.

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COMPULSORY

Group - II - Business Management

PAPER - I

PRINCIPLES OF BUSINESS MANAGEMENT

(Paper Code-1135)

Max. M. 75

OBJECTIVE

This Course familiarizes the students with the basics of principles of management.

COURSE INPUTS

UNIT-I Introduction : Concept, nature, process, and significance of management; management roles (Mintzberg); An overview of functional areas of management; Development management thought; Classical and neo-classical systems; Concept approaches.

UNIT-II Planning : Concept, process and types. Decision making - concept and Bounded rationality; Management by objectives; Corporate planning; Environment analysis and diagnosis; Strategy formulation.

UNIT-III Organizing : Concept, nature, process and significance; Authority and resident relationships; Centralization and decentralization; Departmentation; Organization structure - forms and contingency factors.

UNIT-IV Motivating and Leading People at work : Motivation - concept; Theories Herzberg, McGregor, and Ouchi; Financial and non- financial incentives.

Leadership - concept and leadrship styles; Leadership theories (Tannenb Schmidt.); Likert's System Management;

Communication - nature, process, networks, and barriers, Effective Communication.

UNIT-V Managerial Control : Concept and process; Effective control system; Technical control - traditional and modern.

Management of Change : Concept, nature, and process of planned Resistance to change; Emerging horizons of management in a environment.

SUGGESTED READINGS :

1. Drucker peter F : Management Chanllenges for the 21st Century; Butterworth Heinemann, Oxford.
2. Weihrich and Koontz, et al : Essentials of Management; Tata McGraw Hill, New Delhi.
3. Fred Luthans : Orniztion Behaviour; McGrow Hill, New York.
4. Louis A Allen : Management and Organisation; McGrow Hill, Tokyo.
5. Ansoff H.I. : Corporate Strategy; McGrow Hill, New York.
6. Hampton,. David R. : Modern Management; McGrow Hill, New York.
7. Dr. R.C. Agrawal, Agra.
8. Dr. S.C. Saxena, Agra.

COMPULSORY

Group - II - Business Management

PAPER - II

COMPANY LAW

(Paper Code-1136)

Max. M. 75

OBJECTIVE

This objective of this course is to provide basic knowledge of the provisions Companies Act. 1956, along with relevant case law.

COURSE INPUTS

(The Companies Act, excluding provisions relating to accounts and audit sections, a agents and secretaries and treasurers Sections 324 - 388E, arbitration, compare arrangements and reconstructions - section 389-396.)

UNIT-I Corporate personalities; Kinds of Companies, Nature & Scope, promotion on and incorporation of companies.

UNIT-II Memorandum of Association; Articles of Association; Prospectus, Shares; share capital - transfer and transmission.

UNIT-III Capital management - borrowing powers, mortgages and charges, debentures. Directors - Managing Director, whole time director, Appointment, Remuneration, and duties.

UNIT-IV Company meetings - kinds, Notice, quorum, voting, proxy, resolutions, minutes.

UNIT-V majority powers and minority rights; Prevention of oppression and mismanagement. Winding up - kinds and conduct.

SUGGESTED READINGS :

1. Gower L.C.B. : Principles of Modern Company Law; Stevens & Sons, London.
2. Ramaiya A. : Guide to the companies Act; Wadhwa & Co. Nagpur.
3. Singh Avtar : Company Law; Eastern Book Co., Lucknow.
4. Kuchal M.C. : Modern India Company Law; Shri Mahavir Books, Noida.
5. Kapoor N.D. : Company Law - Incorporating the Provisions of the comanies Amendment Act, 2000 Chand & Sons, New Delhi.
6. Bagrial A.K. : Company Law; Vikas Publishing House, New Delhi.
7. Dr. S.M. Shukla.
8. Dr. R.C. Agrawal.

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COMPULSORY

Group - III - Applied Economics

PAPER - I

BUSINESS STATISTICS

(Paper Code-1137)

Max. M. 75

OBJECTIVE

It enable the students to gain understanding of statistical techniques as are applicable to business.

COURSE INPUTS

UNIT-I Introduction : Statistics as a subject; Descriptive Statistics - compared to Inferential Statistics; Types of data; Summation operation; Rules of Sigma E operations, Analysis of University Data; Construction of a frequency distribution; Concept of central tendency.

UNIT-II Dispersion - and their measures; Partition values; Moments; Skewness and measures; Kurtosis and measures.

UNIT-III Analysis of Bivariate Data : Linear regression two variables and correlation.

UNIT-IV Index Number; Meaning, types, and uses; Methods of Constructing price and quantity indices (simple and aggregate); Tests of adequacy; Chain - base index numbers; Base shifting, splicing and deflating; Problems in constructing index numbers; Consumer price index. Analysis of Time Series : Cause of Variation in time series data; Components of a time series; Decomposition - Additive and Multiplicative models; Determination of trend - Moving Averages Method and method of least squares (including linear, second degree, parabolic, and exponential trend); Computation of seasonal indices by simple averages, ratio - to - trend, ratio - to - moving average, and link relative methods.

UNIT-V Forecasting and Methods : Forcasting - concept, types and importance; General approach to forecasting; Methods of forecasting; demand; Industry Vs Company sales forecast; Factors affecting company sales. Theory of Probability : as a concept; The three approaches to defining probability; Addition and multiplication laws of probability; Conditional Probability; Bayes' Theorem; Expectation and Variance of a random variable.

COMPULSORY

Group - III - Applied Economics

PAPER - II

FUNDAMENTALS OF ENTREPRENEURSHIP

(Paper Code-1138)

Max. M. 75

OBJECTIVE

It Provides exposure to the students to the entrepreneurial culture and industrial growth so as to preparing them to set up and manage their own small units.

COURSE INPUTS

UNIT-I Introduction : The entrepreneur; Definition; Emergence of entrepreneurial class; Theories of entrepreneurship; Role of socio - economic environment; Characteristics.

UNIT-II Promotion of a Venture; Opportunities analysis; External environmental analysis economic, social and technological; Competitive factors; Legal requirements for establishment of a new unit, and raising of funds; Venture capital sources and documentation required.

UNIT-III Entrepreneurial Behavior : Innovation and entrepreneur; Entrepreneurial behavior and Psycho - Theories, Social responsibility.

UNIT-IV Entrepreneurial Development Programs (EDP) : EDP, their role, relevance, and achievements; Role of Government in organizing EDPs; Critical evaluation.

UNIT-V Role of Entrepreneur : Role of an entrepreneur in economic growth as an innovator, generation of employment opportunities, complementing and supplementing economic growth, bringing about social stability and balanced regional development of industries; Role in export promotion and import substitution, forex earnings, and augmenting and meeting local demand.

SUGGESTED READINGS :

1. Tandon B.C. : Environment and Entrepreneur; Chugh Publications, Allahabad.
2. Siner A David : Entrepreneurial Megabuks; John Wiley and Sons, New York.
3. Srivastava S.B. : A Practical Guide to industrial Entrepreneurs; Sultan Chand and Sons, New Delhi.
4. Prasanna Chandra : Project Preparation, Appraisal, Implementation; Tata McGrow Hill, New Delhi.
5. Pandey I.M. : Venture Capital - The Indian Experience; Prentice Hall of India.
6. Holt : Entrepreneurship - New Venture Cration; Prentice Hall of India.

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COMPUTER APPLICATION

MARKS DISTRIBUTION

Theory Paper Paper - I Total Marks - 50

Paper - II Total Marks - 50

Every unit of theory paper will consists of 10 marks.

Practical Paper Total Marks - 50

Practical Marks Distribution :

Viva	- 10
Internal	- 15
Practical	- 25
Total Marks - 150	

Practical Test will consist of 3 Hrs.

Syllabus of B.Com.-II (Computer Application)

PAPER - I

INTERNET APPLICATION & E-COMMERCE

(Paper Code-1139)

UNIT - I Introduction to HTML

Introduction to Internet & World Wide Web

Internet - Indian and the Internet, Profile of Indian Surfer, History of the Internet, Indian Internet History, Technological Foundation of Internet, Application in Internet Environment, Movement of files/data between two computers, TCP/IP, IP Addresses, Domain Name System, Domain Name Services, allocation of second level domains in India, Internet & India.

World Wide Web (WWW) - WWW consortium browsing and Information retrieval, exploring the WWW, address : URL.

UNIT - II

Introduction to HTML & Designing Web Page

Concept to Website, Web standards, What is HTML, HTML documents / file, HTML Editor, Explanation of the structure of Homepage, Elements in HTML Documents, HTML Elements, HTML Tags & Basic HTML Tags, viewing the source of web page & downloading the web page source, Extensible HTML, CSS, XML, XSL.

HTML Document Structure - Head Section

Illustration of Document Structure, Mark-up elements within the Head : BASE, ISINDEX, LINK, META, TITLE, SCRIPT.

UNIT - III

HTML Document Structure & HTML Forms

Body Section - Illustration, Body elements, Background, TEXT BODY element, ADDRESS, BLOCKQUOTE, TABLE, COMMENTS, CHARACTER Emphasis modes, Logical styles, Physical Styles, FONT, BASEFONT and CENTER.

Image, Internal and External Linking Between Web Pages - IMG Elements, HEIGHT, WIDTH, ALT, ALLIGN, Illustration of IMG elements, Hypertext Anchors, NAME attribute in Anchor.

HTML Forms - Forms, Form tag, Form Structure, Input types, Drop down menu or select menu tags, image buttons.

UNIT - IV

Introduction to E-Commerce & Business Strategy in Electronic Age

E-Commerce - Scope & definition of language, E-commerce & Trade cycle, E-markets, E-Data Interchange, Internet Commerce, E-commerce in Perspective.

Business Strategy - The value chain, competitive advantage, business strategy, Case-Study : e-commerce in Passenger Air Transport.

UNIT - V

B to B e-Commerce & B to C e-Commerce

Business to Business e-Commerce - Inter-organisational Transactions, Electronic markets, Electronic Data Interchange (EDI) - the nuts and bolts, EDI and business, Inter roganizational e-Commerce.

Business to Consumer e-Commerce - Consumer trade transactions.

The elements of e-Commerce - elements, e-visibility, e-shop online payments, delivering the goods, after sales service, Internet e-Commerce Security A web site evaluation model.

e-Business - Introduction, Internet Bookshops, Software Supplies & support, e-newspapers, internet banking, virtual auctions, online share dealing, gambling on net, e-diversity.

TEXT BOOKS :

1. An Introduction to HTML - Dr. Kamlesh N. Agarwala, Dr. O.P. Vyas, Dr. Prateek A. Agarwala.

2. E-Commerce strategy, technologies & applications - David Whiteley.

REFERENCE BOOKS :

1. Business on the Net - Dr. Kamlesh N. Agarwala (Macmillan India Ltd.)

PAPER - II

RELATIONAL DATABASE MANAGEMENT SYSTEM

(Paper Code-1140)

UNIT - I

DATABASE SYSTEM CONCEPT & ENTITY RELATIONSHIP MODEL :

Operational data, why database, data independence, an Architecture for a Data base system, DDL & DML, Data Dictionary, Data Structures and Corresponding Operators, Data Models, The Relational approach, The Network approach, DBMS storage structure and access method. Entity-Relationship model as a tool for conceptual design-entities attributes and relationaships. ER diagrams; strong and weak entities Generatization; Specialization and aggregation. Converting and ER-model into relational.

UNIT - II

Relational Database Management System

Relational Model : Structure to Relational Database, Relational Algebra, The Domain Relational, Calculus, Extended Relational- Algebra Operation, Modification of database, Views. **Relational Database Design :-** Pitfalls in Relational Database Design, Decomposition, Functional Dependencies, Normalization : INF, 2NF, BCNF, 3NF, 4NF, 5NF operations not involving cursors, Operations involving cursors, dynamic statements, security & intergrity security specification in SQL.

UNIT - III

RELATIONAL DATABAWSE DESIGN :

Relational Algebra, Traditional Set Operations, Attributes Names for Derived Relations, special relational operations, further normalization, functional dependence. First, second and third normal forms, BCNF Forms, relations with more than one candidate key, Good and bad decompositions, fourth normal form, fifth normal form, De-normalization.

UNIT - IV

Introduction to RDBMS Software - Oracle

(a) **Introduction :** Introduction to personnel and Enterprises Oracle, Data Types, Commercial Query Language, SQL, SQL * PLUS.

(b) **DDL and DML :** Creating Table, Specify Integrity Constraint, Modifying Existing Table, Dropping Table, Inserting, Deleting and Updating Rows in as Table, Where Clause, Operators, ORDER BY, GROUP Function, SQL Function, JOIN, Set Operation, SQL Sub Queries. Views : What is Views, Create, Drop and Retrieving data from views.

UNIT - V

(a) **Security :** Management of Roles, Changing Password, Granting Roles & Privilege, with drawing privileges.

(b) **PL/SQL :** Block Structure in PL/SQL, Variable and constants, Running PL/SQL in the SQL*PLUS, Data base Access with PL/SQL, Exception Handling, Record Data type in PL/S!L, Triggers in PL/SQL.

SUGGESTED BOOKS :

1. Data base system : Korth & Siberschatz.
2. An Introduction to Data base System : C.J. Date

PAPER - III

PRACTICAL EXERCISES BASED ON PAPER I & II

Practicals to be done :

1. Creating simple Web-pages using html.
2. Designing *business web-sites* using HTML features (e.g. html forms)

   [Each student should study the existing *business web-sites* and do atleast 05 exercises to create business websites using various html features]
3. Should perform various queries using SQL.

   [Each student should create ER diagrams for various business scenario, and convert it into tables, using any RDBMS Software (i.e. Oracle / Access)
4. Practical using various aspects of Oracle.

   [At least 10 practical-exrecises covering the contents of paper-II]

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पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़)

पाठ्यक्रम

बी.काम. भाग-3 (कोड-603)

B. Com. Part - III (Code - 603)

परीक्षा : **2016-17**

कुलसचिव पं. रविशंकर शुक्ल विश्वविद्यालय

रायपुर (छत्तीसगढ़) की ओर से

B.Com. - III

(विषय-सूची)

REVISED ORDINANCE NO.-23

(As per State U. G. C. Scheme)

BACHELOR OF COMMERCE

1. The three year course has been broken up into three Parts.

   Part-I known as B. Com. Part-I Examination at the end of first year.

   Part-II Examination at the end of the second year, and,

   Part-III Examination at the end of the third year.

2. A candidate who after passing (10+2) Higher Secondary or Intermediate examination of C.G. Board of Secondary Education, C.G. or any other examination recognised by the University or M.P. Board of Secondary Education as equivalent thereto has attended a regular course of study in an affiliated college or in the Teaching Department of the University for one academic year, shall be eligible for appearing at the B.Com. Part-I examination.

3. A candidate who after passing B.Com. Part-I examination of the University or any other examination recognised by the University as equivalent thereto has attended a regular course of study for one academic year in an affiliated College or in the Teaching Department of the University, shall be eligible for appearing at the B.Com. Part-II Examination.

4. A candidate who after passing B.Com. Part-II examination of theUniversity has completed a regular course of study for one academic year in an affiliated College or in the Teaching Department of the University, shall be eligible for appearing at the B.Com. Part-III examination.

5. Besides regular students, subject to their compliance with this ordinance, ex-students and non-collegiate students shall be eligible for admission to the examination as per provision of Ordinance No. 6 relating to examinations (General).

   Provided that non-collegiate candidates shall be permitted to offer only such subject/ papers as are taught to the regular students at any of the University Teaching Department of College.

6. Every candidate for B.Com. Examination shall be examined in subjects as mentioned in the marking scheme and course or studies.

7. A candidate who has passed the B.Com. Part-III examination of the University shall be allowed to present himself of examination in any of the additional subjects prescribed for the B.Com. examination and not taken by him at the degree examination. Such candidate will have to first appear and pass the B. Com. Part-I examination in the subject which he proposes to offer then the B.Com. Part-II and Part-III examination in the same subject. Successful candidates will be given a certificate to that effect.

8. In order to pass at any part of the three year degree course examination, an examinee

must obtain not less than 33% of the total marks in each paper/group of subjects. In group where both theory and practical examinations are provided an examinee must pass in both theory and practical parts of examination separately.

9. Candidate will have to pass separately at the Part-I, Part-II and Part-III examination. No division shall be assigned on the result of the Part-I and Part-II examinations In determining the division of the Final examination, total marks obtained by the examinees in their Part-I, Part-II and Part-III examination in the aggregate shall be taken into account. Candidate will not be allowed to change subjects after passing Part-I examination.

Provided in case of candidate who has passed the examination through the supplementary examination having failed in one subject/group only, the total aggregate mark being carried over for determining the division, shall include actual marks obtained in the subject/group in which he appeared at the supplementary examination.

10. Successful examinees at the Part - III examination obtaining 60% or more marks shall be placed in the First Division, those obtaining less than 60% but not less than 45% marks in the Second Division and other successful examinees in the Third Division.

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B.COM. PART-III

SCHEME OF EXAMINATION

Subject	Max. Marks	Min. Marks
A. FOUNDATION COURSE-		
(a) HIndi Language -	75	26
(b) English Language -	75	26
B. COMPULSORY CORE COURSE :		
(i) Income Tax	75	25
(ii) Indirect Tax	75	25
(iii) Management Accounting	75	25
(iv) Auditing	75	25
And any one of the following Cantination Optional Group.		
OPTIONAL GROUP - A		
(i) Financial Management	75	25
(ii) Financial Market	75	25
OPTIONAL GROUP - B		
(i) Principal of Marketing	75	25
(ii) International Marketing	75	25
OPTIONAL GROUP - C		
(i) Information Technology and its Applications in Business	75	25
(ii) Essential of E-Commerce	75	25
OPTIONAL GROUP - D		
(i) Fundamentals of Insurance	75	25
(iii) Money & Banking System	75	25

USE OF CALCULATORS

The students of Degree/P.G. Classes will be permitted to use of Calculators in the examination hall from annual 1986 examination on the following conditions as per decision of the standing committee of the Academic Council at its meeting held on 31-1-1986.

1. Student will bring their own Calculators.
2. Calculators will not be provided by University or examination centres.
3. Calculators with, memory and following variables be permitted +, −, ×, ÷, square reciprocal, expotentials, log squares, root, trignometric functions viz, sine, cosine tangent etc. factorial summation, xy, yx and in the light of objective approvial of merits and demerits of the viva only will be allowed.

आधार पाठ्यक्रम

हिन्दी भाषा

(पेपर कोड-0891)

प्रथम प्रश्न पत्र **पूर्णांक - 75**

(बी.ए., बी.एस.सी., बी.एच.एस-सी., बी.काम., तृतीय वर्ष के पुनरीक्षित

एकीकृत आधार पाठ्यक्रम एवं पाठ्य सामग्री का संयोजन)

।। सम्प्रेषण कौशल, हिन्दी भाषा और सामान्य ज्ञान ।।

आधार पाठ्यक्रम की संरचना और अनिवार्य पाठ्य पुस्तक- हिन्दी भाषा एवं समसामयिकी- का संयोजन इस तरह किया गया है कि सामान्य ज्ञान की विषय वस्तु- विकासशील देशों की समस्याओं- के माध्यम और साथ-साथ हिन्दी भाषा का ज्ञान और उसमें सम्प्रेषण कौशल अर्जित किया जा सके । इसी प्रयोजन से व्याकरण की अन्तर्वस्तु को विविध विधाओं की संकलित रचनाओं और सामान्य ज्ञान की पाठ्य सामग्री के साथ अन्तर्गुम्फित किया गया है । अध्ययन-अध्यापन के लिए पूरी पुस्तक की पाठ्य सामग्री है और अभ्यास के लिये विस्तृत प्रश्नावली है । यह प्रश्नपत्र भाषा का है अत: पाठ्य सामग्री का व्याख्यात्मक या आलोचनात्मक अध्ययन अपेक्षित नहीं है । पाठ्यक्रम और पाठ्य सामग्री का संयोजन निम्नलिखित पाँच इकाइयों में किया जाता है । प्रत्येक इकाई को दो भागों में विभक्त किया गया है ।

इकाई - 1 **(क) भारत माता :** सुमित्रानंदन पंत, परशुराम की प्रतीज्ञा : रामधारी सिंह दिनकर, बहुत बड़ा सवाल : मोहन राकेश, संस्कृति और राष्ट्रीय एकीकरण : योगेश अटल ।

(ख) कथन की शैलियाँ : रचनागत उदाहरण और प्रयोग ।

इकाई -2 (क) विकासशील देशों की समस्यायें, विकासात्मक पुनर्विचार, और प्रौद्योगिकी एवं नगरीकरण ।

(ख) विभिन्न संरचनाएँ ।

इकाई - 3 (क) आधुनिक तकनीकी सभ्यता, पर्यावरण प्रदूषण तथा धारणीय विकास ।

(ख) कार्यालयीन पत्र और आलेख ।

इकाई - 4 (क) जनसंख्या : भारत के संदर्भ में और गरीबी तथा बेरोजगारी ।

(ख) अनुवाद ।

इकाई - 5 (क) ऊर्जा और शक्तिमानता का अर्थशास्त्र ।

(ख) घटनाओं, समारोहों आदि का प्रतिवेदन और विभिन्न प्रकार के निमंत्रण-पत्र ।

मूल्यांक योजना : प्रत्येक इकाई से एक-एक प्रश्न पूछा जायेगा । प्रत्येक प्रश्न में आंतरिक विकल्प होगा । प्रत्येक प्रश्न के 15 अंक होंगे । प्रत्येक इकाई दो-दो खंड (क्रमश: 'क' और 'ख' में) विभक्त है, इसलिए प्रत्येक प्रश्न के भी दो भाग, (क्रमश: 'क' और 'ख') होंगे । 'क' अर्थात पाठ एवं सामान्य ज्ञान से संबद्ध प्रश्न के अंक 8 एवं 'ख' अर्थात भाषा एवं सम्प्रेषण कौशल से संबद्ध प्रश्न के अंक 7 होंगे । इस प्रकार पूरे प्रश्न पत्र के पूर्णांक 75 होंगे ।

Foundation Course - III

English Language

(Paper Code-1152)

B.A./B.Sc./B.Com./B.H.Sc./III

M.M. 75

The question paper for B.A./B.Sc./B.Com./B.H.Sc. III Foundation course, English Language and General Answers shall comprise the following items :

Five question to be attempted, each carrying 3 marks.

UNIT-I Essay type answer in about 200 words. 5 essay type question to be asked three to be attempted. 15

UNIT-II Essay writing 10

UNIT-III Precis writing 10

UNIT-IV (a) Reading comprehension of an unseen passage 05

(b) Vocabulary based on text 10

UNIT-V Grammar Advanced Exercises 25

Note : Question on unit I and IV (b) shall be asked from the prescribed text. Which will comprise of popular create writing and the following items. Minimum needs housing and transport Geo-economic profile of M.P. communication Educate and culture. Women and Worm in Empowerment Development, management of change, physical quality of life. War and human survival, the question of human social value survival, the question of human social value, new Economic Philosophy Recent Diberaliation Method) Demoration docontralisation (with reference to 73, 74 constitutional Amendment.

Books Prescribed :

Aspects of English Language And Development - Published by M.P. Hindi Granth Academy, Bhopal.

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COMPULSORY CORE COURSE

PAPER - I

INCOME TAX

(Paper Code-1153)

M.M. 75

OBJECTIVE

It enables the students to know the basics of Income Tax Act and its implications.

COURSE INPUTS

UNIT-I Basic Concepts : Income, agricultural Income, casual income, assessment year, previous year, gross total income, total income, person.

Basis of charge : Scope of total income, residence and tax liability, income which does not form part of total income.

UNIT-II Heads of Income : Salaries; Income from house property.

UNIT-III Profit and gains of business or profession, including provisions relating to specific business; Capital gains, Income from other sources.

UNIT-IV Computation of Tax Liabilty : Set-off and carry forward of losses; Deduction from gross total income.

Aggregation of income; Computation of total income and tax liability of and individual, H.U.F., and firm.

UNIT-V Tax Management : Tax deduction at source; Advance payment of tax; Assessment procedures; Tax planning for individuals.

Tax evasion, Tax Avoidance and Tax planning.

Tax Administration : Authorities, appeals, penalties.

Suggested Reading :

1. Singhania V.K. : Students Guide to Income Tax; Taxmann, Delhi.
2. Prasad, Bhagwati : Income Tax Law & Prectice; Wily Publication, New Delhi.
3. Mehrotra H.C. : Income Tax Law & Accounts : Sahitya Bhawan, Agra.
4. Girish Ahuja and Ravi Gupta : Systematic approach to income tax : Sahitya Bhawan Publications, New Delhi.
5. Chandra Mahesh and Shukla D.C. : Income Tax Law and Practice; Pragati Publications, New Delhi.
6. R.K. Jain : Income Tax & Law (Hindi & English) Shahitya Bhavan, Publication, Agra,

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PAPER - II

INDIRECT TAXES

(Paper Code-1154) **M.M. 75**

OBJECTIVE

This course aims at imparting basic knowlege about major indirect taxes.

UNIT-I Central Excise : Nature and scope of Central Excise; Important terms and definitions under the Central Excise Act; General procedures of central excise; Clearance and excisable goods; Concession to small scale industry under Central Excise Act.

UNIT-II State Excise, CENVAT.

Detail study of State Excise during calculation of Tax.

UNIT-III Customs : Role of customs in international trade; Important terms and definitions goods; Duty; Exporter; Foreign going vessel; Aircraft goods; Import; Import Manifest; Importer; Prohibited goods; Shipping bill; Store; Bill of lading; Export manifest; Letter of credit; Kinds of duties - basic, auxillary, additional or coutervailing; Basics of levy-advalorem, specific duties; Prohibition of export and import of goods, and provisions regarding notified & specified goods; Import of goods - Free import and restricted import; Type of import - import of cargo, import of personal baggage, import of stores.

Clearance Procedure - For home consumption, for warehousing for re-export; Clearance procedure for import by post; Prohibited exports; Canalised exports; Export against licensing; Type of exports export of cargo, export of baggage; Export of cargo by land, sea, and air routes.

UNIT-IV Central Sales Tax : Important terms and difinitions under the Central Sales Tax Act 1956 - Dealer, declared good, place of business, sale, sale price, turnover, year, appropriate authority; Nature and scope of Central Sales Tax Act; Provisions relating to inter-state sales; Sales in side a state; Sales/purchase in the course of imports and exports out of India. Registration of dealers and procedure thereof; Rate of tax; Exemption of subsequent sales; Determination of turnover.

UNIT-V State Commercial Tax (Chhattisgarh) Definition, Registration, Tax liability, Procedure of Computation & Collection of Tax, Penalties & Prosicution calculation of Tax. VAT-Preliminary Knowledge.

Suggested Reading :

1. Malhotra & Goyal (Hindi & English).
2. Shripal Saklecha. - अप्रत्यक्ष कर
3. Commercial Tax Act. (C.G.)
4. Central Excise Act.
5. Sales Tax Act.

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PAPER - III

MANAGEMENT ACCOUNTING

(Paper Code-1155) **M.M. 75**

OBJECTIVE

This course provides the students an understanding of the application of accounting techniques for management.

COURSE INPUTS

UNIT-I Management Accounting : Meaning, nature, scope, and functions of management accounting; Role of managment accounting in decision making; Management accounting vs financial accounting; Tools and techniques of management accounting; Financial statement; Objectives and methods of financial statements analysis; Ratio analysis; Classification of ratios - Profitability ratios, turnover ratios, liquidity ratios, turnover ratios; Advantages of ratio analysis; Limitations of accounting ratios.

UNIT-II Funds Flow Statement as per Indian Accounting Standard 3, cash flow statement.

UNIT-III Absorption and Marginal Costing : Marginal and differential costing as a tool for decision making - make or buy; Change of product mix; Pricing, Break-even analysis; Exploring new markets; Shutdown decisions.

UNIT-IV Budgeting for profit Planning and control : Meaning of budget and budgetary control; Objectives; Merits and limitations; Types of budgets; Fixed and flexible budgeting; Control ratios; Zero base budgeting; Responsibility accounting; Performance budgeting.

UNIT-V Standard Costing and Variance Analysis : Meaning of standard cost and standard costing; Advantages and application; Variance analysis - material; Labour and overhead (Two-way analysis); Variances.

Suggested Reading :

1. Arora M.N. : Cost Accounting - Principles and Practice, Vikas, New Delhi.
2. Jain S.P. & Narang K.L. : Cost Accounting; Kalyani, New Delhi.
3. Anthony, Rogert & Reece, at al : Principles of Management Accounting; Richard Irwin Inc.
4. Horngren, Charles, Foster and Datar et al : Cost Accounting - A Managerial Emphasis; Prentice Hall, New Delhi.
5. Khan M.Y. and Jain P.K. : Management Accounting : Tata McGraw Hill, New Delhi.
6. Kaplan R.S. and Atkonson A.A. : Advanced Management Accounting; Printice Hall India, New Delhi.
7. J.K. Agrawal & R.K. Agrawal : Jaipur (English & Hindi).
8. Dr. M.R. Agrawal : Minakshi Prakashan Meruth.
9. Dr. S.P. Gupta - Agra (Hindi & English).

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PAPER - IV

AUDITING

(Paper Code-1156) **M.M. 75**

OBJECTIVE

This course aims at imparting knowlege about the principles and methods of auditing and their applications.

COURSE INPUTS

UNIT-I Introduction : Meaning and objectives of auditing; Types of audit; Internal audit.

Audit Process : Audit programme; Audit note books; Working papers and evidences.

UNIT-II Internal Check System : Internal control.

Audit Procedure : Vouching : Verification of assets and liabilities.

UNIT-III Audit of Limited Companies :

a. Company auditor - Appointment, powers, duties, and liabilities.

b. Divisible profits and dividend.

c. Auditor's report - standard report and qualified report.

d. Special audit of banking companies.

e. Audit of educational institutions.

f Audit of Insurance companies.

UNIT-IV Investigation : Investigation; Audit of non profit companies,

a. Where fraud is suspected, and

b. When a running a business is proposed.

c. Varifications & Valuation of assets.

UNIT-V Recent Trends in Auditing : Nature and significance of cost audit; Tax audit; Management audit. Company auditing - Qualification, Appointment, Resignation and liabilities.

Suggested Reading :

1. Gupta KaPal : Contemporary Auditing : Tata Mcgraw Hill, New Delhi.
2. Tandon B.N. : Principles of Auditing : S. Chand & Co., New Delhi.
3. Pagare Dinkar : Principles and Practice of Auditing : Sultan Chand, New Delhi.
4. Sharma T.R. : Auditing Principles and Problems, Sahitya Bhawan, Agra.
5. Shukla S.M. : Auditing - Shahitya Bhavan, Agra, (Hindi)
6. Batliboy : Auditing.

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OPTIONAL GROUP A

Combination - I (Finance Area)

PAPER - I

FINANCIAL MANAGEMENT

(Paper Code-1157) **M.M. 75**

OBJECTIVE

The objective of this course is to help students understand the conceptual framework of financial management.

COURSE INPUTS

UNIT-I Financial Management : Financial goals; Profit vs wealth maximization; Financial functions-investment, financing, and dividend decisions; Financial planning.

UNIT-II Capital Budgeting : Nature of investment decisions, Investment evaluation criteria, payback period, accounting rate of return, net present value, internal rate of return profitability index; NPV and IRR comparison.

UNIT-III Cost of Capital : Significance of cost of capital; Calculating cost of debt; Preference shares, equity capital, and retained earnings; Combined (weighted) cost of capital.

Operating and financial Leverage : Their measure; Effects on profit, analyzing alternate financial plans, combined financial and operating leverage.

UNIT-IV Capital Structure : Theories and determinates.

Dividend Policies : Issues in dividend policies; Walter's model; Gordon's model; M.M. Hypothesis, forms of dividends and stability in dividends, determinats.

UNIT-V Management of Working Capital : Nature of working capital, significance of working capital, operating cycle and factors determining of working capital requirements, Management of working capital - cash, recevables, and inventories.

Suggested Reading :

1. Van Home J.C. : Financial Management and Policy; Prentice Hall of India, New Delhi.
2. Khan M.Y. and Jain P.K. : Financial Management, Text and Problems; Tata McGrow Hill, New Delhi.
3. Prasanna Chandra L Financial Management Theory and practice; Tata McGrow Hill, New Delhi.
4. Pandey I.M. : Financial Management Vikas Publishing Hous, New Delhi.
5. Brigham E.F. Gapenski L.C., and Ehrhardt M.C. : Financial Management - Theory and Practice; Harcourt College Publishers, Singapore.
6. Bhalla V.K. : Modern Working Capital Management, Anmol Pub. Delhi.
7. वित्तीय प्रबंध : एस. सी. जैन
8. वित्तीय प्रबंध : अग्रवाल एवं अग्रवाल, रमेश बुक डिपो, जयपुर
9. वित्तीय प्रबंध : एस. डी. सी. शर्मा, मेरठ

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OPTIONAL GROUP A

(Finance Area)

PAPER - II

FINANCIAL MARKET OPERATIONS

(Paper Code-1158)

M.M. 75

OBJECTIVE

This course aims at acquainting the students with the working of financial markets in India.

COURSE INPUTS

UNIT-I Money Market : Indian money market's composition and structure; (a) Acceptance houses, (b) Discount houses and (c) Call money market; Recent trends in Indian money market.

UNIT-II Capital Market : Security market - (a) New issue market, (b) Secondary market; Functions and role of stock exchange; listing procedure and legal requirements; Public issue - pricing and marketing; Stock exchanges - National Stock Exchange and over the counter exchanges.

UNIT-III Securities contract and Regulations Act : Main provgisions.

Investors Protection : Grievancesconcerning stock exchange dealings and their removal; Grievance cells in stock exchanges; SEBI; Company Law Board; Press; Rmedy through courts.

UNIT-IV Functionaries on Stock Exchanges : Brokers, sub brokers, market makers, jobbers, portfolio consultants, institutional investors, and NRIs.

UNIT-V Financial Services : Marchant banking - Functions and roles; SEBI guide-lines; Credit rating - concept, functions, and types.

Suggested Reading :

1. Chandler M.V. and Goldfeld S.M. : Economics of money and Banking, Harper and Row, New Delhi.
2. Gupta Suraj B. Monetary Economics; s. chand and Co. New Delhi.
3. Gupta Suraj B. Monetary Planning in India; Oxford, Delhi.
4. Bhole L.M. : Financial Markets and Institutions : Tata McGrow Hill, New Delhi.
5. Hooda R.P. : Indian Securities Market - Investors view point; Excell Books, New Delhi.
6. R.B.I. : Functions and Working.
7. R.B.I. : Report in Currency and Finance.
8. R.B.I. : Report of the Committee to Review the working of the Monetary system : Chakravarty committee.
9. R.B.I. : Report of the Committee on the Financial System, Narsimham Committee.
10. वित्तीय बाजारों की कार्यप्रणाली – साहित्य भवन पब्लिकेशन, आगरा

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OPTIONAL GROUP B

(Marketing Area)

PAPER - I

PRINCIPLES OF MARKETING

(Paper Code-1159) **M.M. 75**

OBJECTIVE

The Objective of this course is to help students to understand the concept of marketing and its applications.

COURSE CONTENTS

UNIT-I Introduction : Nature and scope of marketing; Importnace of marketing as a business function, and in the economy; Marketing concepts - traditional and modern; Selling vs. marketing; Marketing mix; Marketing environment.

UNIT-II Consumer Behaviour and Market Segmentation : Nature, scope, and significance of consumer behaviour; Market segmentation - concept and importance; Bases for market segmentation.

UNIT-III Product : Concept of product, consumer, and industrial goods; Product planning and development; Packaging role and functions; Brand name and trade mark; after sales service; Product life cycle concept.

Price : Importance of price in the marketing mix; Factors affecting price of a product/ service; Discounts and rebates.

UNIT-IV Distributions Channels and Physical Distribution; Distribution channels - Concept and role; Types of distribution channels. Factors affecting choice of a distribution channel; Retailer and holesaler; Physical distribution of goods; Transportation, Warehousing, Inverntory control; Order processing.

UNIT-V Promotion : Methods of promotion; Optimum promotion mix; Advertising media - their ralative merits and limitations; Characteristics of an effective advertisement; Personal selling; Selling as a career; Classification of successful sales person; Functions of salesman.

Suggested Reading :

1. Philip Kotler : Marketing Management Englewood Cliffs; Prentice Hall, N.J.
2. William M. Pride and O.C. Ferrell : Marketing : Houghton - Mifflin Boston.
3. Stanton W.J. Etzel Michael J., and Walker Bruce J. Fundamentals of Marketing; McGraw Hill, New York.
4. Lamb Charies W., Hair Joseph F. and McDaniel Carl : Principles of Marketing; South-Western-Publishing, Cincinnati, Ohio.
5. Cravens David W. Hills Gerald E., Woodruff Robert B : Marketing management : Richard D. Inwin, Homewood Illinois.
6. Kotler Philip and Armstrong Gary : Principles of Marketing; Prentice Hall of India, New Delhi.
7. Dr. R.C. Agrawal, Agra.
8. Dr. S.C. Saxena Agra.
9. Dr. S.K. Jain, Hindi Granth Academi. M.P. भोपाल
10. Dr. N.C. jain

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OPTIONAL GROUP - B

(Marketing Area)

PAPER - II

INTERNATIONAL MARKETING

(Paper Code-1160) **M.M. 75**

OBJECTIVE

This course aims at acquainting student with the operations of marketing in international environment.

COURSE CONTENTS

UNIT-I International Marketing : Nature, definiton, and scope of international marketing; Domestic marketing vs. International marketing; International environment external and internal.

UNIT-II Identifying and Selecting Foreign Market : Foreign market entry mode decisions.

Product Planning for international Market : Product designing; Standardization vs. adaptation; Branding and packaging; Labeling and quality issues; After sales service.

International Pricing : Factors Influenceing International price; Pricing process-process and methods; International price quotation and payment terms.

UNIT-III Promotion of Product/Services Abroad : Methods of international promotion; Direct mail and sales literature; Advertising; Personal selling; Trade fairs and exhibitions.

UNIT-IV International Distribution : Distribution channels and logistics decisions; Selection and appointment of foreign sales agents.

UNIT-V Export Policy and Practices in India : Exim policy - an overview; Trends in India's foreign trade; Steps in starting an export business; Product selection; Market selection; Export pricing; Export finance; Documentation; Export procedures; Export assistance and incentives.

Suggested Reading :

1. Bhattacharya R.L. and Varshney B. : International Mrketing Management; Sultan Chand, New Delhi.
2. Bhattacharya B. : Export Marketing Strategles for Success; Global Press, New Delhi.
3. Keegan W.J. : Multinational Marketing Management; Prentice Hall, New Delhi.
4. Kriplani V. : International marketing; Prentice Hall New Delhi.
5. Taggart J.H. and Moder Mott. M.C. : The Essence of International Business; Prentice Hall New Delhi.
6. Kotler Phillip : Principles of Marketing; Prentice Hall New Delhi.
7. Fayer Weather John : International Marketing; Prentice Hall N.J.
8. Caterora P.M. and Keavenay S.M. : Marketing an international Perspective; Erwin Homewood, Illinois.
9. Paliwala, Stanely J. The Essence of International marketing; Prentice Hall, New Delhi.

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OPTIONAL GROUP C (Commercial Area)

PAPER - I

INFORMATION TECHNOLOGY AND ITS APPLICATIONS IN BUSINESS

(Paper Code-1161)

M.M. 75

OBJECTIVE

The objective of the course is to familiatize the students with the innovation information technology and how it affects business. An understanding of the group rules of these technologies will enable the students to appreciate the nitty-gritty Commerce.

COURSE INPUTS

UNIT-I Information Revolution and information Technology (IT) : Deployment of Business; Basic features of IT; Impact of IT on business environment and social fabric; Invention of writing; Written books; Printing Press and movable type Gutenberg's invention; Radio; telephone, wireless and satelite communication computing and dissemination of information and knowledge and convergence technologies (Internet with Wireless-WAP).

UNIT-II Fundamentals of Computer : Data, information and EDP : Data, information and concept of data and information; Levels of information from data; processing; Electronic data processing; Electronic machines;

a. Number Systems and Codes : Different number systems - binary, octal decimal, hexagonal, and their conversion codes used in computers; Bed, EBCDIC, ASCII; Gray and conversions.

b. Computer Arithmetic and Gates : Binary arithmetic, complements, addition subtraction; Conversion from one system to another; Logic Gates, truthtable and applications minimisation, and K-maps.

c. Computer Processing System : Definition of computer; Hardware/Software concepts; Generation of computers; Types of computers; Elements of computer; CPU and its functions, Various computer systems.

d. I/O devices : Basic concepts of I/O devices; Various input devices Keyboard, mouse; MICR, OCR, microphones.

e. Various output devices : VDU, printer, plotter, spooling, L.S.

f. Storage Devices : Primary and secondary memory; Types of memory capacity and its enhancement; Memory devices and comparisons; Auxiliary storage, tapes, disks (magnetic and potical); various devices and their comparison.

g. System Software - Roale of Software, Different System Software : O.S., utilization element of O.S. - Its types and variations; DOS and windows.

h. Computer and Networks : Need of communication; Data transmission; Baud; Bandwidth; Communication Channel; Multiplexing; Basic network concepts; O.S.I. model; Types of topologies; LAN, WAN, Client server concept.

UNIT-III Computer-based Business Applications -

a. Word Processing : Meaning and role of word processing in creating of documents, editing, formatting, and printing documents, using tools such as spelling check, thesaurus, etc. in word processors (MS-Word).

b. Electronic Spreadsheet : Structure of spreadsheet and its applications to

accounting, finance, and marketing functions of business; Crating a dynamic/ sensitive worksheet; Concept of absolute and relative cell reference; Using built-in functions; Goal seeking and solver tool; Using graphics and formatting of worksheet; Sharing data with other desktop applications; Strategies of crating error-free worksheet (MS-Excel, Lotus 123). Practical knowledge on Wings Accounting (Software).

c. Programming under a DBMS environment : The concept of data base management system; Data field, records, and files, Sorting and indexing data; Searching records, designing queries, and reports; Linking of data files; Understanding programming environment in DBMS; Developing menu driven applications in query language (MS-Access).

UNIT-IV Electronic Data Interchange (EDI)

Introduction to EDI; Basics of EDI; EDI standards; Financial EDI (FEDI); FEDI for international trade transaction; Applications of EDI; Advantages of EDI; Future of EDI.

UNIT-V The Internet and its Basic Concepts

Internet-concept, history development in India; Technological foundation of internet; Distributed computing; Client-server computing; Internet protocol suite; Application of distributed computing; Client-server computing; Internet protocol suite in the internet environment; Domain Name System (DNS(; Domain Name Service (DNS); Generic top-lelvel domian (gTLD); Country code top-level domain (ccTLD); - India; Llocation of second-level doomains; IP addresses; Internet protocol; Applications of Internet in business, education, governance, etc.

Information System Audit

Basic idea of information audit; Difference with the traditional concepts of audit; Conduct and applications of IS audit in internet environment.

Suggested Reading :

1. Agrawala Kamlesh N. and Agarwala Deeksha : Business on the Net - Introduction to E-commerce, Macmillan India, New Delhi.
2. Agarwala Kamlesh, N. and Agarwala Deeksha : Bulls, Bears and The mouse; and introduction to On-line Service Market Trading; Macmillan India, New Delhi.
3. Agarwala Kamlesh, N. and Agarwala Prateek Amar; WAP the Net; An Introduction on Wireless Application Protocol; Macmillan India, New Delhi.
4. Bajaj Kamlesh K. and Nag Debjanl : E-Commerce; The cutting Edge of Business; Tata McGraw Hill, New Delhi.
5. Edwards, Ward and Bytheway : The Essence of Information Systems; Prentice Hall, New Delhi.
6. Garg & Srinivasan : Work Book on Systems Analysis & Design; Prentice Hall New Delhi.
7. Kanter : Managing with Information; Prentice Hall New Delhi.
8. Minoli Daniel, Minoli Emma : Web Commerce Technology Handbook; Tata McGraw Hill, New Delhi.
9. Minoli Daniel : Internet & Internet Engineering; Tata McGrow Hill, New Delhi.
10. Yeats : Systems Analysis & Design; Macmillan India, New Delhi.
11. Goyal : Management information System; Macmillan India, New Delhi.
12. Timothi J O'Leary : Microsoft Office 2000; Tata McGrow Hill, New Delhi.

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OPTIONAL GROUP C

(E-Commerce Area)

PAPER - II

ESSENTIAL OF E-COMMERCE

M.M. 75

(Paper Code-1162)

OBJECTIVE

The objective of this course is to familiarize the students with the basics of e-commerce and to comprehend its potential.

COURSE INPUTS

UNIT-I Internet and Commerce : Business operations; E-Commerce practices; Concepts b2b, b2c, b2g, g2h; Benefits of e-commerce to organization, consumers, and society; Limitation of e-commerce; Management issues relating to e-commerce.

Operations of E-Commerce : Credit card transaction; Secure Hypertext Transfer Protocol (SHTP); Electronic payment systems; Secure electronic transaction (SET); Set's encryption; Process; Cybercash; Smart cards; Indian payment models.

UNIT-II Applications in B2C : Consumer's shopping procedure on the internet; Impact on disintermediation and re-inermediation; Global market; Strategy of traditional department stores; Products in b2c model; Success factors of e-brokers; Broker based services on-line; Online travel tourism services; Benefits and impact of e-commerce on travel industry; Real estate market; Online stock trading and its benefits; Online banking and its benefits; Online financial services and their future; Educations benefits, implementation, and impact.

UNIT-III Applications in B2B; Applications of b2b, Key technologies for b2b; Architectural models of b2b; Characteristics of the supplier-oriented marketplace, buyer-oriented marketplace, and intermediary-oriented marketplace; Benefits of b2b on procurement re-engineering; Just in Time delivery in b2b; Internet-based EDI from traditional EDI; Integrating EC with back-end information systems; Marketing issues in b2b.

UNIT-IV Applications in Governance : EDI in governance; E-government; E-governance applications of the internet; Concept of government to business, business to government and citizen-to-government; E-governance models; Private sector interface in e-governance.

UNIT-V Emerging Business Models : Retail model; Media model; Advisory model, Mode-to-order manufacturing model; Do-it yourself model; Information service model; Emerging

hybrid models; Emerging models in India.

Suggested Reading :

1. Agarwala Kamlesh. N. and Agarwala Deekhsa : Bridge to Online Storefornt; Macmillan India, New Delhi.
2. Agarwala Kamlesh. N. and Agarwala Deeksha : Business on the Net Introduction to the E-commerce; Macmillan India New Delhi.
3. Agarwala Kamlesh N. and Agarwala Deeksha : Bulls, Bears and The Mouse : An Introduction to Online Stock Market Trading; Macmillan India New Delhi.
4. Tiwari Dr. Murli D. : Eductaion and E-Governance; Macmillan India, New Delhi.
5. Minoli Daniel, Minoli Emma : Web Commerce Technology Handbook; Tata McGraw Hill, New Delhi.
6. Minoli Deniel, Internet & Internet Engineering : Tata McGrow Hill, 1999.
7. Bhatnagar Subhash and Schware Robert (Eds) : Information and Communication Technology in Development; Sage Publications India, New Delhi.
8. Amor, Daniel : E-business R evealuation, The : Living and Working in an Interconnected World; Prentice Hall, U.S.
9. Afuah, A., and Tuccu, C.: Internet usiness models and Strategies; McGraw Hill, New York.
10. Agarwala Kamlesh. N. Internet Banking; Macmillan India, New Delhi.

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OPTIONAL GROUP D

(Money Banking & Insurance Area)

PAPER - I

FUNDAMENTAL OF INSURANCE M.M. 75

(Paper Code-1163)

OBJECTIVE

This course enables the students to know the fundamentals of insurance.

COURSE INPUTS

UNIT-I Introduction to Insurance : Purpose and need of insurance; Insurance as a social security tool; Insurance and economic development.

UNIT-II Fundamentals of Agency Law : Definiton of an agent; Agents regulations; Insurance intermediaries; Agents Compensation.

UNIT-III Procedure for Becoming an Agent : Prerequisite for obtaining a license; Duration of license; Cancellation of incense; Revocation or suspension/termination of agent appointment; Code of conduct; Unfair practices. Functions of the Agent : Proposal form and other forms for grant of cover; Financial and medical underwriting; Material information; Nomination and assignment; Procedure regarding settlement of policy claims.

UNIT-IV Company Profile : Organizational set-up of the company; Promotion strategy; Market share; Important activities; Structure; Product; Actuarial profession; Product pricing actuarial aspects; Distribution channels.

UNIT-V Fundamentals/Principles of Life Insurance/Marine/Fire/Medical/General Insurance; Contracts of various kinds; Insurable Interest.

Suggested Reading :

1. Mishra M.N. : Insurance Principle and Practice; S. Chand and Co., New Delhi.
2. Insurance Regulatory Development Act. 1999.
3. Life Insurance Corporation Act. 1956.
4. Gupta OS : Life Insurance; Frank brothers, New Delhi.
5. Vinayakam N., Radhaswamy and Vasudevan SV : Insurance - Principles and Practice, S. Chand and Co. New Delhi.
6. Mishra MN : Life Insurance Corporation of India, Vols I, II & III; Raj Books, Jaipur.
7. Balchand Shriwastava, Agra.
8. Dr. M.L. Singhai, RAmesh Book Depot, Jaipur.
9. बीमा के तत्व – आर. के. विश्नोई, आगरा

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OPTIONAL GROUP D

(Money Banking & Insurance Area)

PAPER - II

MONEY & BANKING SYSTEM M.M. 75

(Paper Code-1164)

OBJECTIVE

This course enables the students to know the working of the Indian Money & banking system.

UNIT-I Money : Function, Alternative Measures to money supply in India - their different components. Meaning and changing relative importance of each.

UNIT-II Indian Banking System : Structure and organization of banks; Reserve Bank of India; Apex banking Institutions; Commercial banks; Regional rural banks; Cooperative banks; Development banks.

UNIT-III Banking Regulation Act, 1947 : History; Social control; Banking Regulation Act as applicable to banking companies and public sector banks; Banking Regulation Act as applicable to Cooperative banks.

UNIT-IV Regional Rural and Cooperative Banks in India : Functions; Role of regional rural and cooperative banks in rural India; Progress and performance.

UNIT-V Reserve Bank of India : Objectives; Organization; Functions and working; Monetary policy; Credit control measures and their effectiveness.

State Bank of India, Project History, Objectives, Functions & Organization working & progress.

Suggested Reading :

1. Basu A.K. : Fundamentals of Banking-Theory and Practice; A Mukherjee and Co., Calcutta.
2. Sayers R.S. : Modern Banking : Oxford University Press.
3. Panandikar S.G. And Mithani D.M. : Banking in India; orient Longman.
4. Reserve Bank of India : Functions and Working.
5. Dekock : Central Banking; Crosby lockwood Staples, London.
6. Tannan M.L. : Banking - Law and Practice in India : India Law House, New Delhi.
7. Knubchandani B.S. : Practice and Law of Banking; Macmillan, New Delhi.
8. Shekhar and Shekhar : Banking Theory and Practice; Vikas Publishing House, New Delhi.
9. Harishchandra Sharma.
10. M.L. Singhai.
11. प्रो. बी.के. जैन एवं डॉ. ए.पी. सिंह – मुद्रा एवं वित्तीय प्रणाली – कैलाश पुस्तक भवन, भोपाल

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COMPUTER APPLICATION

MARKS DISTRIBUTION

Theory Paper	Paper - I			Total Marks - 50
	Paper - II			Total Marks - 50
Every unit of Theory Paper will consists of 10 Marks.				
Practical Paper				Total Marks - 50
Practical Marks Distribution :	Viva	-	10	
	Internal	-	15	
	Practical	-	25	
Practical Test will consist of 3 Hrs.				**Total Marks - 150**

PAPER - I

PROGRAMMING IN VISUAL BASIC

(Paper Code-1165)

UNIT-I Introduction to Visual Basic, Programs, Variables

Editions of Visual Basic, Event Driven Programming, Terminology, Working environment, project and executable files, Understanding modules, Using the code editor window, Other code navigation features, Code documentation and formatting, environment options, code formatting option automatic code completion features. Introduction to objects, Controlling objects, Properties, methods and events, Working with forms, interacting with the user: MsgBox function, InputBox function, Code statements, Managing forms, Creating a program in Visual Basic, Printing, Overview of variables, Vser-defined data types, constants working with procedures, Working with dates and times, Using the Format Function, Manipulating text stringe.

UNIT-II Controlling Program Execution, Working with Control

Comparison and logical operators, If....Them statements, Select Case Statements looping structures, Using Do....Loop structures, For....Next statement, Exiting a loop. Types of controls, Overview of standard controls, ComboBox and ListBox, OptionButton and Frame controls Menu, Status bars, Toolbars, Advanced standard controls, ActiveX controls, Insertable objects, Arrays, Dynamic Arrays.

UNIT-III Procedure, Function Error Trapping & Debugging

Procedure, Function, call by value, call by reference, Type definition, with object, Validation, Overview of run-time errors, error handling process, The Err object, Errors and calling chain, Errors in an error-handling routine, Inline error handling, Error handling styles, General error-trapping options Type of errors, Break mode Debug toolbar, Watch window, Immediate window, Local window, Tracing Program flow with the Call Stack.

UNIT-IV Sequential and Random Files :

Saving data to file, basic filling, data analysis and file, the extended text editor, File organization Random access file, The design and coding, File Dialog Box, Picture Box, Image box, Dialog Box, using clipboard, Copy, Cut, Paste of Text & Picture in Clipboard, Use of Grid Control Multiple document interface, Single document interface.

UNIT-V Data Access Unsing the ADO Data Control & Report Generation

Overview of ActiveX data Objects, Visual Basic data access features, Relational database concepts Using the ADO Data control to access data, Overview of DAO, RDO, Data Control, structured query language (SQL), Manipulating data Using Data Form Wizard. Overview of Report, Data Report, Add groups, Data Environment, Connection to database Introduction to Crystal Report Generator.

BOOK REFERENCE :

1. Visual Basic Programming - Reeta Sahu, B.P.B. Publication.
2. Mastering in Visual Basic - By BPB Publications.
3. Visual Basic Programming - Mark Brit.

PAPER - II

SYSTEM ANALYSIS, DESING & MIS

(Paper Code-1166)

UNIT-I Introduction -

Systems Concepts and the information systems environment : Definition of system, Characteristics of system, elements of system, types of system, The system Development life cycle : consideration of candidates system. The Role of system Analyst : Introduction, the multiphase role of the analyst, the analyst / user interface, the place of the analyst in the MIS Organization.

UNIT-II System Analysis, Tools of Structured Analysis, Feasibility Study-

System Planning and initial investigation : Basis for planning in systems analysis, initial investigation, fact finding, fact analysis, determination of feasibility.

Information Gathering : Kind of information, Information gathering tools.

Structured Analysis, Flow chart, DFD, Data Dictionary, Decision Tree, Structured English, Decision Table. System Performance, Feasibility Study. Data Analysis.

UNIT-III System Design & System Implementation -

The process of Design Methodologies. Input Design, Output Design, Form Design, File Structure, File organization, data base design, System Testing, the test plan, quality assurance, data processing auditor. Conversion, Post implementation review, Software Maintenance.

UNIT-IV Introduction to MIS & Other Subsystem-

Evolution of MIS, Need of MIS, Definition & Benefits of MIS, Characteristic, Role component of Information system, data base as a future of MIS, Decision making, logic of Management Information system. Structure of MIS.

UNIT-V Information System Concept -

Difference between Transaction Processing. System (TPS) and Management Information System, How MIS works, MIS and Information Resource Management, Quality information Building Blocks for the information system, information system concept, Other system characteristic (Open & Closed System), difference between MIS & Strategic System, Adaptive system, Business function information system.

BOOK REFERENCE :

1. System Analysis and Design - Elias M. Awad.
2. System Analysis and Design - Alan Dennis & Barbara Haley Wixo.
3. Management Information systems - C.S.V. Murthy, Himalaya Publication House.

PAPER - III

PRACTICAL EXERCISES BASED ON PAPER I & II

Practicals to be done -

1. At least 20 practical - exercises covering the contents of paper - I (e.g. Designing calculator, sorting of elements, Generating Fibbonacci series)
2. Design the Project on one of the following - Application Software / Website Design/ Accounting software / Inventory control System / System Software & othter (e.g. Library Management System, Medical management, Stock Management, Hotel Management, Website for your institute / Website of any Organization)
3. The Project Report cover the following topic - Objective, Hardware & Software Requirements, Analysis, Design, Coding, input forms, testing, Reports, Future enhancement of s/w.
4. Practical exam is based on the Project Demonstration & report.

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पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़)

पाठ्यक्रम

बी.एस.सी. भाग-1 (कोड-301)

B. Sc. Part - I (Code - 301)

परीक्षा : **2016-17**

कुलसचिव पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़) की ओर से

B. Sc. Part - I

विषय–सूची

PT. RAVISHANKAR SHUKLA UNIVERSITY RAIPUR (C.G.)

REVISED ORDINANCE NO. 21

BACHELOR OF SCIENCE

1. The three year course has been broken up into three Parts. Part-I known as B.Sc. Part-I examination at the end of the first year, Part-II known as B.Sc. Part-Ii examination at the end of the second year and Part-III known as B.Sc. Part-III examination at the end of the third year.

2. A candidate who after passing (10+2) Higher Secondary or Intermediate examination of C.G. Board of Secondary Education Bhopal or any other Examination recognised by the University or C.G. Board of Secondary Education as equivalent thereto, has attended a regular course of study in an affiliated College or in the Teaching Department of the University for one academic year shall be eligible for appearing at the B.Sc. Part-I examination.

3. A candidate who, after passing the B.Sc.-I examination of the University or any other examination recognised by the University as equivalent thereto, has attended a regular course of study for one academic year in an affiliated college or in the Teaching Department of the University shall be eligible for appearing at the B.Sc. Part-II examination.

4. A candidate who, after passing the B.Sc. Part-Ii examination of the University, has completed a regular course of study for one academic year in an affiliated college or in the Teaching Department of the University shall be eligible for appearing at the B.Sc. Part-III examination.

5. Besides regular students, subject to their compliance with this Ordinance ex-student and non-collegiate candidates shall be permitted to offer only such subjects/papers as are taught to the regular student at any of the University Teaching Department or College.

6. Every candidate appearing in B.Sc. Part-I, Part-II and Part-III examination shall be examined in -

   (i) Foundation Course :

   (ii) Any one of the following combinations of three subjects :-

      1. Physics, Chemistry & Mathematics.
      2. Chemistry, Botany & Zoology.
      3. Chemistry, Physics & Geology.
      4. Chemistry, Botany & Geology.
      5. Chemistry, Zoology & Geology.
      6. Geology, Physics & Mathematics.
      7. Chemistry, Mathematics & Geology.
      8. Chemistry, Botany & Defence Studies.
      9. Chemistry, Zoology & Defence Studies
      10. Physics, Mathematics & Defence Studies.
      11. Chemistry, Geology & Defence Studies
      12. Physics, Mathematics & Statistics
      13. Physics, Chemistry & Statistics
      14. Chemistry, Mathematics & Statistics.
      15. Chemistry, Zoology & Anthropology.
      16. Chemistry, Botany & Anthropology.
      17. Chemistry, Geology & Anthropology.
      18. Chemistry, Mathematics & Statistics.

19. Chemistry, Anthropology & Defence Studies.
20. Geology, Mathematics & Statistics.
21. Mathematics, Defence Studies & Statistics
22. Anthropology, Mathematics & Statistics
23. Chemistry, Anthropology & Applied Statistics
24. Zoology, Botany & Anthropology
25. Physics, Mathematics & Electronics.
26. Physics, Mathematics & Computer Application
27. Chemistry, Mathematics & Computer Application
28. Chemistry, Bio-Chemistry & Pharmacy
29. Chemistry, Zoology & Fisheries.
30. Chemistry, Zoology & Agriculture
31. Chemistry, Zoology & Sericulture
32. Chemistry, Botany & Environmental Biology
33. Chemistry, Botany & Microbiology
34. Chemistry, Zoology & Microbiology
35. Chemistry, Industrial Chemistry & Mathematics
36. Chemistry, Industrial Chemistry & Zoology
37. Chemistry, Biochemistry, Botany
38. Chemistry, Biochemistry, Zoology
39. Chemistry, Biochemistry, Microbiology
40. Chemistry, Biotechnology, Botany
41. Chemistry, Biotechnology, Zoology
42. Geology, Chemistry & Geography
43. Geology, Mathematics & Geography
44. Mathematics, Physics & Geography
45. Chemistry, Botany & Geography

(iii) Practical in case prescribed for core subjects.

7. Any candidate who has passed the B.Sc. examination of the University shall be allowed to present himself for examination in any of the additional subjects prescribed for the B.Sc. examination and not taken by him at the degree examination. Such candidate will have to first appear and pass the B.Sc. Part-I examination in the subjects which he proposes to offer and then the B.Sc. Part-II and Part-III examination in the same subject. Successful candidates will be given a certificate to that effect.

8. In order to pass at any part of the three year degree course examination an examinee must obtain not less than 33% of the total marks in each subject/ group of subjects. In subject/ group of subjects where both theory and practical examination are provided an examinee must pass in both theory and practical parts of the examination separately.

9. Candidate will have to pass separately at the Part-I, Part-II and Part-III examinations. No division shall be assigned on the result of the Part-I and Part-II examination. In determining the division of the final examination, total marks obtained by the examinees in their Part-I, Part-II and Part-III examination in the aggregate shall be taken in to account. Provided in case of candidate who has passed the examination through supplementary examination having failed in one subject/ group only, the total aggregate marks being carried over for determining the division shall include actual marks obtained in the subject/ group in which he appeared at the supplementary examination.

10. Successful examinee at the Part-III examination obtaining 60% or more marks shall be places in the First Division, those obtaining less than 60% but not less than 45% marks in the Second Division and other successful examinees in the Third Division.

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In clause 6(ii) after serial No. 41, 42-45 inserted. Approved in 23rd Co-Ordination committee Dated 15-01-2014.

SCHEME OF EXAMINATION

Subject	Paper	Max. Marks	Total Marks	Min. Marks
Environmental Studies		75	100	33
Fild Work		25		
Foundation Course				
Hindi Language	I	75	75	26
English Language	I	75	75	26

नोट : प्रत्येक खंड में से 2 (दो) प्रश्न हल करने होगे । सभी प्रश्न समान अंक के होंगे ।

Three Elective Subject :

1.	Physics	I	50	100	33
		I	50		
		Practical		50	17
2.	Chemistry	I	33		
		I	33	100	33
		III	34		
		Practical		50	17
3.	Mathematics	I	50		
		I	50	150	50
		III	50		
4.	Botany	I	50	100	33
		I	50		
		Practical		50	17
5.	Zoology	I	50	100	33
		I	50		
		Practical		50	17
6.	Geology	I	50	100	33
		I	50		
		Practical		50	17
7.	Statistics	I	50	100	33
		I	50		
		Practical		50	17
8.	Anthropology	I	50	100	33
		I	50		
		Practical		50	17

Subject	Paper	Max. Marks	Total Marks	Min. Marks
9. Defence Studies	I	50		
	II	50	100	33
	Practical		50	17
10. Micro Biology	I	50		
	II	50	100	33
	Practical		50	17
11. Computer Science	I	50		
	II	50	100	33
	Practical		50	17
12. Information Technology	I	50		
	II	50	100	33
	Practical		50	17
13. Industrial Chemistry	I	34		
	II	33	100	33
	III	33		
	Practical		50	17
14. Bio Chemistry	I	50		
	II	50	100	33
	Practical		50	17
15. Bio Technology	I	50		
	II	50	100	33
	Practical		50	17

USE OF CALCULATORS

The Students of Degree/P.G. Classes will be permitted to use of Calculators in the examination hall from annual 1986 examnination on the following conditions as per decision of the standing committee of the Academic Council at its meeting held on 31-1-1986.

1. Student will bring their own Calculators.
2. Calculators will not be provided either by the University or examination centres.
3. Calculators with, memoty and following variables be permitted +, –, x, , square, reciprocal, expotentials log, square root, trignometric functions, wize, sine, cosine, tangent etc. factiorial summation, xy, yx and in the light of objective approval of merits and demerits of the viva only will be allowed.

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Part - I

SYLLABUS FOR ENVIRONMENTAL STUDIES AND HUMAN RIGHTS

(Paper code-0828)

MM. 75

इन्वारमेंटल साईंसेस के पाठ्यक्रम को स्नातक स्तर भाग–एक की कक्षाओं में विश्वविद्यालय अनुदान आयोग के निर्देशानुसार अनिवार्य रूप से शिक्षा सत्र 2003–2004 (परीक्षा 2004) से प्रभावशील किया गया है। स्वशासी महाविद्यालयों द्वारा भी अनिवार्य रूप से अंगीकृत किया जाएगा।

भाग 1, 2 एवं 3 में से किसी भी वर्ष में पर्यावरण प्रश्न–पत्र उत्तीर्ण करना अनिवार्य है। तभी उपाधि प्रदाय योग्य होगी।

पाठ्यक्रम 100 अंकों का होगा, जिसमें से 75 अंक सैद्धांतिक प्रश्नों पर होंगे एवं 25 अंक क्षेत्रीय कार्य (Field Work) पर्यावरण पर होंगे।

सैद्धांतिक प्रश्नों पर अंक – 75 (सभी प्रश्न इकाई आधार पर रहेंगे जिसमें विकल्प रहेगा)

(अ) लघु प्रश्नोंत्तर – 25 अंक

(ब) निबंधात्मक – 50 अंक

Field Work – 25 अंकों का मूल्यांकन आंतरिक मूल्यांकन पद्धति से कर विश्वविद्यालय को प्रेषित किया जावेगा। अभिलेखों की प्रायोगिक उत्तर पुस्तिकाओं के समान संबंधित महाविद्यालयों द्वारा सुरक्षित रखेंगे।

उपरोक्त पाठ्यक्रम से संबंधित परीक्षा का आयोजन वार्षिक परीक्षा के साथ किया जाएगा।

पर्यावरण विज्ञान विषय अनिवार्य विषय है, जिसमें अनुत्तीर्ण होने पर स्नातक स्तर भाग–एक के छात्र/छात्राओं को एक अन्य विषय के साथ पूरक की पात्रता होगी। पर्यावरण विज्ञान के

सैद्धांतिक एवं फील्ड वर्क के संयुक्त रूप से 33% (तैंतीस प्रतिशत) अंक उत्तीर्ण होने के लिए अनिवार्य होंगे।

स्नातक स्तर भाग–एक के समस्त नियमित/भूतपूर्व/अमहाविद्यालयीन छात्र/छात्राओं को अपना फील्ड वर्क सैद्धांतिक परीक्षा की समाप्ति के पश्चात् 10 (दस) दिनों के भीतर संबंधित महाविद्यालय/परीक्षा केन्द्र में जमा करेंगे एवं महाविद्यालय के प्राचार्य/केन्द्र अधिक्षक, परीक्षकों की नियुक्ति के लिए अधिकृत रहेंगे तथा फील्ड वर्क जमा होने के सात दिनों के भीतर प्राप्त अंक विश्वविद्यालय को भेजेंगे।

UNIT-I THE MULTI DISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES

Definition, Scope and Importance

Natural Resources:

Renewable and Nonrenewable Resources

(a) Forest resources: Use and over-exploitation, deforestation, Timber extraction, mining, dams and their effects on forests and tribal people and relevant forest Act.

(b) Water resources: Use and over-utilization of surface and ground water, floods drought, conflicts over water, dams benefits and problems and relevant Act.

(c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.

(d) food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging , salinity.

(e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources.

(f) Land resources: Land as a resource, land degradation, man induced landslides soil erosion and desertification.

(12 Lecture)

UNIT-II ECOSYSTEM

(a) Concept, Structure and Function of and ecosystem

- Producers, consumers and decomposers.
- Energy flow in the ecosystem

- Ecological succession
- Food chains, food webs and ecological pyramids.
- Introduction, Types, Characteristics Features, Structure and Function of Forest, Grass, Desert and Aquatic Ecosystem.

(b) Biodiversity and its Conservation

- Introduction - Definition: genetic. species and ecosystem diversity
- Bio-geographical classification of India.
- Value of biodiversity: Consumptive use. productive use, social ethics, aesthetic and option values.
- Biodiversity at global, National and local levels.
- India as mega-diversity nation.
- Hot spots of biodiversity.
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wild life conflict.
- Endangered and endemic species of India.
- Conservation of biodiversity: In situ and Ex-situ conservation of biodiversity.

(12 Lecture)

UNIT- III

(a) Causes, effect and control measures of

- Air water, soil, marine, noise, nuclear pollution and Human population.
- Solid waste management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Disaster Management : floods, earthquake, cyclone and landslides.

(12 Lecture)

(b) Environmental Management

- From Unsustainable to sustainable development.
- Urban problems related to energy.

- Water conservation, rain water harvesting, watershed management.
- Resettlement and rehabilitation of people, its problems and concerns.
- Environmental ethics: Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.
- Wasteland reclamation
- Environment protection Act: Issues involved in enforcement of environmental legislation.
- Role of Information Technology in Environment and Human Health.

UNIT- IV

General background and historical perspective- Historical development and concept of Human Rights, Meaning and definition of Human Rights, Kind and Classification of Human Rights.

Protection of Human Rights under the UNO Charter, protection of Human Rights under the Universal Declaration of Human Rights, 1948.

Convention on the Elimination of all forms of Discrimination against women.

Convention on the Rights of the Child, 1989.

UNIT- V

Impact of Human Rights norms in India, Human Rights under the Constitution of India, Fundamental Rights under the Constitution of India, Directive Principles of State policy under the Constitution of India, Enforcement of Human Rights in India.

Protection of Human Rights under the Human Rights Act, 1993- National Human Rights Commission, State Human Rights Commission and Human Rights court in India.

Fundamental Duties under the Constitution of India.

Reference/ Books Recommended

1. SK Kapoor- Human rights under International Law and Indian Law.
2. HO Agrawal- Internation Law and Human Rights
3. एस.के. कपूर – मानव अधिकार
4. जे.एन. पान्डेय – भारत का संविधान
5. एम.डी. चतुर्वेदी – भारत का संविधान
6. J.N.Pandey - Constitutional Law of India
7. Agarwal K.C. 2001 Environmental Biology, Nidi pub. Ltd. Bikaner

8. Bharucha Erach, the Biodiversity of India, Mapin pub. Ltd. Ahmedabad 380013, India, Email: mapin@icenet.net(R)
9. Bruinner R.C. 1989, Hazardous Waste Incineration. McGraw Hill Inc.480p
10. Clark R.S. Marine pollution, Clanderson press Oxford (TB)
11. Cuningham, W.P.Cooper. T.H.Gorhani, E & Hepworth. M.T,200
12. Dr. A.K.- Environmental Chemistry. Wiley Eastern Ltd.
13. Down to Earth, Center for Science and Environment (R)
14. Gloick, H.P. 1993 Water in crisis. pacific institute for studies in Deve. Environment & Security. Stockholm Eng. Institute. Oxford University, Press. m 473p.
15. Hawkins R.E. Encyclopedia of Indian Natural History, Bombay Natural History Society, Mumbai (R)
16. Heywood, V.H. & Watson, T.T.1995 Global Biodiversity Assessment, Cambridge Univ. Press 1140p
17. Jadhav H. & Bhosale, V.H. 1995 Environmental Protection and Law. Himalaya pub. House, Delhi 284p
18. Mckinney M.L.& School R.M.1996, environmental Science systems & solutions, web enhanced edition, 639p
19. Mhadkar A.K. Matter Hazardous, Techno-Science publication(TB)
20. Miller T.G.Jr. Environment Science, Wadsworth publication co. (TB)
21. Odum E.P.1971, Fundamentals of Ecology, W.B. Saunders Co. USA,574p
22. Rao M.N. & Datta, A.K. 1987, Waste water treatment. Oxford & IBH pub.co.pvt. Ltd 345p
23. Sharma B.K. 2001, Environmental chemistry, Goel pub. House, Meerut
24. Survey of the Environment, The Hidu(M)
25. Townsend C. Harper J. And Michael Begon, Essentials of Ecology, Blackwell Science(TB)
26. Trivedi R.K.Handbook of Environment Laws, Rules, Guidlines, Compliances and Standards, Vol land II, Environment Media(R)
27. Trivedi R.K. and P.K. Goel, Introduction to air pollution, Techno-Science publication (TB)
28. Wanger K.D.1998, Environmental Management. W.B. Saunders Co. Philadelphia, USA 499p

आधार पाठ्यक्रम

प्रश्न पत्र - प्रथम

हिन्दी भाषा पूर्णांक - 75

(पेपर संख्या 0791)

नोट :

1. प्रश्न पत्र 75 अंक का होगा ।
2. प्रश्न पत्र अनिवार्य होगा ।
4. इसके अंक श्रेणी निर्धारण के लिए जोड़े जावेंगे ।
5. प्रत्येक इकाई के अंक समान होंगे ।

पाठ्य विषय -

इकाई-1 पल्लवन, पत्राचार तथा अनुवाद एवं पारिभाषिक शब्दावली ।

इकाई-2 मुहावरे-लोकोक्तियाँ, शब्दशुद्धि, वाक्य शुद्धि, शब्द ज्ञान-पर्यायवाची, विलोम, अनेकार्थी, समश्रुत (समानोचरित) अनेक शब्दों के लिए एक शब्द ।

इकाई-3 देवनागरी लिपि की विशेषता, देवनागरी लिपि एवं वर्तनी का मानक रूप ।

इकाई-4 कम्प्यूटर में हिन्दी का अनुप्रयोग, हिन्दी में पदनाम ।

इकाई-5 हिन्दी अपठित, संक्षेपण, हिन्दी में संक्षिप्तीकरण ।

पाठ्य क्रम के लिए पुस्तकें -

1. भारतीयता के स्वर साधन धनंजय वर्मा - म. प्र. ग्रंथ अकादमी ।
2. नागरी लिपि और हिन्दी - अनंत चौधरी - ग्रंथ अकादमी पटना ।
3. कम्प्यूटर और हिन्दी - हरिमोहन - तक्षशिला प्रकाशन, दिल्ली ।

FOUNDATION COURSE

PAPER - II

ENGLISH LANGUAGE M.M. 75

(paper code - 0792)

UNIT-1 **Basic Language skills : Grammar and Usage.**

Grammar and Vocabulary based on the prescribed text.
To be assessed by objective / multiple choice tests.

(Grammar - 20 Marks
Vocabulary - 15 Marks)

UNIT-2 **Comprehension of an unseen passage.** 05

This should imply not only (a) an understanding of the passage in question, but also (b) a grasp of general language skills and issues with reference to words and usage

within the passage and (c) the Power of short independent composition based on themes and issues raised in the passage.

To be assessed by both objective multiple choice and short answer type tests.

UNIT-3 **Composition :** Paragraph writing 10

UNIT-4 **Letter writing** (The formal and one Informal) 10

Two letters to be attempted of 5 marks each. One formal and one informal.

UNIT-5 **Texts :** 15

Short prose pieces (Fiction and not fiction) short poems, the pieces should cover a range of authors, subjects and contexts. With poetry if may sometimes be advisable to include pieces from earlier periods, which are often simpler than modern examples. In all cases, the language should be accessible (with a minimum of explanation and reference to standard dictionaries) to the general body of students schooled in the medium of an Indian language.

Students should be able to grasp the contents of each plece; explain specific words, phrases and allusions; and comment on general points of narrative or argument. Formal Principles of Literary criticism should not be taken up at this stage.

To be assessed by five short answers of three marks each.

BOOKS PRESCRIBED -

English Language and Indian Culture - Published by M.P. Hindi Granth Academy Bhopal.

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PHYSICS

OBJECTIVES OF THE COURSE

The undergraduate training in Physics is aimed at providing the necessary inputs so as to set forth the task of bringing about new and innovative indeas/concepts so that the formulated model curricula in physics becomes in tune with the changing scenario and incorporate new and rapid advancements and multi disciplinary skills, societal relevance, global interface, self sustaining and supportive learning.

It is desired that under graduate i.e. B.Sc. level besides grasping the basic concepts of physics should in addition have broader vision. Therefore, they should be exposed to societal interface of physics and role of physics in the development of technologies.

EXAMINATION SCHEME :

1. There shall be 2 theory papers of 3 hours duration each and one practical paper of 4 hours duration. Each paper shall carry 50 marks.
2. Numerical problems of at least 30% will compulsorily be asked in each theory paper.
3. In practical paper, each student has to perform two experiments, one from each group as listed in the list of experiments.
4. Practical examination will be of 4 hours duration-one experiment to be completed in 2 hours.

   The distribution of practical marks will be as follows:

Experiment	:	15 + 15 = 30
Viva Voce	:	10
Internal assessment	:	10

5. The external examiner should ensure that atleast 16 experiments are in working order at the time of examination and submit a certificate to this effect.

PAPER - I

MECHANICS, OSCILLATIONS AND PROPERTIES OF MATTER

(paper code - 0793)

UNIT-1 Laws of motion, motion in a uniform field, components of velocity and acceleration in different coordinate systems. (Cartesian, Cylindrical and Spherical) uniformly rotating frame, centripetal acceleration, Coriolis force and its applications. Motion under a central force, Kepler's laws. Gravitational law and field.

Potential due to a spherical body. System of particles, center of mass, equation of motion, conservation of linear & angular momentum, conservation of energy.

UNIT-2 Rigid body notion, rotational motion, moments of inertia and their products, principal moments & axes, Introductory idea of Euler's equations. potential well and periodic oscillations, case of harmonic small oscillations, differential equation and its solution, kinetic and potential energy, examples of simple harmonic oscillations, spring and mass system, simple and compound pendulum, torsional pendulam.

UNIT-3 Bifilar oscillations, helmholtz resonator, LC circuit, vibrations of a magnet, oscillations of two masses connected by a spring. Superpostion of two simple harmonc motions of the same frequency, Lissajous figures, case of different frequencies. Damped harmonc oscillator', power dissipation, quality factor, examples, driven (forced)

harmonic oscillator, transient and steady states, power absorption, resonance.

Note : (The emphasis here should be on the mechanical aspects and not on the details of the apparatus mentioned, which are indicated as applications of principles involved)

UNIT-4 E as an accelerating field, electron gun, case of discharge tube, linear accelerator, E as deflecting field- CRO sensitivity,

Transverse B field, 180° deflection, mass spectrograph, curvatures of tracks for energy determination, principle of a cyclotron. Mutually perpendicular E and B fields-velocity selector, its resolution. Parallel E and B fields, positive ray parabolas, discovery of isotopes, elements of mass spectrography, principle of magnetic focussing (lens.)

UNIT-5 Elasticity, small deformations, Hooke's law elastic constants for an isotropic solid and relations between them beams supported at both the ends, cantilever, torsion of cylinder, bending moments and shearing forces. Kinematics of moving fluids, equations of continuity. Euler's equation, Benaulli's theorem, viscous fluids, steamline and turbulent flow. Poiseulle's law. Capillary tube flow, Reynold's number, Stokes law, surface tension and surface energy, molecular interpretation of surface tension, pressure on a curved liquids surface, wetting.

TEXT AND REFERENCE BOOKS :

E M purcell, Ed Berkely physics course, vol. Mechnics (Mc. Gr. Hill) R P Feynman, R B lighton and M Sands, the feynman lectures in physics, vol I (B) publications, Bombay, Delhi, Calcutta, Madras

D P Khandelwal, Oscillations and waves (Himalaya Publishing House Bombay)

R. K. Ghosh, The Mathematics of waves and vibrations (Macmillan 1975) .

J.C. Upadhyaya- Mechanics (Hindi and English Edition.)

D.S. Mathur- Mechanics and properties of matter.

Brij lal and subramanium- Osccillations and waves.

Resnick and Halliday- Volume I

PAPER - II

ELECTRICITY, MAGNETISM AND ELECTROMAGNETIC THEORY

(paper code - 0794)

UNIT-1 Functions of two and three variables, partial derivatives, geometrical interpretation of partial derivatives of functions of two variables. Total differential of a function of two and three variables. Repeated integrals of a function of more than one variable, definition of a double and triple integral. Scalars and vectors, dot and cross products, triple vector product, gradient of a scalar field and its geometrical interpretation, divergnence and curl of a vector field, line, surface and volume integrals, flux of a vector field. Gauss's divergence theorem, Green's theorem and Stokes theorm.

UNIT-2 Columbs law in vacuum expressed in Vector forms calculations of E for simple distributions of charges at rest, dipole and quadrupole fields.

Work done on a charge in a electrostatic field expressed as a line integral, conservative nature of the electrostatic field. Electric potential $\phi, \vec{E} = -\vec{\nabla}\phi$, torque on a dipole in a uniform electric field and its energy, flux of the electric field, Gauss's law and its application for finding E for symmetric charge distributions, Gussian pillbox ? Fields at the surface of a conductor screening of E field by a conductor, capacitors,

electrostatic field energy, force per unit area of the surface of a conductor in an electric field, conducting sphere in a uniform electric field, point charge in front of a grounded infinite conductor.

UNIT-3 Dielectrics parallel plate capacitor with a dielectric, electric susceptibility, permittivity and dielectric constant, polarization and polarization vector, displacement vector $\vec{D}$, molecular interpretation of Claussius- Mossotti equation.

Steady current, current density J, non-steady curents and continuity equation, kirchoff's law and analysis of multiloop circuits, rise and decay of current in LR and CR circuits, decay constants, transients in LCR circuits, AC circuits, complex numbers and their applications in solving AC circuit problems, complex impedance and reactance, series and parallel resonance, Q factor, power consumed by an a AC circuit, power factor,.

UNIT-4 Force on a moving charge, Lorentz force equation and definition of B, force on a straight conductor carrying current in a uniform magnetic field, torque on a current loop, magnetic diploe moment, angular momentum and gyromagnetic ratio.

$\vec{\nabla} \cdot B = O$, $\vec{\nabla} \times \vec{B} = \mu \vec{J}$. Biot and Savart's law, Ampere's law field due to a magnetic dipole, magnetization current, magnetization vector, magnetic permeability (Linear cases), interpretation of a bar magnet as a surface distribution of sinusoidal current.

UNIT-5 Electromagnetic induction, Faraday's law, electromotive force, $\varepsilon = \oint E.dr$, integral and differential forms of Faraday's law Mutual and self inductance, Transformers, energy in a static magnetic field. Maxwell's displacement current, Maxwells' equations, electromagnetic field energy density.

The wave equation satisfied by E and B, plane electromagnetic waves in vacuum, Poyning's vector.

TEXT AND REFERENCE BOOK :

Berkeley Physics Course, Electricity and Magnetism, Ed. E.M. Purcell (Mc Graw - Hill)

Halliday and Resnik, Physics, Vol. 2

D J Grifith, Introduction to Electrodynamics (Prentice-Hall of India)

Raitz and Milford, Electricity and Magnetism (Addison-Wesley)

A S Mahajan and A A Rangwala, Electricity and Magnetism (Tata Mc Graw-hill)

A M Portis, Electromagnetic fields.

Pugh & Pugh, Principles of Electricity and Magnetism (Addison-Wesley)

Panofsky and Phillips, Classical Electricity and Magnetism, (India Book House)

S S Atwood, Electricity and Magnetism (Dover).

PRACTICAL

Minimum 16 (Eight from each group)

EXPERMENTS OUT OF THE FOLLOWING OR SIMILAR EXPERIMENTS OF EQUAL STANDARD

GROUP-A

1. Study of laws of parallel and perpendicular axes for moment of inertia.
2. Study of conservation of momentum in two dimensional oscillations.
3. Study of a compound pendulum.

4. Study of damping of a bar pendulum underr various mechanics.
5. Study of oscillations under a bifilar suspension.
6. potential energy curves of a 1- Double system and oscillations in it for various amplitudes.
7. Study of oscillations of a mass under different combinations of springs.
8. Study of bending of a cantilever or a beam.
9. Study of torsion of wire (static and dynamic methods)
10. Study of flow of liquids through capillaries.
11. Determination of surface tension of a liquid by different methods.
12. Study of viscosity of a fluid by different methods.

GROUP-B

1. Characteristics of a baillistic galvanometer.
2. Setting up and using an electroscope or electrometer.
3. Use of a vibration magnetometer to study a field.
4. Study of B field due to a current.
5. Measurement of low resistance by Carey-Foster bridge or otherwise.
6. Measurement of inductance using impedance at different frequencies.
7. Study of decay of currents in LR and RC circuits.
8. Response curve for LCR circuit and resopapce frequence and quality factor.
9. Sensitivity of a cathode-ray oscilloscope.
10. Characteristics of a choke.
11. Measurement of inductance.
12. Study of Lorentz force.
13. Study of discrete and continuous LC transmission lines.
14. Elementary Fortran programs, flowcharts and their interpretation.
15. To find the product of two matrices.
16. Numerical solution of equation of motion.
17. To find the roots of quadratic equation.

TEXT AND REPERENCE BOOKS:

B saraf et al Mechanical Systems (Vikas Publishing House, New Delhi)

D.P. Khandelwal, A Laboratory Manual of Physics for Undergraduate classes (Vani Publication House, New Delhi)

C G Lambe Elements of Statistics (Longmans Green and Co London New York, Toronto)

C Dixon, Numerical Analysis.

S Lipsdutz and A Poe, Schaum's Outline of theory and problems of programming with fortran (MC Graw-Hill Book Company, Singapore 1986)

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CHEMISTRY

The new curriculam will comprise of Three papers of 33.33 and 34 marks each and practical work of 50 marks. The curriculam is to be completed in 180 working days as per the UGC norms & conforming to the directives of the Govt. of Chhattisgarh. The theory papers are of 60 hrs. each duration & the practical work of 180 hrs. duration.

PAPER-I

INORGANIC CHEMISTRY M.M. 33

(paper code - 0795)

UNIT-1 A. ATOMIC STRUCTURE

Idea of de-Broglie matter-waves, Heisenberg Uncertainty principle, Schrodinger wave equation, significance of , radial & angular wave functions and probability distribution curves, Atomic orbital and shapes of s, p, d orbital's, Aufbau and Pauli exclusion principles, Hund's Multiplicity rule, electronic configuration of the elements, effective nuclear charges.

B. PERIODIC PROPERITIES

Ionization energy, electron gain enthalpy and electro negativity, trend in periodic table and applications in predicting and explaining the chemical behavior.

UNIT-2 CHEMICAL BONDING

Covalent Bond : Valence bond theory and its limitations, directional charectaristics of covalent bond, various types of hybridization & shapes of simple inogranic molecules and ions. Valence shell electron pair repulsion (VSEPR) theory to $NH_3, H_3O^+, SF_4, ClF_3,$ Ψ and Ψ^2 ICl_2^- and H_2O . M.O. Theory, homonuclear & hetronuclear bond strength & bond energy, percentage ionic character from dipole moment & electronegativity difference.

UNIT-3 CHEMICAL BONDING

Ionic Solids- Ionic structures, radius ratio & co-ordination number, limitation of radius, ratio rule, lattice defects, semiconductors, lattice energy Born- Haber cycle, Solvation energy and solubility of ionic solids, polarising power & polarisabilitry of ions, Fajans rule, Metallic bond-free electron, Valence bond & band theories.

UNIT-4 A. s-BLOCK ELEMENTS

Comparative study, salient features of hydrides, solvation & complexation tendencies including their function in biosystems and introduction to alkyl & aryls, Derivatives of alkali and alkaline earth metals.

B. CHEMISTRY OF NOBLE GASES

Chemical properties of the noble gases, chemistry of xenon, structure binding in xenon compounds.

UNIT-5 A. p-BLOCK ELEMENTS

Halides hydrides, oxides and oxyacids of Boron, Aluminum, Nitrogen and Phosphorus, boranes, borazines, fullerenes and silicates, interhalogens and pseudohalogens.

B. INORGANIC CHEMICAL ANALYSIS

Chemical principles involved in the detection of acids and basic radicals including interfering radicals.

REFERENCE BOOKS :

1. Basic Inorganic Chamistry, F.A Cotton, G. Wilkinson and P.L. Gaus, Wley
2. Conciso Inorganic Chemistry, J.D. Lee, ELBS
3. Concepts of models of Inorganic Chemistry, B. Douglas, D. Mc Daniel and J Alexander, John Wiley.
4. Inorganic Chemistry, D.E. Shriver, P.W. Atkins and C.H.L. angford, Oxford.
5. Inorganic Chemistry, W.W. Porterfield, Addison- Wesley.
6. Inorganic Chemistry, A.G. Sharp, ELBS.
7. Inorganic Chemisty, G.L. Micssels and D.A. Tarr, Prentice Hall.
8. Advanced Inorganic Chemistry, Satya Prakash
9. Advanced Inorganic Chemistry, Agarwal & Agarwal
10. Advanced Inorganic Chemistry, Puri & Sharma, S. Naginchand
11. Inorganic Chemistry, Madan, S. Chand
12. Aadhunik Akarbnic Rasayan, R.K. Shrivastav & P.S. Jain, Goel Publication.
13. Uchchattar Akarbnic Rasayan, Satya Prakash & G.D. Tuli, Shyamal Prakashan.
14. Uchchattar Akarbnic Rasayan, Puri & Sharma
15. Akarbnic Rasayan, Bhagchandni, Sahitaya Publication.
16. Rasayan Vigyan, Bhatnagar, Arun Pablication.

PAPER - II

ORGANIC CHEMISTRY M.M. 33

(paper code - 0796)

UNIT-I ELECTONIC STRUCTURE & BONDING

A. Resonance, Hyperconjugation, Inductive and other field effects, Aromaticity, hydrogen bonding.

B. MECHANISM OF ORGANIC REACTIONS

Homolytic & heterolytic bond breaking, types of reagents-electrhpiles & nucleophiles. Structure and reactivity of reaction intermediates-Carbocation, carbanions free radicals, carbenes and niterenes.

UNIT-2 STEREOCHEMISTRY OF ORGANIC COMPOUNDS

A. Optical Isomerism - enantiomers, diasterecmers, threo and erythro meso compound, resolution of enantiomers, inversion, retention and recemization, Relative and absolute configuration, Sequence rules, D and L and R & S systems of nomenclature.

B. Geometrical isomerism - Syn and anti forms, E & Z system of nomenclature, properties of cis-trans isomers.

UNIT-3 ALIPHATIC AND AROMATIC RING COMPOUNDS

A. Cycloalkanes- Nomenclature, methods of formation, chemical reactions, Baeyer's strain theory and its limitations. Ring strain in small rings (cyclopropane and cyclobutane), theory of strainless rigns. The case of cyclopropane ring: banana bonds.

B. Mono-nuclear and polynuclear aromatic ring. Structure of benzene & naphthalene. Molecular formula and Kekule structure. Aromatic electrophilic substitution. General pattern of the mechanism, role of σ and π complexes. Electrophilic substitution in naphthalene.

UNIT-4 ALKENES, DIENES AND ALKYNES

A. Mechanism of dehydration of alcohols.

B. Chemical reactions of alkenes- Mechanisms involved in electrophilic and free radical additions, hydroboration-oxidation, oxymercuration- reduction. epoxidation. Substitution at the allylic and vinylic positions of alkenes. Structure of allenes and butadiene, chemical reaction- 1,2 and 1,4 addition, Diel-Alder reaction.

Chemical reactions of alkynes and acidity of alkynes. Electrophilic and nucleophilic addition reactions, hydroboration and oxidation with ozone and $KMnO_4$.

UNIT-5 ARENES AND AROMATICITY

A. Alkyl halides and Aryl Halides

Mechanism and stereochemistry of nucleophilic substitution reactions and alkyl halides and aryl halides with energy profile diagrams. SN1, SN2, SNi mechanisms.

B. Mechanisms and stereochemistry of elimination reaction and alkyl halides. Elimination Vs Substitution.

REFERENCE BOOK :

1. Organic Chemistry, Morrison and Boyd, Prentic- Hall
2. Organic Chemistry, L.G. Wade Jr, Prentice-Hall
3. Fundamentals of Organic Chemistry, Solomons, John Wiley
4. Organic Chemistry, Vol. I, II, III, S.M. Mukherjee, S.P. singh and R.P. Kapoor, wiley-eastern (New-Age).
5. Organic Chemistry, F.A. Carey, MC Graw Hill
6. Introduction to Organic Chemistry, Struiweisser, Heathock and Kosover, Macmillan.
7. Organic Chemistry, P.L.Soni.
8. Organic Chemistry, Bahi & Bahl
9. Organic Chemistry, Joginder Singh.
10. Carbanic Rasayan, Bashi & Bahi
11. Carbanic Rasayan, R.N. Singh,. S.M.I. Gupta, M.M. Bakodia & S.K. Wadhwa.
12. Carbanic Rasayan, Joginder Singh.
13. Carbanic Rasayan, P.L. Soni.
14. Corbanic Rasayan, Bhagchandani, Sahitya Bhawan Publication.
15. Rasayan Vigyan, Bhatnagar, Arun Prakashan.

PAPER - III

PHYSICAL CHEMISTRY M.M.34

(paper code - 0797)

UNIT-1 MATHEMATICAL CONCEPTS FOR CHEMIST AND COMPUTER

A. Logarithmic relations, curve sketching linear graphs, Properties of straight line, sloped and intercept, Differentiation of functions, Partial differentiation, Integration of some useful and relavant functions, Maxima and minima, Permutation and combination, Probability.

B. General introduction to computers, components of computer, hardware and software, input and output devices; binary numbers, Introduction to computer languages, Programming, Operation systems.

UNIT-2 A. MOLECULAR VELOCITIES :

Root mean square velocity average and most probable velocities, Maxwell's law of distribution of molecular velocites of gases, (Graphical interpretation), effect of temperature on distribution of molecular velocities, collision frequency, mean free path, Joule- Thompson effect, Liquification of gases.

B. Deviation from ideal behavior, Real gases, Vander Waal equation of state, Relationship, Vander waal constant and critical constants, Law of corresponding state.

UNIT-3 A. LIQUID STATE

Inter molecular forces, magnitude of intermolecular force, structure of liquids, Properties of liquids, viscosity and surface tension.

B. Ideal and non ideal solutions, modes of representing concentration of solutions, activity and activity coefficient.

Dilute solution : Colligative Properties, Lowering of vapor pressure of solvent, Roults law, Osmosis, Vant Hoff Theory of dilute solutions, measurements of Osmotic pressure, relationship between lowering of vapour pressure and osmotic pressure. Elevation of boiling point, Depression in freezing point, abnormal molar masses, Depress of dissociation and association of solutes, Vant Hoff factor.

UNIT-4 A. LIQUID CRYSTALS :

Defference between liquid Crystal, solids and liquids, Classification, Structure of nematic and cholestic phases, Thermography, Seven segment cell, applications of liquid Cristals.

B. COLLOIDAL STATE :

Classification, Optical, Kinetic, and Electrical Properties of colloid, Coagulation, Handy Schulze law, flocculation value, Protection, Gold number, Emulsion, micelle. Gel, Syneresis and thixotrophy, Application of colloid.

C. SOLID STATE

Space lattices, unit cells, Elements of Symmetry in crystallize solids, X-rays diffraction, Mills indices, identification of unit cell by Broggs Spectrometer, Powder method, Neutron and electron diffraction (Elementry idea only)

UNIT-5 A. CHEMICAL KINETICS

Rate of reaction, Factors influencing rate of reaction, rate constant, Order and

molecularity of reactions, Zero, first and second order reaction, methods of determining order of reaction, Complex reactions : Consecutive, opposing and side reactions, Chain reactions.

Temperature dependence of raction rate, Arrhenius theory, Physical significance of Activation energy, collision theory, demerits of collision theory, non mathematical concept of transition state theory.

B. CATALYSIS :

Homogeneous and Heterogeneous Catalysis, types of catalyst, characteristic of Catalyst, Enzyme Catalysed reactions, Micellor catalysed reactions, Industrial applications of Catalysis.

REFERENCE BOOKS :

1. Physical chemistry, G.M. Barrow, International student edition, MC Graw Hill
2. Basic programming with application, V.K. Jain, Tata Mc Graw-Hill
3. Computers & Common sense, R. Hunt & Shelly, Prentice-Hall
4. University general chemistry, C.N.R. Rao Macmillan.
5. Physical Chemistry, R.A. Alberty, Wiley Eastern.
6. The elemetns of Physical Chemistry, P.W. Atkin, Oxford.
7. Physical Chemistry throught problems, S.K. Dogra & Dogra, wiley Eastern.
8. Physical Chemistry, B.D. Khosla
9. Physical Chemistry, Puri & Sharma
10. Bhoutic Rasayan, Puri, Sharma & Palhania, Vishal Publishing Company.
11. Bhoutic Rasayan, P.L. Soni
12. Bhoutic Rasayan, Bahi & Tuli. Pb^{2+},
13. Bhoutic Rasayan, I. R. Gambin
14. Bhoutic Rasayan, Bhagchandani, Sahitya Bhawan Publication.
15. Rasayan Vigyan, Bhatnagar, Arun Prakashan.

PAPER - IV

LABORATORY COURSE

180 Hrs.

The following experiments are to be conducted during the curriculam

1. Inorganic Chemistry

Semimicro Analysis - cations analysis, separation and identification of ions from

$Bi^{3+}, Cu^{2+}, Cd^{2+}, Sb^{3+}, Sn^{2+,4+}, Fe^{3+}, Al^{3+}, Cr^{3+}, Ni^{2+}, Co^{2+}Zn^{2+}, Mn^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}$, Mg^{2+}, NH^{4+} and Anions $CO_3^{2-}, SO_3^{2-}, S^{2-}, SO_4^{2-}, NO_2^-, NO_3^-, Cl^-, Br^-, I^-$, CH_3COO^-, $C_2O_4^{2-}, BO_3^{3-}, F^-$.

2. Organic Chemistry

i Calibration of Thermometer

$80^o - 82^o$ (Naphthalene), $113.5^o - 114^o$ (Acetanilide), $132.5^o - 133^o$ (Urea), 100^o (Distilled Water)

ii Determination of Melting Point

$80^0 - 82^0$ (Naphthalene), Benzoic and $121.5^0 - 122^0$, Urea $132.5^0 - 133^0$, Succinic acid $184.5^0 - 185^0$, Cinnamic acid $132.5^0 - 133^0$, Salicylic acid $157.5^0 - 158^0$, Acetanilide $113.5^0 - 114^0$, m- Dinitrobenze 90^0, p-Dichlorobenzene 52^0 Aspirin135^0.

iii. Determination of boiling points

Ethanol = 78^0, Cyclohexane 81.4^0, Toluene 110.6^0, Benzene 80^0.

iv. Mixed Meting point Determination

Urea- Cinnamic acid mixture of various compositions (1 : 4, 1 : 1, 4 : 1)

v Distillation (Demonstration)

Simple distillation of ethanol- water mixture using water condensor.

Distillation of nitrobenzene and aniline using air condenser.

vi. Crystallization

Phthalic acid from hot water (using fluted filter paper and stemless funnel).

Acetanilide from boiling water

Naphthalule from ethanol

Benzoic acid from water.

Vii. Decolorisation and crystallisation using charcoal

Decolorisation of brown sugar with animal charocal using gravity filteration

Crystallization and decolorisation of impure naphthalene (100g of naphthalene mixed with 0.3g of congo red using 1g of decolorising carbon) from ethanol.

Viii. Sublimation

Camphor, Naphthalene, Pthalic acid and Succinic acid

ix. Qualitative Analysis

Detection of elements (N, S and halogens) and functional groups (Phenolic, Carboxylic, CarbonyI, Esters, Carbohydrates, Amines, Amides, Nitro and Anilide) in simple organic compounds.

3. Physical Chemistry

(i) Chemical Kinetics

To determine the specific rate of hydrolysis of methyl/ ethyl acetate catalysed by hydrogen ions at room temperature.

To study the effect of acid strength on the hydrolysis of an ester

To compare the strengths of HCl & H_2SO_4 by studying the kinetics of hydrolysis of ethyl acetate

To study kinetically the reaction between H_2O_2 & Iodide

(ii) Distribution Law

To study distribution of iodide between water & CCl_4

To study distribution of benzoic acid between benzene & water.

(iii) Colloids

To prepare arsenious sulphide sol & compare the precipitating power of mono-, bi, & tri valent anions.

(iv) Viscosity & Surface Tension

To determine the of % composition of a given mixture (Non interacting system) by viscosity mehtod.

To determine the viscosity of amyI alcohol in water at differnt concentrations & calculate the excess viscosity of these solutions.

To determine the % composition of a given binary mixture by surface tension method (acetone & ethyl methyl ketone).

BOOK :

1. ogeps qualitive analysis, revised svehla, orient longman
2. Standered methods of chemical analysis, W.W. scott, The Technical Press
3. Experimental Organic Chemistry, Vol. I & II, P.R. Singh, D.S. Gupta & K.S. bajpai, Tata Mc Graw Hill
4. Manual ingorganic chemistry, R.K. Bansal Wiley Eastern
5. vogel's text book of practical organic chemistry, B.S. Furnis A.J. Hannaford, V. Rogers, P.W.G. Smith & A.r. Tatchel, ELBS
6. Experiments in general chemistry, CNR Rao & U.C. Agarwal
7. Experiments in physical chemistry, R. C. Das & B. Behara Tata Mc Graw Hill
8. Advanced practical physical chemistry,. J.B. Yadav, Goel publishing house

PRACTICAL EXAMINATION **05 Hrs.**

Three experiments are to be performed **M.M. 50**

1. Inorganic Mixture Analysis, four radicals two basic & two acid (insoluble, Interfering & combination of acid radicals) any one to be given. 12 Marks.
2. Detection of functional group in the given organic compound and determine its MPt/BPt. 8 marks

OR Crystallization of any one compound as given in the prospectus along with the determination of mixed MPt.

OR Decolorisation of brown sugar along with sublimation of camphor/ Naphthlene.

3. Any one physical experiment that can be completed in two hours including calculations. 14 marks
4. Viva 10 marks
5. Sessionals 06 marks

In case of Ex-Students two marks will be added to each of the experiments.

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ZOOLOGY

PAPER - I (paper code - 0813)

(CELL BIOLOGY & INVERTEBRATES) **M.M. 50**

UNIT-1 The Cell (Prokaryotic & Eukaryotic)
Methods in cell biology (Microscopy light & Electron)
Organisation of cell extranuclear and nuclear (Plasma membrane, mitochondria, chromosomes, ER. Golgi bodies, Ribosomes)

UNIT-2 Cell divisions (Mitosis & Meiosis)
An elementary idea of cell transformation & Cancer Immunity (elementary idea)

UNIT-3 General Characteristics & Classification of invertabrates upto orders with examples
Protozoa - type study *Paramoecium*, protozoa & disease
Porifera - type sutdy *Sycon*
Coelenterata - type sutdy *Obelia*

UNIT-4 Helminths - type sutdy *fasciola*
Annelida - type sutdy *Pheretima*
Arthropoda - type sutdy *Palaemon*

UNIT-5 Mollusca - type sutdy *Asterias* (starfish)
Protochordata - type sutdy *Balanoglossus*

PAPER - II (paper code - 0814) M.M. 50

(VERTEBRATES & EMBRYOLOGY)

UNIT-1 Origin and classification of Chordates.
Protochordata - type sutdy Amphioxus.
A comparative account of Petromyzon & Myxine

UNIT-2 Fishes - Skin and scales
Migration in fishes
Parental care
Amphibia - Parental care
Neoteny
Reptilia - Poisonous & non poisonous shakes, Poison apparatus, snake venom.

UNIT-3 Aves - Flight adaptation in birds
Discuss - Birds are glorified reptiles
Mammals- comparative account of prototheria, metatheria & Eutheria and Affinities.

UNIT-4 Gametogenesis, Fertilization & Parhenogenesis.
Development of frog upto formation of three germ layers

UNIT-5 Development of Chick upto formation of three germ layer, Extra embryonic membranes.
Placenta in mammals.
Embryonic induction organisers & differentiation.

PARACTICAL M.M. 50

The practical work will, in geneal be based on the syllabus prescribed in theory and the candidates will be required to show a knowledge of the following.

1. Dissection of earth worm.
2. Dissection of Cockroach, Palaemon, Pila.

3. Minor Dissection- Appendages of Prawn & hastate plate, Mouth-parts of Insects, Radula of Pila.
4. Mounting-Setae, Spermatheca, Septal Nephridia, Nerve ring & ovary of earth worm/ Parapodia of Nereis Salivary gland of Cockroach, ctenidium of pila, Malpighian tubules.
5. Cytological preparation- Onion root-tip "Squash Preparation" for mitosis/Grasshopper testis squash for meiosis.
6. Osteology-Frog & Rabbit
7. Museum Specimen invertebrate & Vertebrate, frog embryology.
8. Slides-Chick embryology, Cytology, Mammal Histology, Bird feather & invertebrate Slides.

Scheme of Practical Exam. **Time 3 Hrs, M.M. 50**

1.	Major Dissection	8 Marks
2.	Minor Dissection	6 Marks
3.	Mounting	5 Marks
4.	Cytological Preparation	5 Marks
5.	Spots- 8 (Slides-4, Specimens-2, & Bones-2)	16 Marks
6.	Sessional	10 Marks

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BOTANY

PAPER - I

(GENERAL DIVERSITY OF MICROBES AND CRYPTOGAMS) M.M. 50

(paper code - 0811)

UNIT-1 Viruses and Bacteria: General account of viruses and mycoplasma; bacteria structure; nutrition, reproduction and economic importance; general account of cyanobacteria. 12 Hrs.

UNIT-2 Algae: General characters, classification and economic importance; important features and life history of Chlorophyceae-Volvox, Oedogonim, Coleochaete; Xanthophyceae-Vaucheria; Phaeophyceae- Ectocarpus, Sargassum; Rhodophyceae- Polysiphonia. 12 Hrs.

UNIT-3 Fungi: General characters, classification and economic importance; important features and life history of Mastigomycotina- Pythium, Phytophthora; Zygomycotina- Mucor, Ascomycotina-Saccharomyces, Eurotium, Chaetomium, Peziza; Basidiomycotina-Puccinia, Agaricus; Deuteromycotina-Cercospora, Colletotrichum; general account of Lichens. 12 Hrs.

UNIT-4 Bryophyta: Amphibians of plant kingdom displaying alternation of generations; structure, reproduction and classificaiton of Hepaticopsida (e.g. Riccia Marchantia); Anthocerotopsida (e.g. Anthoceros), Bryopsida (e.g. Funaria) 12 Hrs.

UNIT-5 Pteridophyta: The first vascular plants; important characteristics of Psilopsida, Lycopsida, Sphenopsida and Pteropsida; structure, Reproduction in Rhynia, Lycopodium Selaginella, Equisetum, Pteris and Marsilea.

BOTANY

PAPER - II

CELL BIOLOGY AND GENETICS

(paper code - 0812)

UNIT-1 The cell envelope: Plasma membrane; bilayer lipid structure; functions; the cell wall.

Ultra structure and function of nucleus: nuclear membrane; nucleolus and other organelles: Golgi bodies, ER, peroxisomes, Vacuoles. 12 Hrs.

UNIT-2 Chromosome organization: Morphology; centromere and telomere; chromosome alterations; deletions, duplications, translocations, inversions; variations in chromosome number aneuploidy, polyploidy; sex chromosomes.

Cell division : Mitosis; meiosis 12 Hrs.

UNIT-3 DNA the genetic material: DNA structure; replication; DNA- protein interaction; the nucleosome model; genetic code; satellite and repetitive DNA.

Extranuclear genome: Presence and function of mitochondrial and plastid DNA; plasmids. 12 Hrs.

UNIT-4 Gene expression: Structure of gene; transfer of genetic information; transcription, translation, protein synthesis; tRNA; ribosomes; regulation of gene expression in prokaryotes and eukaryotes; proteins, 1D, 2D and 3D structure. 12 Hrs.

UNIT-5 Genetic Variations: Mutations, spontaneous and induced; transposable genetic elements; DNA damage and repair:

Genetic inheritance: Mendelism; laws of seggregation nd independent assortment: linkage analysis; allelic and non-allelic interactions. 12 Hrs.

BOTANY PRACTICAL

Time : 3 Hrs **Marks-50**

1.	Algae/Fungi	10
2.	Bryophyta/ Pteridophyta	10
3.	Disease Symptoms/Gram's Staining	05
4.	Cytology/Genetics	05
5.	Spots (1-5)	10
6.	Viva Voce	05
7.	Sessionals	05
		50 marks

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MATHEMATICS

PAPER - I

ALGEBRA AND TRIGONOMETRY

(paper code - 0798)

UNIT-1 Symmetric, Skew symmetric, Hermitian and skew hermitian, matrices. Elementary operations on matrices, Inverse of a matrix. Linear independence of row and column matrices, Row rank, Column rank and rank of a matrix. Equivalence of column and row ranks. Eigen values, Eigen vectors and the characterstic equations of a matrix. Cayley Hamilton theorem and its use in finding inverse of a matrix.

UNIT-2 Application of Matrices to a system of linear (both homogeneous and nonhomogeneous) equations. Theorems consistancy of a system of linear equations. Relation between the roots and coefficients of general polynomial equations in one variable. Transformation of equations. Descarte's rule of signs. Solutions of cubic equations (Cardons Method), Biquadratic equation.

UNIT-3 Mappings, Equivalence relations and partitions. Congruence modulo n. Definition of a group with examples and simple properties. Cyclic groups generators, Coset decomposition, Lagranges theorem and its consequances. Formate and Euler's theorems. Normal subgroups. Quotient group, Permutation groups, Even and odd permutations the alternating groups. Cayley's theorem An.

UNIT-4 Homomorphism and Isomorphism the fundamental theorems of homomorphism. Introduction, properties and examples of Rings, Subsings, Integral domain and fields Characterstic of a ring and field.

TRIGONOMETRY :

UNIT-5 De Moivres theorem and its applications. Direct and inverse Circular and Hyperbolic functions. Logarathim of a complex quantity. Expansion of Trignometrical functions. Gregory's series. Summation of series.

TEXT BOOK :

1. I.N. Herstein, Topies in Algebra Wiley Eastern Ltd., New Delhi, 1975
2. K.B. Datta, Matrix and Linear Algebra, Prentice Hall of India Pvt. Ltd.New Delhi, 2000.
3. Chandrika Prasad, Text-Book on Algebra and Theory of equations, Pothishala Private Ltd., Allahabad.
4. S.L. Loney, Plane Trigonometry Part II, Macmillan and Company, London.

REFERENCES :

1. I.N. Herstein, Topics in Algebra, Wiley Eastern Ltd., New Delhi, 1975.
2. K.B. Datta, Matrix an linear algebra, Prentics Hall of India Pvt. Ltd. New Delhi, 2000.
3. P.B. Bhattacharya, S.K. Jain and S .R. Nagpaul, First Course in linear Algebra, Wiley Eastern, New Delhi, 1983.
4. P.B. Bhattacharya, S.K.Jain and S.R. Nagpaul, Basic Abstract Algebra (2 edition), Cambridge University Press, Indian Edition, 1997.
5. S.K. Jain, A. Gunawardena and P.B. Bhattacharya, Basic linear Algebra with MATLAB, Key College Publishing (Springer-Verlag), 2001.
6. H.S. Hall and S.R. Knight, Higher Algebra, H.M. Publications, 1994.
7. Chandrika Prasad, Text-Book on Algebra and Theory of Equations, Pothishala Private Ltd., Allahabad.
8. S.L. Loney, Plane Trigonometry Part II, Macmillan and Company, London.
9. R.S. Verma and K.S. Shukla, Text Book on Trigonometry, Pothishala Pvt. Ltd., Allahabad.

PAPER - II

CALCULUS

(paper code - 0799)

DIFFERENTIAL CALCULUS :

UNIT-1 $\varepsilon - \delta$ definition of the limit of a function. Basic properties of limits. Continuous functions and classification of discontinuties. Differentiability. Successive differentiation. Leibnritz theorem. Maclaurin and Taylor series expansions.

UNIT-2 Asymptotes curvature. Tests for concavity and convexity. Points of inflexion. Multiple points. Tracing of curves in Cartesian and polar coordinates.

INTEGRAL CALCULUS:

UNIT-3 Integration of irrational algebraic functions and transcendental functions. Reduction formulae. Definite integrals. Quadrature. Rectification. Volumes and surfaces of solids of revolution.

ORDINARY DIFFERENTIAL EQUATIONS :

UNIT-4 Degree an order of a differential equation. Equations of first order and first degree. Equations in which the variables are separable. Homogeneous equations. Linear equations and equations reducible to the linear form. Exact differential equations. First order higher degree equations solvable for x, y, p. Clairaut's form and singular solutions. Geometrical meaning of a differential equation. Orthogonal trajectories. Linear differential equations with constant coefficients. Homogeneous linear ordinary differential equations.

UNIT-5 Linear differential equations of second order. Transformation of the equation by changing the dependent variable/the independent variable. Method of variation of parameters. Ordinary simultaneous differential equations.

TEXT BOOK :

1. Gorakh Prasad, Differential Calculaus, Pothishala Private Ltd. Allahabad.
2. Gorakh Prasad, Integral Calculus, Pothishala Private Ltd. Allahabad.
3. D.A. Murray Introductory Course in Differential Equations, Orient Longman (India), 1976.

REFERENCES :

1. Gabriel Klambauer, Mathematical Analysis, Marcel Dekkar, Inc. New York, 1975.
2. Murray R. Spiegel, Theory and Problems of Advanced Calculus, Schaum's outline series, Schaum Publishing Co. New York.
3. N. Piskunov, Differential and Integral Calculus, Peace Publishers, Moscow.
4. P.K. Jain and S.K. Kaushik, An Introduction to Real Analysis, S. Chand & Co. New Delhi, 2000.
5. Gorakh Prasad, Differential Calculus, Pothishala private ltd. Allahabad.
6. Gorakh Prasad Integral Calculus, Pothishala Private ltd. Allahabad.
7. D.A. Murray, Introductory Course in Differential Equations, Orient Longman (India), 1967.
8. G.F. Simmons, Differential Equations, Tata Mc Graw Hill, 1972.
9. E.A. Codington, An Introduction to Ordinary Differential Equaitons, Prentics Hall of India, 1961.
10. H.T.H. Piaggio, Elementary Treatise on Differential Eidations and their Applications, C.B.S. Publishe & Distributors, Dehli, 1985.

11. W.E. Boyce and P.O. Diprima, Elementary Differential Equations and Boundary Value Problems, John Wiley, 1986.
12. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley and Sons, 1999.

PAPER - III

VECTOR ANALYSIS AND GEOMETRY M.M. 50

(paper code - 0800)

VECTOR ANALYSIS :

UNIT-1 Scalar and vector product of three vectors. Product of four vectors. Reciprocal Vectors. Vector differentition. Gradient, divergence and curl.

UNIT-2 Vector integration. Theorems of Gauss, Green, Stokes and problems based on these.

UNIT-3 General equation of second degree. Tracing of conies. System of conies. Confocal conies. Polar equation of a conic.

UNIT-4 Plane the Straight line and the plane. Sphere cone. Cylinder.

UNIT-5 Central Conicoids. Paraboloids. Plane sections of conicoids. Generaing lines. Confocal Conicoids. Reduction of second degree equations.

TEXT BOOKS :

1. N. Saran and S.N. Nigam, Introduction to vector Analysis, Pothishala Pvt. Ltd. Allahabad.
2. Gorakh Prasad and H.C. Gupta, Text Book on Coordinate Geometry, Pothishala Pvt. Ltd., Allahabad.
3. R.J.T. Bill, Elementary Treatise on Coordinate Geometry of three dimensions, Machmillan India Ltd. 1994.

REFERENCES :

1. Murray R. Spiegel, Theory and Problems of Advanced Calculus, Schaum Publishing Company, New York.
2. Murray R. Spiegel, Vector Analysis, Schaum Publishing Company, New York.
3. N. Saran And S.N. Nigam Introduction to Vector Analysis, Pothishala Pvt. Ltd., Allahabad.
4. Erwin Kreysizig, Advanced Engineering Mathematics, John Wiley & Sons, 1999.
5. Shanti Narayan, A Text Book of Vector Calculus, S. Chand & Co., New Delhi.
6. S.L. Loney, The Elements of Coordinate Geometry, Macmillan and Company, london.
7. Gorakh Prasad and H.C. Gupta, Text Book on Coordinate Geometry, Pothishala Pvt. Ltd., Allahabad.
8. R.J.T. Bill, Elementary Treatise on Coordinate Geometry of three Dimensions, Macmillan India Ltd., 1994.
9. P.K. Jain and Khalil Ahmad, A Text Book of Analytical Geometry of two Dimensions, Wley Eastern Ltd., 1994.
10. P.K. Jain and Khalil Ahmad, A Text Book of Analytical Geometry of three Dimensions, Wiley Eastern ltd., 1999.
11. N. Saran and R.S. Gupta, Analytical Geometry of three Dimensions, Pothishala Pvt. Ltd. Allahabad.

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MICROBIOLOGY

PAPER - I **M.M. 50**

GENERAL MICROBIOLOGY

(paper code - 0819)

UNIT-1 Unity of microbial world, scope of microbiology, Microbiology and human health, beneficial and harmful microbes. development of microbiology (contributions and pioneers)

UNIT-2 Diversity of microbial world: principle of classification, classification of viruses, Bacteria (including Cyanobacteria) Algae and Fungi (including yeast) and protozoa.

UNIT-3 Methods of studying microorganism: Origin of microbes, microscopy, pure culture techniques, Sterlization, Aseptic techniques, isolation of pure culture, conditions and media for growth of microorganisms in the laboratory.

UNIT-4 General organization of microbes; Structural functional organization and economic importance of algae (*Nostoc, anabaena, Ocillitoria),* fungi (*Rhizopus, Penicillium, Aspergillus*), yeast and lichens.

UNIT-5 Structure, Functional organization and economic importance of bacteria (Gram +ve and Gram -ve), viruses (Plant and Animal) and protozoa (Ciliates, Flagellates and Sporozoans).

TEXT BOOKS :

1. General Microbiology by Brock.
2. Microbiology by Black.
3. General Microbiology by Pelzar et al.
4. Introduction on Microbial Techniques by Gunasekaran.

PAPER - II

BIOCHEMISTRY AND IMMUNOLOGY M.M. 50

(paper code - 0820)

UNIT-1 Structure and properties of mono and disaccharides, amino acids and peptides, bases; purines and pyrimidens, sugars; ribose, deoxyribose and nucleoside and nucleotide; general account of lipids.

UNIT-2 concept of macromolecules; Structural and functional organization of polysaccharides (starch, glycogen, cellulose, mucopolysaccharides), proteins and nucleic acids (DNA, RNA).

UNIT-3 Enzymes; historical account, classification, Co-enzymes and their role. Enzyme action, Enzyme kinetic. Km, Vm and Enzyme inhibition. Allosteric enzyme and isoenzyme. Extracellualar enzymes and their role.

UNIT-4 Metabolism; General concept of metabolims (anabolism, catabolism and amphibolism). Glycolysis TCA Cycle and HMP Shunt. Anaerobic catabolims of glucose; alpha, beta and gamma oxidation of fatty acids.

UNIT-5 Concept of immunity, Innate and aquired immunity. Brief account of cells and organs of immune system. Antigen and Antigenecity. Antibody structure and function. Antigen-Antibody reaction.

Text Books :

1. General Biochemistry by A.C. Deb.
2. Biochemistry by Lehninger (Kalyani publication)
3. Biochemistry by U. Satyanarayan.
4. General Immunology by Fatima.
5. Microbiology by Anantanarayan and Panikar.
6. Immunology by C.V. Rao.

PRACTICAL **M.M. 50**

Preparation fo solid/liquid culture media
Sterilization techniques
Isolation of single colonies on solid media.
Enumeration of Bacterial numbers by serial dilution and plating.
Simple and differential staining.
Measurement of microorganism (micrometry) and camera lucida drawing of isolated organism.
Determination of antibiotic resistances / sensitivity of bacteria.
General and specific qualitative test for carbohydrates
General and specific qualitative test for amino acids
General and specific qualitative test for lipids
Estimation of protein
Estimation of blood glucose
Assay of the activity of amylases
Assay of the activity of Phosphatase
Identification and Enumeration of White Blood Cells
Defferential leukocyte count
Structure and histology of lymphoid organs
Antigen- anitbody reaction
Agglutination reaction

Scheme of Practical Examination

Time - 4 hours **M.M. 50**

1.	Exercise on Microbiological methods	10
2.	Exercise on Biochemical tests	10
3.	Exercise on Immunological techniques	05
4.	Spotting (1-5)	10
5.	Viva-Voce	05
6.	Sessional	10
	Total	**50**

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GEOLOGY

PAPER - I

INTRODUCTION TO GEOLOGY M.M. 50

(paper code - 0801)

UNIT-1
1. Geology and its perspectives. Earth in the solar system: origin, size, shape, mass, and density.
2. Internal structure of earth, Chemical composition of crust, mantle and core.
3. Formation of atmosphere, hydrosphere and biosphere.
4. Age of the earth. Redioactivity, Production of magnitic field.
5. Origin of solar system and universe Universe with indian perspective.

UNIT-2
1. Elementary ideas of continental drift and Plate Tectonics.
2. Origin of oceans, continents and mountains.
3. Earthquake and earthquake belts, measure of earthquake. Volcanoes- types and distribution.
4. Rock-weathering. Erosion adn transportation by rivers.
5. Erosion & transportation by winds & glaciers.

UNIT-3
1. Wave erosion and beach processes.
2. Bedding identification and data measurement Effects of topography on outcrop.
3. Unconformity, Onlap, offlap outtlier, inlier.
4. Forms of igneous rocks.
5. Simple deformational structures; folds, Faults and joints.

UNIT-4
1. Elementary idea about crystal structure, edges, solid angles, zone.
2. Crystallographic axes and axial angles. Axial parameters and indices.
3. Crystal symmetry and Plane - Axix & Centre of symmetry.
4. Classification of crystal : Symmetry elements of normal class of cubic, tetragonal and hexgenal system.
5. Symmetry elements of normal class of Orthorhombic, Monoclinic and Triclinic systems.

UNIT-5
1. Definition and classification of minerals Physical properties of minerals.
2. Optical properties of minerals : Twinkling, Refractive index, birefringence, pleochroism, interference colurs.
3. Physical & optical properties of Quartz and Feldspar family.
4. Physical & optical properties of Pyroxene & Amphibole family.
5. Physical & optical properties of Mica & Garnet.

PAPER - II

INTRODUCTION TO GEOLOGY M.M. 50

(paper code - 0802)

UNIT-1
1. Magma: definition, composition and origin.
2. Bowen's reaction series. Magmatic differentiation and assimilation.
3. Texture structure and classification of igneous rocks.
4. Definition and agents of metamorphism. Texture, structure and classification of metamorphic rocks.
5. Metamorphic facies, facies series and isograde s. Relationship between metamorphism and deformation.

UNIT-2
1. Origin, transportation and deposition of sediments. Consolidation and diagenesis.

2. Sedimentary fabric and texture Classification of sedimentary rocks-Terrigenous and chemical sedimentary rocks.
3. Definition & Scope of paleobiology, processes of fossilization, preservation potential of organisms.
4. Elementary idea of origin of life, evolution of fossil record.
5. Classification of organisms.

UNIT-3 1. Morphology, environmental factors & geological distribution of Mollusca.
2. Morphology, environmental factors and geological distribution of Brachiopoda
3. Morphology, environmental factors and geological distribution of echinodermata, and Arthopoda.
4. Gondwana Plant fossils & their significance.
5. Morphology of corals

UNIT-4 1. Principles of statography. Gological time scale.
2. Lithostratigraphic, Chronostratigraphic and biostratigraphic units. Stratigraphic correlation.
3. Physical and structural subdivisions of Indian subcontinent and their Characteristics.
4. Classfication & distribution of Dharwars.
5. Classification & distribution of Aravallis, sausar. Group and Cuddapah.

UNIT-5 1. Brief account of geology and distribution of Vindhyan and Chhattisgarh.
2. Classification and geographic distribution of Gondwana in India.
3. Geology and age of Deccan traps. Inter-trappians & Infra trappean beds.
4. Classification & distriburion of Siwalik.
5. Evoluation of Himalayas.

PRACTICAL **M.M. 50**

LABORTORY WORK : M.M. 40

1. Study and drawing of block diagrams of important geomorphological models. Reading topographical maps and interpretation of landforms and drainage from topographical maps. - 5 Marks
2. Exercises on structural geology problems: completion of outcrops, Drawing and interpretation of cross-sections through elementary representative geological structures. - 6 Marks
3. Study of elements of symmetry of at least one representative crystal of normal classes of each crystal system. Study of physical properties of important minerals in hand specimens. - 7 Marks
4. Study of optical characters of important rock forming minerals using polarizing microscope. - 4 Marks
5. Study of morphological characters of phyla included in theory syllabus. - 5 Marks
6. Preparation and study of stratigraphic maps - 3 Marks
7. Sessional - 5 Marks
8. Viva-Voce - 5 Marks

GEOLOGICAL FIELD WORK : M.M. 10

Students will be required to carry out field work for 7 days in a suitable geological area to study the following aspects and submit a report there on.

1. Use of clinometer/ brunton in determination of attitude of planar and linear structures.
2. Study of mode of occurrence of rocks and minerals in the field.

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ANTHROPOLOGY

PAPER - I

FOUNDATION OF ANTHROPOLOGY M.M. 50

(paper code - 0815)

UNIT-1 Meaning and scope of Anthropology, history of Anthropology, Branches of Anthropology.

(a) Sociocultural Anthropology;

(b) Physical-Biological Anthropology;

(c) Archaeological Anthropology;

(d) Linguistic Anthropology.

UNIT-2 Relationship with other disciplines: Life sciences, Earth sciences, Medical Sciences, Social Sciences, Humanities, Environment Sciences.

UNIT-3 Foundation in Biological Anthropology.

(a) Human Evolution

(b) Human Variation

(c) Human Gcnetics

(d) Human Growth and Development.

UNIT-4 Fundamentals in Social-Cultural Anthropology.

(a) Culture, Society, Community,Group, Institution

(b) Human Institution : Family, Marriage, Kinship Religion.

(c) Development and change.

(d) Research Methods : Tools and Techniques.

UNIT-5 Fundamentals in Archaeological Anthropology.

(a) Tool typology & Technology.

(b) Cultural evolution: Broad outlines of cultures.

(c) Chronology.

PAPER - II

INTRODUCTION TO PHYSICAL ANTHROPOLOGY M.M. 50

(paper code - 0816)

UNIT-1 Meaning & scope & History of Physical Anthropology & its applied aspects. Theories of organic evolution, synthetic theory of evolution Lamaslism & Darwynism.

UNIT-2 Position of Man in animal kingdom : comparative anatomy of Man and Apes.

UNIT-3 Fossil evidence of human evolution, origin of tool making and their evolution. Ramapithecus, Austratopithecus, Pithecanthropus, Sinauthropus, Neahder that Cromagnon, Grimaldiman, Chanulade.

UNIT-4 Concept of race, Genetic basis of Race, UNESCO Statement on Race- Ethnic Group population, Racial classification of human Populations.

UNIT-5 Human Genetics, Mendelian principles, Genctic markers, DNA.

PAPER - III

ANTHROPOLOGY PRACTICAL M.M. 50

I Idenification of bones of Human Skeleton Sketching and labeling of various norms of skull Overview of Pectoral & Pelvic girdles & Femur & Human bone.

II. Craniometry :

(i) Maximum Cranial length

(ii) Maximum Cranial breadth

(iii) Minimum frontal Breadth

. (iv) Bizygomiatic Breadth

(v) Nasal Height

(vi) Nasal Breadth

(vii) Basiba Bregmatic Height

(viii) Bimaxeelary Breadth

(ix) Biometrical Breadth

(x) Length of occipital foraman.

III. Solliatometry :

Osteometry

Femur

(1) Maximum lengh

(2)

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STATISTICS

PAPER - I

PROBABILITY THEORY (paper code - 0803)

Important concepts in probability: defination of Probability- classical and relative frequency approach to probability, Richard Von Mises, Cramer and Kolmogorov's approaches to probability, merits and demerits of these approaches any general ideas to be given.

Random Experiment: Trial, sample point and sample space, definition of an event,operation of events, mutually exclusive and exhaustive events. Discreate sample space, properties of probability based on axiomatic approach, conditional probability, independece of events, Bayes' theorem and its applications.

Random Variables: Definition of discrete random variables, probability mass function, idea of continuous random variable, probability density function, illustrations of random variables and its properties, expectation of a random variable and its properties -moments, measures of location, dispersion skewness and kurtosis-probability generating function (if it exists), their properties and uses.

Standard univariate discrete distributions and their properties: Discrete Uniform, Binomial, Poisson, Hypergeometric, and Negative Binoinial distributions.

Continuous univariate distributions- uniform, normal, Cauchy, Laplace, Exponential, Chi-Square, Gamma and Beata distributions. Bivariate normal distribution (including marginal and conditional distributions).

Chebyshev's inequality and applications, statements and applications of weak law of large numbers and central limit theorems.

REFERENCES :

Bhat B.R., Srivenkatramana T and Rao Madhava K.S. (1997): Statistics: A Beachner's Text, Vol. II new Age International (P) Ltd.

Edward P.J. Ford J.S. and Lin (1974): Porbability for statistical decision- Making, Prentice Hall.

Goon A.M. Gupta M.K., Das Gupta.B. (1999): Fundamentals of statistics, Vol World Press Calcutta.

Mood A.M. Grabill F.A. and Boes D.C. (1974): Introduction to the theory of statistics, Mc Graw Hill.

ADDITIONAL REFERENCES :

Cooke, Cramer and Clarke (): Basic Statistical computing, Champan and Hall.

Devid S. (1996): Elementary Probability, Oxford Press.

Hoel P.G. (1971): Introduction to Mathematical Statistics, Asia Publishing House

Meyer P.L. (1970): Introductory Probability and Statistical applications. Addision Wesley

PAPER - II

DESCIRIPTIVE STATISTICS (paper code - 0804)

Type of Datta: Concepts of a statistical population and sample from a population; qualitative and quantitative data; nominal and ordinal data; cross sectional and time series data; discrete and continuou data; frequency and non- frequency data. Different type of scales-nominal, ordinal, ratio and interval.

Collection and security of data: Primary data- designing a questionnaire and a schedule; checking their consistency. Secondary data-its major sources including some government publications. Complete enumeration, controlled experiments, observational studies and sample survey. Scrutiny of data for internal consisteny and detection of errors of recording. ideas of cross- validation.

Presentation of Data: Construction of tables with one or more factors of classification. Diagnommatic and graphical representation of grouped data. Frequency distributions, cumutative frequency distributions and their graphical representation, histogram, frequency polygon and ogives. Stem and leaf chart Box plot.

Analysis of Quantitative Data: Univariate data-Concepts of central tendency or location, dispersion and relative oispersion, skewness and kurtosis, and their., measures including those based on quantiles and moments. Sheppard's corrections for. moments for grouped data (without derivation).

Bivariate Data: Scatter diagram. Product moment correlation coefficient and its properties. Coefficient of determination. Correlation ratio. Concepts of error in. regression.Principle of least squares. Fitting of linear regression and related results. Fitting of curves reducible to polynomials by transformation. Rank correlation- Spearman's and Kendall's meausres.

Multivariable data: Multiple regression, multiple correlation and partial correlation in three variables. Their measures and related results.

Analysis of Categorical Data: Consistency of categorice data. Independence and association of attributes, Various measures of association for two way and three way classifed data Odds ratio.

REFERENCES :

Bhat B.R. Srivenkairamana T and Rao Madhava K.S. (1996): Statistics: A Beginner's Text, Vol. I, New Age International (P) Ltd.

Croxion F.E. Covden D.J. and kelin S (1973): Applied General Statistics, Prentice Hall of Inida.

Goon A.M. Gupta M.K.,Das Gupta. B. (1991): Fundamentals of Statistics, Vol. I, World Press, Calcutta.

ADDITIONAL REFERENCES :

Anderson T.W. and Sclove S.L (19718) An Introduction to the Statistical Analysis of. Houghton Miffin\Co.

Cooke, Cramer and Clarke (): Basic Statistical Computing, Chapman and Hall.

Mood A.M, Graybill F.A. and Boes D.C. (1974): Introduction to the Theory of Sttistics, Mc Graw Hill.

Snedecor G.W. and Cochian, W.G. (1976): Statistical Mehtods. Lowa State University Press.

Spiegel, M.R. (1967): Theory & Problems of Statistics, Schaum's Publishing Series.

PAPER - II

PRACTICAL

1. Presentation of data by Frequency tables, diagrams and graphs.
2. Calculation of Measures of central tendecy, dispersion, skewness and Kurtosis:
3. Product Moment Correlation and Correlation ratio.
4. Fitting of Curves by the least square method.
5. Regression cf two variables.
6. Spearman's Rank correlation and Kendall's tau.
7. lvlultiple regression of three variables.
8. Multiple correlation and Partial correlation.
9. Evaluation of Probabilites using Addition and Multiplication theorems, conditional probabilities, and Baye's theorems.
10. Exercises on mathematical expectations and finding measures of central tendecy dispersion, skewness and Kurtosis of univariate probability distributions.
11. Fitting of standard univariate and continuous distributions.

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DEFENCE - STUDIES

PAPER - I

INDIAN MILITATY HISRORY M.M. 50

(paper code - 0817)

AIM : The main idea behind this paper is to give a conceptual background about the events and factors which infleenced course of history and helped in developing the art of war in India.

Note : Questions will be set from each unit, There will be only internal choice.

UNIT-1
1. The definition and scope of Defence Studies and its relationship with other subjects.
2. Art of war of Epic and Puranic period.
3. Comparative study of lndo-Greek art of war with special reference to the Battle of Hydaspus 326 B.C.
4. Mauryan Military system and art of war.

UNIT-2
1. Kautalya's Philosophy of war.
2. Gupta's military system and art of war.
3. Military system of Harshavardhan.
4. Dicline of Chariots and Importance of Elephant and Cavalory.

UNIT-3
1. Mughal military system.
2. Rajput and Turk pattern of warfare with speci of reference to Battle of Somnath and Battle of Tarain up to 12th century A.D.
3. Causes of the fall pf Rajput Military system.
4. Army organization during Sultanate period.
5. Battle of Panipat 1526 A.D. and Battle of Haldighati 1576 A.D.

UNIT-4
1. Maratha Military system.
2. Warfare of Shivaji.
3. Battle of Assaye 1803 A.D.
4. Sikh Military system.
5. Battle of Sobraon 1846 A.D

UNIT-5
1. 1857 Liberation Movement.
2. Reorganizations of Indian Army under the, Crown.
3. Nationalization of, Indian Army after independence.
4. Military reforms of Lord Kitchner's.

READING LIST :

1.	Military System of Anciant India	:	B.K. Majumdar
2.	Generalship of Alexander the Great	:	J.F.C.Fuller
3.	Kautilya Arthashastra	:	K.P. Kanbley
4.	Military history of India	:	J.N. Sarkar

PAPER - II

DEFENCE MECHANISM OF THE MODERN STATE

(paper code - 0818)

IM : To enable students to appreciate the importance of higher political direction in the formulation of national defence policy and roles as political and military leadership in furthering national security.

Note : Question will be from each unit, there will be only internal choice.

UNIT-1
1. Evolution of National defence policy.
2. Inter dependence of Foreign, Defence and Economics policies.
3. Higher defence organization of U.S.A., U.K. and RUSSIA.
4. Higher defence organization of CHINA, PAKISTAN and NATO.

UNIT-2
1. Higher defence organization in India.
2. Powers of President and relation to Armed forces.
3. Parliament and the Armed forces.
4. Defence (Political affair) committee of the cabinet. Its composition, methods of working during war and peace.
5. National Defence Council and its Valiant.

UNIT-3
1. Organization of Ministry of Defence.
2. Organization of Army head quarter.
3. Organization of Naval head quarter.
4. Orgatiization of Air head quarter.

UNIT-4
1. Organization and role of Para-militaty forces - B.S.F., I.T.B.P., C.I.S.F. etc.
2. Organization and role of Intelligence Agencies - RAW, CBI, CID., IB etc.
3. Military Intelligence.
4. Role of N.C.C. in preparing youth for Defence services.

UNIT-5
1. Organization of Civil - defence.
2. Importance and role of civil defence during war and peace.
3. Air-Raid signal and precaution before and after bombardment.
3. Role of Indian armed forces in war and peace.

READING LIST :

1. Indian Army, A Sketch of its History & Organisation : E.H.E. Choen
2. Defence Organization in India : Venkateshwarm

PRACTICAL

M.M. : 50

There shall be practicall examination ot 3 hours duration and carying 50 marks. The distribution of marks shall be as follows -

1. Exercises based on Map reading : 20 Marks
2. Exercises based on models : 10 Marks

3. Sessional Work and Record : 10 marks

4. Viva-Voce : 10 marks,

PART - A

ELEMENTARY MAP READING

1. Maps- Difination, types, Marginal Information.
2. Conventional signs - Military and Geographical.
3. Direction and cardinal points.
4. Types of North, Angle of Convergence.
5. Study of Liquid compass, its parts, various tactical uses and preparation of Night navigation chart.
6. service Protractor and its uses.
7. To find North by Compass, Watch, Sun, Stars etc.
8. Bearing and interconversion of bearing.
9. Setting of Map.
10. Grid System.

PART - B

RECOGNITION & ELEMENTRY STUDY OF FOLLOWING MODELS

1. equivalent Rank and Badges of Indian Army, Navy and Air Force.
2. Famous Armoured vehicles used in war.
3. Weapons used in Infantry.
4. Various Ships of Indian Navy.
5. Famous Air-Crafts Used by Air-Force.

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INDUSTRIAL CHEMISTRY

PAPER - I

INDUSTRIAL ASPECTS, OF ORGANIC & INORGANIC CHEMISTRY

(paper code - 0821)

UNIT-1 1.1 Nomenclature Generic names, Rade names.

1.2 Raw Materials for Organic compounds :-
Petroleum, natural gas, Fractionation of Crude oil.

UNIT-2 2.1. Petrolutri :- Cracking, reforming Hydroforming isomerisaton.

2.2. Coal :- Types, Structure,' Properties, distillation of coal', chemicals derived there from.

UNIT-3 3.1. Renewable natural resources :- Cellulose, starch, properties, modification, important ind. Chemicals derived from them, Alcohol and alcohol based chemicals, Oxalic acid, Furfural.

3.2. Basic metallurgical operations':- PuIverisation, calcination, Roasting, refining.

UNIT-4 4.1 Physico chemical principles of extraction of,:- Iron, Copper, Lead, Silver, Sodium, Aluminium, Magnesium, Zinc, Chromium.

UNIT-5 Inorganic materials of Industrial Importance :- Their availablility, forms, structure arid modification. Alumina, Silica, Silicates, Clays, Mica, Carbon, Zeolites.

BOOKS :

1. Coal Conversion, E.J. Hoggman, The Energon Co., Lavamic Wyomnig, U.S.A.
2. Introduction of Petroleum Chemicals, H. Steiner, Pergamen Press.
3. From Agrocarbon to Petrochemicals, L.F. Hatch & S. Matarm, Gulf Publishing Co., Houston.
4. Colten Cellutose : Its Chemistry & Technology, Hall A.G.
5. Methods in Carbohydrate Chemistry, Vol. 3 - Cellulose, Whistler, R.L.
6. Chemistry of Cellulose, Heuser, E.
7. Chemistry & Industry of Starch, Kerr, R.W.
8. Modified Starches : Properties & Uses, Wurzburg, O.B.
9. Principles of Extractive Metallurgy, Herbashi, Vol. I & II.
10. Theory of Metellurgical Processes, Volsky, A. & Sergievskaya, F.
11. Text book of Metallurg, Baiky, A.R.
12. Clays, H. Reis, John Wileys & Sons.
13. Unit Processes of Extractive Metallurgy, Pehike, Elserier Publication.
14. Industrial Chemistry, Reigel, Reinhold Publication.

PAPER - II

INDUSTRIAL ASPECTS OF PHYSICAL CHEMISTRY

MATERIAL AND ENERGY BALANCE

(paper code - 0822)

UNIT-1 Surface. chemistry and Interfacial Phenomena Adsorption lsotherm, Sols, Gels, Emulions, Micoemulsions,.micelles, Aerosols, Effect of surfacttants, Hydrotropes.

UNIT-2 Calalysts :- Introduction, Types, Homog-eneous and Heterogeneous, Basic Principles, Mechanisms factors affecting the performance, Introduction to phase transfer catalysis

UNIT-3 3.1. Enzyme catalysed reactions - Rate model, Industrially important reactions.

3.2. Material Balance without chemical Reactions:- flow diagram formaterial balance,

simple material with or without recycle or by-pass for chemical engineering operations such as distillation, crystallisation, evaporation, extraction, etc.

UNIT-4 4.1. Dimensions and Units :- Basic. chemical calculations -Atomic weight, molecular, weight, equivalent weight, mole composition of (i) liquid mixt'ure & (ii) gaseous mixture.

4.2. Material balance involving chemical reaction :- concept of limiting reactant, conversion, yield liquid phase reaction, gas phase reactions with/without recycle or by-pass.

UNIT-5 Energy Balance :- Heat capacity of p-ure gases and gaseous mixtures at constant pres sures. Sensible heat changes. in liquids, Enthalpy changes.

BOOKS :

1. Aersol, Science & Technology, Shephered, H.R.
2. Catalysir :Heterogeneons & Homogeneous, Delmon, Elbevior Scienu Publication.
3. Catalysir, Science & Technology, Anderson, J.
4. Catalysir in Micelller & Macromolecular systems, Fendler & Fendler.
5. Phase Transfer Catalysis, Principle & Techniques, Strles, C.
6. Surgace Chemistry, J.J. Bikermann, Academic Press.
7. Physical Chemistry of Surfaces by A.W. Admson.
8. Storchiometry, B.I. Bhalt & S.M. Vora.
9. Chamical Process Principle - Part I, B.A. Hougen, K.M. Watson & R.A. Ragats, Asia Publication.

PAPER - III

UNIT OPERATIONS IN CHEMICAL INDUSTRY AND UTILITIES, FLUID FLOW AND HEAT TRASNPORT IN INDUSTRY

(paper code - 0823)

UNIT-1 1.1. Distillation - Introduction; Batch and continuous distillation, separation of azeotropes, plate columns & packed,columns.

1.2. Absorption - Introduction, Equipments- Packed columns, spray columns, bubble columns, palcked bubble columns, mechanically, agitated contractors.

UNIT-2 2.1 Evaporation - Introduction, Equipm ' ents - short tube (standard) evaporator, forced circulation evaporators, falling film evaporators, climbing film (Upward flow) evaporatiors, wiped (agitated) film evaporator.

2.2 Filtration - Introduction, filter media and filter aids, Equipments- Plate and frame,filter press, nutch filter, rotatory drum filter, spartkler filter, candle filter, bahgfifter, centrifuge.

2.3 Drying - Introdunction, free moisture, bound. moisture,drying curve, Equipments tray dryer, rotatory dryer, flash drater, fluid bed dryer, drum dryer, spray dryer.

UNIT-3 3.1 Utilities in chemical Industry

Fuel - Types of fuels -advantages and disadvantages, combustion of fuels, calortific value. specification for fuel oil.

Boilers - Types of.-boilers and their functioning.

Water - Specifications fof industrial use, various water treatments.

Steam - Generation and use.

Air - Specifications for Industrial use processing of air.

UNIT-4 Fluid Flow : Fans, blowers, compressors, vacuum pumps, ejector.
Pumps :- Reciprocating pumps,, Gear pumps,. centrifugal pumps.

UNIT-5 Heat Exchangers -: Shall and Tube type; finned tube heat exchangers, plate heat exchangers, refrigeration cycles.

BOOKS :

1. Introduction Chemical Engineering, W.L. Badger, J.J. Banchero, McGraw Hill.
2. Unit Operations in Chemical Engineering, W.L. McCabe & J.C. Smith, McGraw Hill.
3. Chemical Engineer's Hand Book, J.H. Perry, McGraw Hill.
4. Unit Operations - I & II, D.D. Kale, Pune Vidyarthi Griha Prakashan, Pune.
5. Unit Operations of Chemical Engineering, Vol. I, P. Chattopadhyay, Khanna Publishers, Delhi.

PRACTICAL

Duration of Examination : 04 Hrs.

Discription of marks			
	Experiment	:	30 marks
	Viva	:	05 marks
	Sessional	:	05 marks
	Project	:	40 marks
	Total	**:**	**80 marks**

EXPERIMENTS TO BE PERFORMED :

1. Simple laboratory tecniques crystallisation, Fraction Crystallisation, Distillation, Fractional distillation Boiling Point.Diagram.
2. Extraction Processes- Phase diagram, partition co-efficient.
3. Preparation of standard solutions- Primary and secondary standards, Determination of- H_2SO_4 and H_3PO_4 in a mixture.
4. Calibration of Thermometres.
5. Acquaintance with safety measures in a laboratory Hazards of Chemicals.
6. Depression and elevation in.b.p./m.p. of solids and liquids.
7. Chromatography-column, Paper, Thin layer.
8. Ore analysis dolomite, limestone, -calcite, Analysis of alloys such as cupro-nickel.
9. Determination of Physical Constants
   Refractive -index, surface tension, Effect of surfactants, on surface tension, viscosity- Fluids, Polymer solutions effect of additives on viscocity, optical rotation.
10. Study, experimenfs/demonstration experiments.

Note : Any two experiments have to be carried out by the students in the Examination. A Mini mum of 60% of the'experiments have to be conducted by the students.

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COMPUTER

PAPER - 1

COMPUTER HARDWARE

(paper code - 0805)

AIM : 'Introduction to computer hardware organization-& computer digital elecctronics:

Note : Question paper should be prepared, having unit-wise questions with internal choice.

OBJECTIVE OF COURSE :

1. To introduce,the computer PC's and clones to the students.
2. To introduce and explain terms, various' parts of computer, which will be helpful in understanding of computer hardware& use of computer.
3. To introduce an idea of digitai electronics and digital circuits for building up- the computer.

UNIT-1 GENERAL OVERVIEW OF COMPUTER HARDWARE :

(A) Introduction to computer : Computer Vs-Caldulator & typewriter ; Parts of a com puter ; The sysfgm unit/inside the systern unit,CPU; RAM-Keyboard Storage Media Floppy disc & hald disc; Monitor, Mouse;. Printer; Types of Computer, Evolution of personal computer form PC-XT,PC-AT (286) to pentium PC. Hardware & Software Types of Software System Software, Application Software, introduction to Program ming Languages, Procedural Oriented Language, Structured Programming, Object Oriented Programming, Languages [Ex. BASIC, COBOL, PASCAL, C, C++, Visual Basic, JAVA & C#]. Typs of operating System" introduction to DOS, UNIX, Windows, Simple DOS Commands and Fotures of UNIX & Working of'Windows.

(B) Computer System Operation Number system: Unary system, Decimal system, Binary system conversions, addition, subtraction by 9's and 10's complements and by 1's and 2's complements. Binary multiplication & division : Octal number system & hexadecimal number system and use.

UNIT-2 COMPUTER DIGITAL ELECTRONICS - PART A :

(A) Computer Communication Code -' Binary code, 8421 code; Ecess 3 code; parity code-, Grey code ASC I I & EBCDIC codes.

(B) Computer Logic System Logic Gates: Diode and BJT as switch; Response of BJT to square waves, New logic, Mathematical logic, Basic logic opereturs /gates, AND, OR,NOT operator./ gate, Positive and Negative logic, NOR & NAND gates, Boolean, equations by logic symbol

UNIT-3 COMPUTER DIGITAL ELECTRONIC - PART B :

(A) Integrated Circults for Computer Logic Family : Electrical characteristics, Propogation delay Noise immunity, Types of load RTL,DITL,TTL & COMO Bipolar & MOS integration circuits, TIL circuits.

(B) Basic bone of Digital Circuitary, Boolean Algebra : Laws of boolean Algebra, Demorgans theorm, Dual nature of Boolean Laws, Boolean expression And logic diagram. The Karnaugh map, Truth table to' K-map, Simplification of K-map.

(C) Computer Logic Circuits,:, Ex-OR, Ex,-NOR circuldary, Half andfull adder, Half

and full subtractor, Subtraction by.1's & 2's compliments.

UNIT-4 COMPUTER DIGITAL ELECTRONICS - PART C :

(A) More computer Logic carcuit cemcbinational logic circuits : Encode & Decoder, Four bit binary, decoder,BCD to 7 segmert, decoderer encoder, Multiplexers & demultiplexers, Date transmission, Logic function generator.

(B) Multivibrator Circuits: Monostable, Astable & Bistable circuits, Smitt Trigr, RS flip-flop, RS flip-flop using. NOR gate and NAND gate,'clocked-RS flip-flop, D flip-flop or latch, Edge triggered flip-flop, Preset and clear, propogaition delay-Set-up time, Hold time Master-Slave flip-flop.

UNIT-5 COMPUTER DIGITAL ELECTRONICS - PART D :

(A) Computer counters-and shift registers: Binary counter, Down counter, Paralle or Synchronous counter, eountel with feedback, code-7 precision time interval, Monitor horizontal to Vertical generator, shift registers in brief, application of shift registers.

(B) Computer Memories Types of, memory, RAM, ROM., PROM, EPROM, DRAM, SRAM.

TEXT BOOK :

1. Riapidex computer course - (Pustak Mahal) by vikas Gupta.
2. Digital'&Analogue Techniquesjz, - (Kitab Mahal) by Navneet, Gokhale & Kale

REFRENCE BOOKS :

1. Computer To-day - By Donald H. Sanders
2. IBM PC & Clones, - By B. Govindarajalu
3. Fundamental of Digital Computers - By Thomas Bharti
4. Introduction to Digital Electronics - By Moninander singh
5. Fundamantal of Computer - By V. Rajaraman.

PAPER - II

COMPUTER, SOFTWARE PART - A

(paper code - 0806)

AIM : Introduction to computer software organization & use for solving any problem by Computer.

NOTE : Question paper should be prepared-having unit-wise question with internal choice.

OBJECTIVE OF COURSE :

1. To introduce the basic knowledge of software require for running the computer.
2. To introduce the basic knowledge of programming in HLL, BASIC for solving-the problem.
3. To introduce the WORLD PRO CESSOR package for document processing and mail merge.

UNIT-1 Fundamentals for using the Computer:

(A) Driving the Computer

(1) Computer Operating System & other Software :

(i) Windows & UNIX system Software & their versions.

(ii) HLL Sottware : BASI C, COBOL,PASCAL,C, C++, Visual Basic, JAVA & C#.

(iii) Package Softwares - MS- Office & Foxpro.

(2) Introduction to DOS Ver 6.22 &-Windows-95, Windows-98 & Windows-2000.

(3) Windows concept, various features &advantages, Windows structure, Desktop, Taskbar, Start Menu, My Computer, Recycle bin.

(4) Accessories: Calculator, Notepad, Paint, WordPad, Character Map, Explorer : Creating Folders and other Explorer Facilities.

(5) Object Linking & embedding. Communication - Dialup Networking, Phone dialer.

(B) General idea of Problem Solving with Computers

Problem Analysis & Solving Scheme,,Computational procedure, program outline, algorithm, pseudocodes, flow chart, testing of flow chart, branching and looping, writing, executing & testing the program with examples.

(C) Programmming Constants, and Variables

Character set, constantS (numeric string), variables (numeric & String), rules for arithmetic expression and hierarehy of ope~ati6ns, relational expressions, logical expressions and operator, library, functions.

UNIT-2 (A) Working with MS-Office

Introduction to word : Basics of WordProcessing; Features, & Advantages of Word Processing; Creating, editing, formatting & previewing documents; Advanced features; Using Thesaurus, Mail merge, Table & Charts, Implementing OLE concept.

Introductiqo.to Excel : *Worksheet* Basics, Creating, Opening, & Moving in Worksheet, Working with Formula & Cell referencing, Absolute & Relative addressing, Working with Ranges, Formatting of worksheet, Graphs& charts, Database, Function, and Macros.

Intorduction to Power Point : *Creating* a. presentation, Modifying Visual Elements,Adding objects, Applying. Transitions, animations and linking, Preparing, handouts. presenting a slide show.

(B) 'Working on Internet

Intoduction to Internet ; Concept of Internet, Application of Internet, Services on Internet, World WideWeb (WWW) &Web Browsdrs,, working with Internet Explorer. Introduction to Internet search Engines, Yahoo, Alta Vista, Google etc. Surfing the Internet, Chatting on. Internet Electronic Mail (E-Mail), working with Outlook Express; Overview of telnet & FTP (File transfer Protocol) Services. Internet Security, Web security firewalls, Type of firewalls,

UNIT-3 PROGRAMMINGWITH C : PART - A

Introduction Characterset, Identifiers and Keywords, Variables, Displaying variables, Reading Variables, Character and Character,String, Qualifiers, Type define Statements, Value initialized Variables, Constants, Constant Qualifier, Operators and Expressions, Operator Precedence- and Associativity, Basic input output : Single Character I/O General Outputs, Types of Characters in format string, Scanf with Specifier, Searchset

Arrangements and Supression Character, Format Specifier for scanf.

Control Structure: If-statement, If else statement, Multiway decision, Compound **Statement, Loops :** For- loop, While-loop, Do-while loop, Break statement, Switch statement, Continue statement, Goto statement. Functions Function main, Function accepting more than one parameter, User defined and library function, Concept associativity with functions, function parameter, Return value, recursion comparisons, of Iteration and recursion variable length argument list.

UNIT-4 PROGRAMMING WITH C : PART - B

Scopearind Extent, Arrays, Strings, Multidimensional Arrays, Strings, Array of. Strings, I Function in String, Pointers: Definition,and. Use of Pointer, address operator, pinter variable, referencing pointer, void pointers, pointer arithmetic, pointer to pointer, pointer and arrays,-passing arrays to functions, pointer and functions, accessing array inside functions, pointers and two dimensional arrays, array of pointers, pointer constants, pointer and functions, accessing array inside functions, gbinters and two dimensional arrays, array of pointers, pointer constants, pointer and strings.

UNIT-5 PROGRAMMING WITH C :PART - C

Structure and Union, Declaring and using Structure, Structure intialization, Structure within Structure, Operations of Structures, Array of Structure, Array within Structure, Creating user defined data type, pointer to Structure and function. Union, difference between Union and Structure, Operations on Union, Scope of Union.

Dynamic memory allocation. Library function for Dynamic memory allocation, Dynamic Multi-Dimensional arrays, Self-rcferential structure. File:- Introduction, Structure, Filehandling, Functions f ile types, Unbuffered and buffered f ile" Error handling. Low level five Input-Output.

TEXT BOOKS:

1.	PC Software made Simple	-	R.K. Taxali
2.	- Let us C	-	Yashwant Kanitkar
3.	Microsoft Office	-	Ginni Courter, Annotte Marquis, BPB Publication

REFERENCE:

1.	Programming with C	-	SchAum's Series (Tata Mcgraw Hill)
2.	Programming with C	-	K.R. VENIUGOPAL, SUDDEP PRASAD
3.	Computer Today	-	Donald H. Sanders
4.	Fundamentals of Computer	-	V. Rajafaman

PRACTICALWORK:

1. The practical exercises should be done to understand the working of DOS, WINDOWS & also to see the various features of existing versions of Windows OS, (eg. Windows 95, Windows 98, Windows 2000).
2. The sufficient practical work should be done for understanding the topics of Unit-II.
3. At, least Five programs on each unit from Unit III to Unit V be prepared.
4. All practical work should be prepared in form of printouts,& be evaluated, while practical examination.

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ELECTRONICS EQUIPMENT MAINTENANCE

PAPER - I

PRINCIPLES OF ELECTRONICS

(paper code - 0809)

UNIT-1 General information : Symbol, colour code, types (Such an carbon, mental film, thin-film thick-fillm, wire-wound), Variable resistors potentiometers (logarithmic linear multi-turn wire wound rheostate.

Physical properties : Temperature dependence (Thermistor), Light Dependencs (LDR), Voltage Dependence (VDR).technical specification wattage and working voltages. Methods of measurement of resistance: very low to very high values.

INDUCTORS : General Information: symbol, Types each as air core, iron core, ferrite core, chocking inductors (Coil), frequency response of an inductor.

Method of measurement of inductances: using universal bridges design and fabrication rules.

CAPACITORS : General infortnation : symbol, colour code, types of capacitors such as Air, paper, Electrolytic, Mica, Tentalum Polyuterene, fixed and variable capacitors. Measurement of Capacitance: universal bridge. application areas.

BATFERIES : Dry Cells, Lead-Acid Accumulators, Nickel Cadmlum cells, standard cells, principles, Specifications.

FUSES : Fast and Slow Fuses, Pilot Lamps.

PCB : Types of PCB, layout techniques, cables and connectors for PCB

UNIT-2 TRANSFORMERS: General information- principle, types of transformer such as single phase, auto mains and isolation transformers. Frequency dependence of transformer theoriem. (Audio, IF and RF), Design of mains transformers and CVT.

RELAYS : General ihformation: symbol, types of relays, such as rend electromagnefic. Specifications, rating, application areas.

MICROPHONES AND LOUDSPEAKERS : General information: frequency response, input and output Impodance, power rating, directionality (omns and unli-directional). Application areas.

TRANSDUCERS : Commonly used transducers, L.D.R., thermistars thermocouples, phatodioden, pholc transistors, IR detectors L Volt.

UNIT-3 **SWITCHES, CABLE AND CONNECTORS :** Spdl, dpdl, band switches, touch switches, thumpwheel switches, rnicro switches, specifications, application areas.

NETWORK THEOREMS : Kirchoffs current and voltage law, -maximurr. power transfer, **THEOREMT :** bevenins theorem, norton's theorem, super position theorem.

LCR AND WAVESHAPING CIRCLITS : Serial and parallal response, idea of black Nix., qwivalent circuits. Idea of two terminal and two part network, eqi&alent cirewits. Integration, differer lation using R.C. circuits, *chpping clampaig*.

UNIT-4 **NUMBER SYSTEMS :** Introduction to decimal bmiazy, octal floca decial, number system interconversions of decimals binary and BCD number. Binary arithmetic and Boolean algebr& Boolean axiom, D Morgan's theorms- statement vanfication and applications.

LOGIC GATES : Posifive and Negative logic, different logic gate, such as AND, OR NOT, NAI, NOF, EXOR, symbol and truth tables. Inverting a non-irverting suffers.

LOGIC.FAMILIES : TTL, ECL & CMOS parameters like power dissipation, speed, supply requirements, logic level, fan in, fan out noise half addar, full addar, half subtulor.

UNIT-5 **COMBINATIONAL CIRCUITS :** Encioder-decoder sequenfial circuits, flip flops (As,K,,D,I,N,S) -shift, registers, counte% Semiconductors memory.

PAPER - II

ELECTRONIC DEVICES, COMPONENTS & ASSEMBLIES (paper code - 0810)

UNIT-1 INTRODUCTION- TO SEMI CONDUCTORS

ENERGY BAND DIAGRAM: conductors, semi conductor, insulation, intrinsic and exitrinsic sermi conductors (P.N. type), diffused junctions, depletion layer, barrier potential.

JUNCTION DIODES : Rectifying diode, forward and reverse bias characteris tic, switching diode, varacleor diode, photo diode. light emitting diode, IR sources and delector optical isolators, Zener diode, Tunnel diode, tunnel diode.

BIPOLAR JUNCTION TRANSISTORS : Basic working principle (qualitative), characterstic, Basic configurations and baising. Operating point, load line, biasmig for stabilization of operating point.

UINT-2 JEFT & MOSFET: Basic working principle (qualitative), charactenistic Binchoff voltage,

UNI JUNCTION TRANSISTORS : Basic working principle (qualitative), characterstic applications, as a switch.

POWER CONTROL DEVICES : Four layer diode (PNPN), Sillicon conq-olled, rectifier (SCR) tracis, diac, principle & characteristics.

AMPLIFIERS : Different terms used in amplifers, sucn as signal fource ssource, input output, voltage and current gain power gain,- decibel , input and'output impendance. Classification according to the frequency response, RC coupled, class A common emitter Amplifier, Introduction to the class & operafion

FEED BACK IN AMPLIFIER : Effect of negative feedback on amplifier performance.

UNIT-3 POWER AMPLIFIER : Transformer coupled equivalent circuit only in brief, class A, class B. class AB and class C the constant power hyperbola, the AC load line input and output considerations, determination of Non-hner distortion.

PUSH-PULL AMPLIFIERS : Phase splitter circuits, complimentary push-pull, thermal ranway, Heat sinks.

Class B and C resonant load amplifiers, graphical class C analysis, **resonant** load requirements.

OPERATIONAL AMPLIFIER :

Basic, idea of an OPAMP with black box concept miverting and noninverting inputs, virtual ground

Parameters such as input impendance, output impendance, open loop gain, measurements of parameters.

Qualitative description of OPAMP as mverting and non inverting arnphfier, summing and. difference amplifier, comparater and linear ubtegratirs, instrumentation amplifier.

UNIT-4 OSCILLATORS : Positive feed back, barkhausen criltenia, phase shift oscillators, wei bridge oscillators Tuned oscillators, Hartley, colpits-oscillators, crystal oscillator.

POWER SUPPLIES : Regulated power supply, Zener regulated power supply series and shunt regulated power supply, block diagrain of IC 723, regulated supply of IC 723. 11iree ter~nal Ics power supply. Study of power supply. w.r. to variation 'in loadand I 'me voltage.

SWITCHED MODE POWER SUPPLY : Design principle, and application.

IC 555 : Operations and applications.

UNIT-5 MODULATION : AM and FM : Principles, modulation, index, modulation, bandwidth, balanced modulator,

DEMODULATION : Am and Fm delectors diode detectors, ratio detector, balanced demodulator'.

Introduction to communication systems, basic principles and operation of communication system.

ELECTRONICS

PAPER - I

ELECTRON DEVICES & PASSIVE CIRCUITS M.M. 50

(paper code - 0807)

UNIT-1 Physic of semiconductors : Basic idea of crystal structure and energy bands, simple idea of effecctive mass, carrier concentration at normal equilibrium in an intrinsic semiconductor, Fermi level for intrinsic semiconductor. Donors and acceptors, Physical picture of electronic and holes as majority carriers, dependence of Fermi level on donor and acceptor concentration, Law of mass action ($m_p p_p = N_i^2$).

UNIT-2 Basic derivation of the relationship between carrier concentration mobility and electron charge from Ohm's Law, idea of drift and diffusion, simple idea of Hall effect.

PN junction, Barrier formation, current components in equilibrium under open circuit, derivation of barrier potential and current voltage characteristics, the resistance of p-n junction diode and its variation with biasing, definition of transition capacitance, capacitance voltage relationship for an abrupt p.n. junction diode.

Basic idea and working of a varactor diode, Solar, cell, LED, Schottky diode, tunnel diode, Zener diode and qualitative mechanism of breakdown.

UNIT-3 PNP and NPN transistors (Ebber-Moll Model), definition of alpha and beta and derivation of relationship between them, basic idea of junction capacitance.

The construction and working of JEET, the idea of channel width, field dependent mobility showing current dependence of voltage, Physical explanation of different regions of I-V curves, various parameters of JEET.

UNIT-4 MOS Devices, Basic structure and energy level diagram, definition of work function, electron affinity, surface potential and difference between intrinsic Fermi level and Fermi level of doped semiconductor, Physical explanation of the formation of accumulation, depletion and inversion regions under an external bias, the idea of band bending (assume that E_f remains fixed).

Basic construction of MOSFET and its working Physical explanation of the characteristics curve enhancement and depletion modes, MOSFET Parameters.

UNIT-5 Basic idea of the impedance of L, C and R, representation of L and C in presence of loss (non ideal). Transformer and its equivalent circuit, mutual inductance, qualitative idea of magnetic core, Qualitiative idea of Steady State and transient response. Network analysis (resistive and reactive), Network definition, loop and nodal analysis, principle of duality, reduction of complicated network, T and Pi form, conversion between T and Pi sections, superposition theorems, Norton's theorem, maximum power transfer theorem, Definition of Z, Y, H, G, Transmission (A, B, C, D parameters) for two port networks, inter-relationship of these parameters.

PAPER - II

LINEAR ACTIVE CIRCUITS M.M. 50

(paper code - 0808)

UNIT-1 P-N Junction diode characteristic curves, static and dynamic resistance of a diode,

idea of positive, negative biased resistance of a diode, idea of positive, negative biased and combination clipping circuits, Avalanche breakdown and Zener effect, half wave and full wave rectifiers and bridge rectifiers, ripple factor and power conversion efficiency for the half wave and full wave rectifiers, use of Zener diode in power supplies, voltage regulation, filter (series inductor, shunt capacitor, L-C and Pi section filters).

UNIT-2 Characteristic curves of bipolar transistors, determination of load line (static), active, Cut off and saturation regions, dynamic load lines.

Biasing (fixed and self) of a transistor circuit, thermal instability of bias, transfer curves showing dependence of I_E on V_{BE},I_{CO} and beta, I_{CO} and V_{BE}, derivation of stability factor S, S' and S''.

UNIT-3 The black box idea of CE, CB and CC transistor circuit as a two port network, small signal active circuit, hybird model of a CE transistor circuit and its g_M equivalent, similarity in the small signal amplifiers using JEET and BJT, derivation of voltage and current gains, input impedance and output impedance RC coupled amplifier and derivation of half power points for its frequency response, idea of bandwidth.

UNIT-4 Parallel resonant circuit, its quality factor and frequency response, basic circuits for tuned amplifiers, equivalent circuit of a single tuned transistor amplifier and dtermination of its gain amd bandwidth (for CE case), idea of cascading of tuned amplifiers, Class A, Class B and Class C amplifiers, Power amplifiers, analysis and desing considerations of push pull amplifiers.

UNIT-5 Feedback in amplifiers, advantage of negative feedback in amplifiers, voltage and current feedback transistor amplifiers, positive feedback, Barkhausen criterion for self-sustained oscillations, Analysis of LC and Phase shift oscillators, Working of Hartley, Colpitt and Weinbridge Oscillators.

Operational amplifiers : requirements of an ideal Op-Amp, Op-Amp basic idea of common mode gain, difference gain, common mode rejection ratio, application of Op-Amp as inverrting and non inverting amplifier, adder, subtractor, integrator and differentiator.

PRACTICALS M.M. 50

A student is required to do at least 15 experiments in an academic year. The sheme of Practical Examination will be as follows :-

(i) One Experiment 3 Hours

(ii) Marks

Experiment	30
Viva-Voce	10
Sessional	10
	50

LIST OF PRACTICALS :

Fimiliarisation with electronic components :-

I Passive Circuit elements.

II. Active circuit elements including IC.

Familiarisation with basic electronic instruments, Power supply sigma generator LCR bridge. CRO, frequency meter multimeters VTVM, EVM.

1) Determination of energy band-gap of a diode.
2) Verification of Norton's Theorem and Superposition Theorem.
3) Measurement of capacitance and resistance combinations using LCR bridge.
4) Frequency and phase measurement with CRO.
5) Verification fo network theorems (Thevenins and Max. power transfer theorem).
6) Study of simple RC network.
7) Study of series and parallel resonance circuits.
8) Study of diode, (including Zener diode) characteristics.
9) Study of Transistor characteristics.
10) Study of simple power supply.
11) Study of RC coupled amplifier.
12) Study of transistor bias stability.
13) Study of LC oscillator.
14) Study of emitter follower (Measurement if imput, output imedance and gain).
15) Study of transistor phase shift Oscillats.
16) Study of FET characteristics.
17) Study of the clamping and clipping circuits.
18) Study of IC Op-AMP applications, viz. Intergrator, Differentiator, Adder, Subtractor.
19) Study of biasing of a BJT-Designing of potential divider arrangement for given point condition. Measure the de voltage at different points.
20) Study of frequency response of a single CE amplifier (Make your own circuit).

Note : 1. Out of above mentioned twenty experiments at least fifteen experiments should be done, use of bread board and use of soldering is expected for at least four experiments.

2. Other experiments of equal standard may also be set.

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INFORMATION TECHNOLOGY

Elective/Core Subject Information Technology

Eligibility for B.Sc. I, II & III subjects

First Year

Theory

Paper-I	Fundamental of I.T. and PC software	:	50 Marks	(I+II=100)
Paper-II	Programming concept using C Language	:	50 Marks	(I+II+II=150)
Practical		:	50 Marks	

PAPER - I

FUNDAMENTAL OF I.T. COMPUTERS & PC SOFTWARE

(paper code - 0824)

UNIT-1 Introduction to computer Von-Neumann model general architecture of computer input and output devices. Application of computers.

UNIT-2 Fundamental of DOS version of DOS booting process internal and external commands creating and executing batch files, files and directories creating text files.

UNIT-3 Introduction to windows features of windows hardware requirement for running various versions of windows. New installation and upgradation. Origin of windows, part of windows screen, types and anatomy of windows, using program manager, creating and using groups, using file manager Accessories.

UNIT-4 Introduction word processing (MS-WORD) advantage of word processing introduction and installation. Editing a file Using paragraph styles. Newspaper style columns using macros, Advanced word processing, Headers and footers, Finding text setting up printer. Mailmerge and other application Mathematical calculator. Table handling.

UNIT-5 Introduction to spreadsheet (MS-EXCEL) Definition and advantage of electronic worksheet, working on spread sheets, Range and related operations Setting saving and retrieving worksheets, inserting deleting coping and moving of data cells inserting and deleting rows and column protecting cells printing a worksheet erasing a worksheet in Graphs creation types of graphs creating a chart sheet 3D. Columns charts moving and changing the size of chart printing the chart.

BOOK RECOMMENDED :

1. PC Software by Ravi Taxali
2. Computer Fundamental by P. K. Sinha
3. Computer Fundamental by Nagpal.

PAPER - II

PROGRAMMING CONCEPT USING C LANGUAGE

(paper code - 0825)

UNIT-1 History of programming Language Low Level Middle Level and High Level Languages.

Programming Development Techniques using flow charts algorithms Compiler and Interpreters.

UNIT-2 Introduction to C Programming Structure and C Compiler.

Data representation : simple data typeslike real interger character etc.

Program, Statements and Header files Simple Input Output Statements in C Running simple C Programs.

Primitive data types in C++ char integer Float Double Long Double Void etc.

UNIT-3 Opearator and expression Arithmatic Operators Assignments opearator increment and decrement operator relational and boolean operators Mixing of different data types and operators for forming expressions.

Control Structures using if, if else, Nested If else Switch statement Using of loops : For loop situations, while loop situation Nested loops.

UNIT-4 User defined functions (Simple Call by value and recursion)

The array data types 1 dimensional and multi dimensional the array of character constructing strings and string manipulation, data structures, Nested structures and union.

UNIT-5 Introduction to pointers, Use of pointer in function (cell by reference). Pointer in Array, Structures Pionters and file handlings.

BOOK RECOMMENDED :

1. Let us C- y. Kanetkar
2. Ansi C- Balaguruswami
3. Programming in C- Gotrfield (Schaum Series)

PRACTICAL

M.M. : 50

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INDUSTRIAL MICROBIOLOGY

Paper	Title	Time	Marks
First	General Microbiology, Tools and Techniques	3 hrs.	50
Second	Molecular Biology, Biochemistry and Microbial Genetics	3 hrs.	50
	PRACTICAL (including sessionals)	4 hrs.	50 (40+10)

PAPER -

GENERAL MICROBIOLOGY, TOOLS AND TECHNIQUES M.M.50

I (paper code - 0826)

UNIT-1 History and development of Industrial Microbiology. Contributions of antony von Leeuwenhoek, Louis Pasteur, Robert Koch, Edward Jenner, Wakman, Alexandar Flaming.

UNIT-2 General characteristics and structure of Bacteria, Cyanobacteria, Fungi, Actino-mycetes, Mycoplasms, Vinuses.

UNIT-3 Microscopy - Invention of Microscope, Compound microscope, Dark field, Fluorescent, Phase contrast and Electron microscope.

UNIT-4 Method of sterilization, culture media and isolation techniques. Methods of preservation of microbial cultures.

UNIT-5 Basic principles and usage - pH meter, Densitometer, Colorimeter, Spectrophotometry, Fluori-metry, Centrifugation - Principles and applications. Usage of Fermentation.

PRACTICALS

The Practical works will, in general be based on the prescribed syllabhus in theory and the candidates will be required to show the knowledge of the following :

1. Preparation of media, autoclaving and sterilization of glassware.
2. Isolation of Phytopathogens.
3. Isolation of Microorganisms from soil and water : Bacteria, Fungi, and Algae.
4. Purification of microbial cultures.
5. Camera Lucida Drawing.
6. Standard Plate count.
7. Heamocytometer.
8. Chromatographic techniques : Separation of amino acids by paper and thin layer chromatography.
9. Measurement of pH of fruit juice.
10. Estimation of cargohydrate by colorimeter.

BOOK RECOMMENDED :

1. General Microbiology, Vol. II by Power and Daginawala.
2. Microbiology by Pelczar, Reid and chan.
3. General Microgiology by Davis and Harper.
4. A Treatise on Media and Methods Used in Bacteriological Techniques by V. Iswarn.
5. Introductory Mycology by C.J. Alexopoulous & Mims.
6. Microbiology by P.D. Sharma.

PAPER - II

MOLECULAR BIOLOGY, BIOCHEMISTRY AND MICROBIAL GENETICS

(paper code - 0827)

M.M. 50

UNIT-1 Nucleic Acids - Structure of DNA and RNA(s), Replication of DNA, Synthesis of RNAs and their types, Genetic code, Concept of genes.

UNIT-2 Molecular Biology - Translation and Protein Synthesis, Operon Concept, CAMP CAP (Catabolic activator protein), Gene expression in Prokaryotes, Lac-Operon. Gene ragulation in Eukaryotes (Britton-Davison Model of Gene Expression).

UNIT-3 Genetic recombination in Bacteria - Transformation, Transduction and conjugation, Genetic Mapping, Extrachromosomal genetic material, Plasmids, Cosmids, Transposons, Overlapping genes, Silent genes and their evolutionary significance. Mutation - Molecular mechanism of mutation, Chemical and Physical Mutagens, Repair of Mutation Damage.

UNIT-4 Biochemistry - Classification of carbohydrates, Chemical structure and property of starch, Cellulose, Glycogen, Synthesis of Purines & Pyrimidine.
Lipids - Saturated and unsaturated fatty acids, Biosynthesis of fatty acids, Distribution and functions of lipids in microorganisms, Degradation of lipids by O < B and Co oxidation, Lipid peroxidation.

UNIT-5 Enzymes - Classification. Co-enzymes, Cofactors, Mechanism of enzyme action, Competitive and non-competitive inhibition. Allosteric regulations of enzymes, isoenzymes, factors contributing to catalytic efficiency of enzymes.
Amino acids - Classification of essential amino acids based on polarity. Acid-base properties and solubilities. Amino acid sequencing of proteins; Primary, Secondary and Tertiary structure.

PRACTICAL

The Practical work will, in general, be based on the syllabus prescribed in theory and the candidates will be required to show the knowledge of the following -

1. Isolation of antibiotic resistant bacteria.
2. Extimation of alkaline phosphatase activity.
3. Measurement of o<amylase activity in extra-cellular fraction of microbial cultures.
4. Estimation of glycogen in bacterial cells.
5. Measurement of cellulase activity by Viscometric technique.
6. Determination of cellulase and amylase activity by reducing sugar assay test.
7. Isolation of DNA.

BOOK RECOMMENDED :

1. General Microbiology, Vol. 1 by Power & Daginawala.
2. Bicrobial Biochemistry by Moat.
3. Principles of Biochemistry by Lehninger.
4. Outline of Biochemistry by Cohn and Stumph.
5. Biochemistry by Harper.
6. Text book of Biochemistry by Rama Rao.
7. Text book of Biochemistry by O.P. Agrawal.

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BIO CHEMISTRY

PAPER-I

BIOMOLECULES

M.M. 50

(paper code - 0832)

UNIT-I

Introduction to Biochemistry, water as a biological solvent, weak acids and bases, pH, buffers, Henderson-Hasselbalch equation, physiological buffers, fitness of the aqueous environment for living organisms.

CARBOHYDRATES

Structure of monosaccharides. Stereoisomerism and optical isomerism of sugars. Reactions of aldehyde and ketone groups. Ring structure and anomeric forms, mutarotation. Reactions of sugar due to hydroxyl groups. Important derivatives of monosaccharides, disaccharides and trisaccharides (structure, occurrence and functions of important ones). Structure ocurrence and biological importance of monosaccharides, oligosaccharides and polysaccharides e.g. Cellulose, Chitin, agar, algenic acids, pectins, proteoglycans, sialic acids, blood group polysaccharides, glycogen and starch. Bacterial cell wall polysaccharides etc. Glycoproteins.

UNIT-II Lipids

Definition and classification. Fatty acids : introduction, classification, nomenclature, structure and properties of saturated and unsaturated fatty acids. Essential fatty acids, prostaglandins. Triacylglycerols: nomenclature, physical properties. chemical properities and characterzation of fats - hydrolysis, saponification value, rancidity of fats, Reichert-Meissel number and reaction of glycerol. Biological significance of fats. Glycerophospholipids (lecithins, lysolecithins, cephalins, phosphatidyl serine, phosphatidyl inositol, plasmalogens), sphingomyelins, glycolipids - cerebrosides, gangliosides. Properties and functions of phospholipids, isoprenoids and sterols.

UNIT-III Proteins

Introduction, classification based on solubility, shape, composition and functions. Aminoacids: common structural features, stereo-isomerism and RS system of designating optical isomers, classification and chemical properties, titration of amino acids, separation of amino acids. Essential amino acids.

Peptides: structure of peptide bond, chemical synthesis of polypeptides - protection and deprotection of N-terminal, and C-terminal ends and functional groups in the side-chains, formation of peptide bonds, condensing agents, strategy of chemical synthesis, Merrifield solid-phase peptids sysnthesis. Determination of the amino acid sequence of a polypeptide chain, specific chemical and enzymatic cleavage of a polypeptide chains and separation of peptides. Protein structure: levels of structure in protein architecture, primary structure of proteins, secondary structure of proteins helix and pleated sheets, tertiary structure of proteins, forces stabilizing the tertiary structure and quaternary structure of proteins. Denaturation and renaturation of proteins. Behaviour of proteins in solutions, salting in and salting out of proteins. Structure and biological functions of fibrous proteins (keratins, collagen and elastin), glocular proteins (hemoglobin, myoglobin), lipoproteins, metalloproteins, glycoproteins and nucleoproteins

UNIT-IV Nature of genetic material: evidence that DNA is the genetic material, Composition of RNA and DNA, generalized structural plan of nucleic acids, nomenclature used in writing structure of nucleic acids, features of DNA double helix. Denaturation and annealing of DNA, structure and roles of different types of RNA Size of DNA in procaryotic and eucaryotic cells, central dogma of molecular biology, Gene, Genome, chromosome.

UNIT-V Porphyrins

Prophyrins: Porphyrin nucleus and classification of porphyrins. important Metalloporphyrins occurring in nature. Detection of porphyrins spectrophotometrically and by fluorescence. Bile pigments - chemical nature and their physiological significance.

PAPER - II

(paper code - 0833)

BIOPHYSICAL AND BIOCHEMICAL TECHNIQUES M.M. 50

UNIT-I Concepts of Bioenergetics

Principles of thermodynamics and their applications in biochemistry - introduction, thermodynamic system, thermodynamic state functions, first and second laws of thermodynamics, concept of free energy, standard free energy, determination of ΔG for a reaction, relation between equilibrium constant and standard free energy change, biological standard state and standard free energy change in coupled reactions. Biological oxidation-reduction reactions - introduction, redox potentials, relation between standard reduction potentials and free enegy change (dervations and numericals included). High-energy phosphate compounds - introduction, phosphate group transfers-free energy of hydrolysis of ATP and sugar phosphates along with reasons for high ΔG.

UNIT-II Hydrodynamic Methods

Sedimentation - sedimentation velocity, preparative and analytical ultracentrifugation techniques. determination of molecular weight by hydrodynamic methods (derivations excluded and numericals included).

Measurement of pH

Principles of glass and reference electrodes, types of electrodes, complications of pH measurement (dependence of pH on ionic strength, electrode contamination and sodium error) and use of pH paper.

UNIT-III Radioisotopic Techniques

Types of radioisotopes used in Biochemistry, units of radioactivity measurements, techniques used to measure radioactivity (gas ionization and liquid scintillation counting), nuclear emulsions used in biological studies (pre-mounted, liquid and stripping), isotopes commonly used in biochemical studies- ^{32}P, ^{35}S, ^{14}C and ^{3}H.

Autoradiography. Biological hazards of radiation and safety measures in handling radioisotopes. Biological application.

UNIT-IV Chromatography

General principles and applications of :

1. Adsorption chromatography

2. Ion-exchange chromatography
3. Thin-layer chromatography
4. Molecular-sieve chromatography
5. Hydrophobic chromatography
6. Gas-liquid chromatography
7. HPLC
8. Affinity chromatography
9. Paper chromatography

Electrophoresis

Basic principles of agarose electrophoresis, PAGE and SDS-PAGE, Two-dimensional electrophoresis, its importance. Isoelectrofocussing.

UNIT-V Spectroscopic Techniques

Beer-Lambert law, light absorption and its transmittance, determination and application of extinction coefficient, application of visible and UV spectroscopic techniques (structure elucidation and numericals excluded). Principle and application of NMR, ESR, Mass spectroscopy. Fluorescent and emission spectroscopy.

Immunological Techniques

Immunodiffusion, immunoelectrophoresis, radioimmunoassay, ELISA, immunofluorescence.

PRACTICAL M.M. 50

1. Preparation of standard buffers and determination of pH of a solution.
2. Qualitative tests for :
   a. Carbohydrates
   b. Proteins and amino acids
   c. Lipids
3. Determination of saponification value and iodine number of fats.
4. Extimation of ascorbic acid.
5. Titration curve for amino acids and determination of pK value;
6. Verification of Beer-Lambert's law.
7. Estimation of
   (i) Carbohydrate by anthrone method.
   (ii) Blood glucose by the methods (a) Folin-Wu, (b) Nelson-Somogyi
8. Estimation of amino acids by ninhydrin method.
9. Isolation and assay of glycogen from rat liver.
10. (i) Extraction of total lipids by Folch method
    (ii) Estimations of food adulterant.
11. Estimation of DNA and RNA.
12. Separation of sugars using paper chromatography.

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BIOTECHNOLOGY

PAPER - I

BIOCHEMISTRY, MATHS & COMPUTERS

UNIT-1
1. Biochemistry : Introduction scope Development, Definition, aims and nature.
2. Carbohydrates : Structure, Classification and function of mono, Oligo & polysaccharides .
3. Proteins - Introduction, structure, classification, physical & chemical properties.
4. Amino acids : Classification, Essential & non-essential, General properties.

UNIT-2
1. Lipids : Structure, Classification, chemical properties.
2. Enzymes : Introduction, Definition co-enzymes & Cofactors, Nomenclature. Classification, mechanism of enzyme action factors affecting the enzymes action.
3. Hormones : Introduction, Definition, Structure, Classification, Function and application of plant hormone-Auxin and Gibberellins, Animal hormone-Pencreas and Thyroid.

UNIT-3
1. Biological Oxidation : Oxidation & Reduction constitutents of electron transport chain, mechanism of oxidation in electron transport chain.
2. Carbohydrate metabolism - glycogenesis glyconeogenesis, glycogenolysis Glycolysis, Krebs cycle.
3. Fat metabolism - Introduction, metabolism of glycerol fatty acid oxidation, conversion of fats into carbohydrates.
4. Protein metabolism - Introcution, conversion of amino acids, decaboxylation. Deamination of amino acids formation of Urea.
5. Enzyme technology - Introduction, Comparison between enzyme and catalysis procuction of enzyme, chemical energetics, enzyme kinetics, enzyme Immobilization use of enzyme solution, Application of Immobilized enzyme, Enzyme reactor, biosensors enzyme engineering.

UNIT-4
1. Set theory and its properties linear equation.
2. The binomial theorem, Logarithm.
3. Simple Differentiation and Integration
4. Probability Calculation, Methods of Sampling.
5. Measurements of central tendencies and deviations.

UNIT-5
1. Computers - General introduction, Organization of computer, digital and analogue computers, computer algorithm.
2. Computer in on line monitoring and automation.
3. Application of computer in co-ordination of solute concentration, pH and temperature etc. of a fermenter in operation.

List of Books :

1. Nelson and Cox-Principles of Biochemistry, Fourth Edition (2005)
2. Albert L. Lehninger - Biochemistry, Second Edition (2005)
3. Todd and Howards Mason - Text book of Biochemistry, Fourth Edition (2004)
4. Lubert Stryer and Berg - Biochemistry, Fifth Edition (2004)
5. E. Balaguruswamy - Programming in BASIC
6. Diana Rain, Marni Ayers Barby - (2006) Textbook on Q level Programming. 4th Edition.
7. Karl Schwartz : (2006) Guide of Micro Soft. Marina Raod, 4th Edition.

PAPER-II

CELL BIOLOGY, GENETICS AND MICROBIOLOGY

UNIT-1
1. Cell theory and the cell : Idea of cell theory, shape and size.
2. Cell wall and plasma membrane.
3. The nucleus – significance structure nucleolus
   Chromosomes – Morphology, chemical composition, Ultra structure & special types of chromosomes.
4. Mitochondria – Morphology, ultra structure, chemical composition origin & functions.
5. Plastids – Chloroplasts, ultra structure & functions

UNIT-2
1. Cytoskeleton : Microtubules – Structure, chemical composition, microtubules in cilia and flagella and role in cell division, Microfilaments in muscle cells and muscle contraction and in non-muscle cell.
2. Cytoplasm – Structure and functions of endoplasmic reticulum Ribosome's.
3. Golgi complex, Lysosomes, Centrosome.
4. Cell division-Amitosis, motpsos Meiosis & Comparison with Mitosis.
5. Mendel's laws of Inheritance.
6. Linkage and crossing over.

UNIT-3
1. Structural changes in chromosomes
   Deletion, Duplication, Translocation, Inversion etc.
2. Numerical changes in chromosomes
   Aneuploidy, Euploidy (Monoploidy and polyploidy and its importance).
3. Mutation – History, physical and chemical mutagens, Detection of mutation in Drosophila and plants.
4. Human Genetics
5. Structure and synthesis of Nucleic acids

UNIT-4
1. Microbiology - Introduction and History
2. Bacteria - Size, Shape & Structure
3. Classification : Bargey's manual.
4. Microbiol Growth & nutrition.
5. Reproduction : Conjugation, Transduction and Transformation.
6. Genetics of Bacteria, Plasmids, transposons and retropososons.

UNIT-5
1. Viruses – Basic features, structure, classification, multiplication, Bacteriophages (morphology, life cycle, infection and medicinal importance)
2. Mycoplasma – History, classification, structure reproduction & Diseases.
3. Food and Dairy Microbiology – Food-production (Dairy, Alcoholic) Food spoilage & food preservation.
4. Soil Microbiology – Soil & Micro – organisms, Biogeochemical cycles (Carbon nitrogen, sulphur & phosphorous Cycle

List of Books :

1. C.B. Power- Cell biology, First Edition (2005), Himalaya Publishing House.
2. Gereld Karp - Dell and molecular biology, 4th Edition (2005)
3. Lewis J. Klein Smith and Valerie M.Kish - Principles of cell and molecular biology-Third Edition (2002)
4. P.K. Gupta - Cell and molecular biology, Second Edition (2003), Restogi publications.

5. Tortora, Funke and Case - Microbiology, An introduction, sixth Edition (1995), Benjamin/ Cummings Publishing Company.
6. Prescott, Harlyey and Klein - Microbiology, Third Edition, Wm. C. Brown Publishers (1996).
7. P. Chakraoborthy - Textbook of microbiology, Second Edition (2007).
8. C.B., Oowar - Cell biology, Third Edition (2005) Himalaya Publishing Hosue.
9. S.S. Purohit - Microbiology : Fundamentals and Applications, 6th Edition (2004)
10. R.C. Dubey and D.K. Maheshwari : Practical Microbiology. S.Chand Publication.
11. R.C. Dubey and D.K. Maheshwari Microbiology.
12. B.R. Vashishita, A.K. Sinha and V.P. Singh Botany for Degree students. Part I. S.chand & Co. Ltd. New Delhi.
13. B.R. Vashishita, A.K. Sinha and V.P. Singh Botany for Degree students. part II. S.Chand & Co. Ltd. New Delhi.
14. C.J. Alexopoulos : Introductry Mycology. Wiley Eastern Limited.
15. M.S. Ghemawat, J.N. Kapoor, H.S. Narayana : A Textbook of Algae, Ramesh Book Depot, Jaipur.
16. Bendr4e and Kumar : A textbook of Practical Botany - I. Rastogi Publications.
17. Prescott, Harley and Klein - Microbiology. Third Edition. Wm. C. Brown.

PRACTICALS

MICROBIOLOGY AND BIOCHEMICAL TECHNIQUES

(1) Laboratory rules, Tools, Equipment and Other requirements in Microbiological laboratory.
(2) Micrometry – Use of ocular & stage micrometrer
(3) Counting of bacteria by counting chamber, by plate count.
(4) Microscopic examination of living micro organisms
  (a) Temporary wet mount
  (b) Hanging drop technique
(5) Smears and staining methods
  (a) Preparation of bacterial smear
  (b) Simple staining of bacteria
  (c) Acid fast staining
  (d) Negative & Positive gram staining
(6) Preparation of media and cultivation techniques
  (a) Basic liquid media (broth)
  (b) Basic Solid media, (agar slants and deep tubes)
  (c) Demonstration of selective and differential media
  (d) Isolation and enumeration of micro organisms
  (e) Isolation from air.
  (f) Isolation from Soil.
(7) Methods of obtaining pure cultures
  (a) Streak plate method
  (b) Pure plate method
  (c) Spread plate method
  (d) Broth cultures
(8) Growth & Biochemical techniques
  (a) Determination of bacterial growth

(b) Amylase production test
(c) Cellulose production test
(d) Estimation of Sugar in given solution
(e) Extraction and separation of lipids
(f) Extimation of proteins
(g) Isolation and purification of protein.
(h) Kinetic studies on enzymes.
(i) Mitosis and Meiosis
(j) Biostatistics : By Manual and by computer.
1. Problems on chi-square text
2. Problems on mean, mode and median.

SCHEME OF PRACTICAL EXAMINATION

Time – 4 hrs. **M. M. : 50**

1.	Instrument based Experiment (Two) 5x2	:	10	Marks
2.	Experiment based on Culture of Micro-organisms	:	10	Marks
3.	Bacterial Growth	:	07	Marks
4.	Biochemical techniques	:	08	Marks
4.	Bio statistics	:	05	Marks
5.	Viva – Voce	:	05	Marks
6.	Record/Sessional	:	05	Marks

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पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़)

पाठ्यक्रम

बी.एस.सी. भाग-2 (कोड-302)

B. Sc. Part - II (Code - 302)

परीक्षा : **2016-17**

कुलसचिव पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़) की ओर से

INDEX

PT. RAVISHANKAR SHUKLA UNIVERSITY RAIPUR (C.G.)

REVISED ORDINANCE NO. 21

BACHELOR OF SCIENCE

1. The three year course has been broken up into three Parts. Part-I known as B.Sc. Part-I examination at the end of the first year, Part-II known as B.Sc. Part-Ii examination at the end of the second year and Part-III known as B.Sc. Part-III examination at the end of the third year.

2. A candidate who after passing (10+2) Higher Secondary or Intermediate examination of C.G. Board of Secondary Education Bhopal or any other Examination recognised by the University or C.G. Board of Secondary Education as equivalent thereto, has attended a regular course of study in an affiliated College or in the Teaching Department of the University for one academic year shall be eligible for appearing at the B.Sc. Part-I examination.

3. A candidate who, after passing the B.Sc.-I examination of the University or any other examination recognised by the University as equivalent thereto, has attended a regular course of study for one academic year in an affiliated college or in the Teaching Department of the University shall be eligible for appearing at the B.Sc. Part-II examination.

4. A candidate who, after passing the B.Sc. Part-Ii examination of the University, has completed a regular course of study for one academic year in an affiliated college or in the Teaching Department of the University shall be eligible for appearing at the B.Sc. Part-III examination.

5. Besides regular students, subject to their compliance with this Ordinance ex-student and non-collegiate candidates shall be permitted to offer only such subjects/papers as are taught to the regular student at any of the University Teaching Department or College.

6. Every candidate appearing in B.Sc. Part-I, Part-II and Part-III examination shall be examined in -

   (i) Foundation Course :

   (ii) Any one of the following combinations of three subjects :-

      1. Physics, Chemistry & Mathematics.
      2. Chemistry, Botany & Zoology.
      3. Chemistry, Physics & Geology.
      4. Chemistry, Botany & Geology.
      5. Chemistry, Zoology & Geology.
      6. Geology, Physics & Mathematics.
      7. Chemistry, Mathematics & Geology.
      8. Chemistry, Botany & Defence Studies.
      9. Chemistry, Zoology & Defence Studies
      10. Physics, Mathematics & Defence Studies.
      11. Chemistry, Geology & Defence Studies
      12. Physics, Mathematics & Statistics
      13. Physics, Chemistry & Statistics
      14. Chemistry, Mathematics & Statistics.
      15. Chemistry, Zoology & Anthropology.
      16. Chemistry, Botany & Anthropology.
      17. Chemistry, Geology & Anthropology.
      18. Chemistry, Mathematics & Statistics.

19. Chemistry, Anthropology & Defence Studies.
20. Geology, Mathematics & Statistics.
21. Mathematics, Defence Studies & Statistics
22. Anthropology, Mathematics & Statistics
23. Chemistry, Anthropology & Applied Statistics
24. Zoology, Botany & Anthropology
25. Physics, Mathematics & Electronics.
26. Physics, Mathematics & Computer Application
27. Chemistry, Mathematics & Computer Application
28. Chemistry, Bio-Chemistry & Pharmacy
29. Chemistry, Zoology & Fisheries.
30. Chemistry, Zoology & Agriculture
31. Chemistry, Zoology & Sericulture
32. Chemistry, Botany & Environmental Biology
33. Chemistry, Botany & Microbiology
34. Chemistry, Zoology & Microbiology
35. Chemistry, Industrial Chemistry & Mathematics
36. Chemistry, Industrial Chemistry & Zoology
37. Chemistry, Biochemistry, Botany
38. Chemistry, Biochemistry, Zoology
39. Chemistry, Biochemistry, Microbiology
40. Chemistry, Biotechnology, Botany
41. Chemistry, Biotechnology, Zoology
42. Geology, Chemistry & Geography
43. Geology, Mathematics & Geography
44. Mathematics, Physics & Geography
45. Chemistry, Botany & Geography

(iii) Practical in case prescribed for core subjects.

7. Any candidate who has passed the B.Sc. examination of the University shall be allowed to present himself for examination in any of the additional subjects prescribed for the B.Sc. examination and not taken by him at the degree examination. Such candidate will have to first appear and pass the B.Sc. Part-I examination in the subjects which he proposes to offer and then the B.Sc. Part-II and Part-III examination in the same subject. Successful candidates will be given a certificate to that effect.

8. In order to pass at any part of the three year degree course examination an examinee must obtain not less than 33% of the total marks in each subject/ group of subjects. In subject/ group of subjects where both theory and practical examination are provided an examinee must pass in both theory and practical parts of the examination separately.

9. Candidate will have to pass separately at the Part-I, Part-II and Part-III examinations. No division shall be assigned on the result of the Part-I and Part-II examination. In determining the division of the final examination, total marks obtained by the examinees in their Part-I, Part-II and Part-III examination in the aggregate shall be taken in to account. Provided in case of candidate who has passed the examination through supplementary examination having failed in one subject/ group only, the total aggregate marks being carried over for determining the division shall include actual marks obtained in the subject/ group in which he appeared at the supplementary examination.

10. Successful examinee at the Part-III examination obtaining 60% or more marks shall be places in the First Division, those obtaining less than 60% but not less than 45% marks in the Second Division and other successful examinees in the Third Division.

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In clause 6(ii) after serial No. 41, 42-45 inserted. Approved in 23rd Co-Ordination committee Dated 15-01-2014.

SCHEME OF EXAMINATION

	Subject	Paper	max. Marks	Total Marks	Min. Marks
C	Environmental Studies		75	100	33
	Fild Work		25		
Foundation Course					
	Hindi Language	I	75	75	26
	English Language	I	75	75	26

नोट : प्रत्येक खंड में से 2 (दो) प्रश्न हल करने होगें । सभी प्रश्न समान अंक के होंगे ।

	Three Elective Subject :				
1.	Physics	I	50	100	33
		I	50		
		Practical		50	17
2.	Chemistry	I	33		
		I	33	100	33
		III	34		
		Practical		50	17
3.	Mathematics	I	50		
		I	50	150	50
		III	50		
4.	Botany	I	50	100	33
		I	50		
		Practical		50	17
5.	Zoology	I	50	100	33
		I	50		
		Practical		50	17
6.	Geology	I	50	100	33
		I	50		
		Practical	50		17
7.	Statistics	I	50	100	33
		I	50		
		Practical		50	17
8.	Anthropology	I	50	100	50
		I	50		
		Practical		50	17

Subject	Paper	max. Marks	Total Marks	Min. Marks
Compulsory Subject - Foundation Course :				
9. Defence Studies	I	50	100	33
	II	50		
	Practical		50	17
10. Micro Biology	I	50	100	33
	II	50		
	Practical		50	17
11. Computer Sciences	I	50	100	33
	II	50		
	Practical		50	17
12. Information Technology	I	50	100	33
	II	50		
	Practical		50	17
13. Industrial Chemistry	I	34		
	II	33	100	33
	III	33		
	Practical		50	17
14. Bio Chemistry	I	50		
	II	50	100	33
	Practical		50	17
15. Bio Technology	I	50		
	II	50	100	33
	Practical		50	17

USE OF CALCULATORS

The Students of Degree/P.G. Classes will be permitted to use of Calculators in the examination hall from annual 1986 examnination on the following conditions as per decision of the standing committee of the Academic Council at its meeting held on 31-1-1986.

1. Student will bring their own Calculators.
2. Calculators will not be provided either by the University or examination centres.
3. Calculators with, memoty and following variables be permitted +, -, x, ¸ square, reciprocal, expotentials log, square root, trignometric functions, wize, sine, cosine, tangent etc. factiorial summation, xy, yx and in the light of objective approval of merits and demerits of the viva only will be allowed.

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आधार पाठ्यक्रम (पेपर कोड 0841)

प्रश्न पत्र - प्रथम

हिन्दी भाषा

पूर्णांक - 75

खण्ड-क निम्नलिखित 5 लेखकों के एक-एक निबंध पाठ्यक्रम में सम्मिलित होंगे - अंक-30

1. महात्मा गांधी - सत्य और अहिंसा
2. विनोबा भावे - ग्राम सेवा
3. आचार्य नरेन्द्र देव - युवकों का समाज में स्थान
4. वासुदेव शरण अग्रवाल - मातृ-भूमि
5. भगवतशरण उपाध्याय - हिमालय की व्युत्पत्ति
6. हरि ठाकुर - डॉ. खूबचंद बघेल

खण्ड-ख हिन्दी भाषा और उसके विविध रूप अंक-20

- कार्यालयीन भाषा
- मीडिया की भाषा
- वित्त एवं वाणिज्य की भाषा
- मशीनी भाषा

खण्ड-ग अनुवाद व्यवहार : अंग्रेजी से हिन्दी में अनुवाद अंक-25

हिन्दी की व्यवहारिक कोटियाँ-

रचनागत प्रयोगगत उदाहरण, संज्ञा, सर्वनाम, विशेषण, क्रिया विशेषण, समास, संधि एवं संक्षिप्तियां, रचना एवं प्रयोगगत विवेचन ।

ENGLISH LANGUAGE

M.M. 75

(Paper Code - 0842)

The question paper for B.A./B.Sc./B.Com./B.H.Sc., English Language and cultural valuers shall comprise the following units :

UNIT-I Short answer questions to be assed by (Five short answer questions of three marks each) 15 Marks

UNIT-II (a) Reading comprehension of an unseen passage 05 Marks

(b) Vocabulary

UNIT-III Report-Writing 10 Marks

UNIT-IV Expansion of an idea 10 Marks

UNIT-V Grammar and Vocabulary based on the prescribed text book. 20+15 Marks

Note : Question on all the units shall asked from the prescribed text which will comprise specimens of popular creative/writing and the following it any

(a) Matter & technology

(i) State of matter and its structure

(ii) Technology (Electronics Communication, Space Science)

(b) Our Scientists & Institutions

(i) Life & work of our eminent scientist Arya Bhatt. Kaurd Charak Shusruta, Nagarjuna, J.C. Bose and C.V. Raman, S. Rmanujam, Homi J. Babha Birbal Sahani.

(ii) Indian Scientific Institutions (Ancient & Modern)

Books Prescribed :

Foundation English for U.G. Second Yaer - Published by M.P. Hindi Granth Academy, Bhopal.

NEW CURRICULUM OF B.SC. PART II

CHEMISTRY

The new curriculum will comprise of three papers of 33, 33 & 34 marks each and practical work of 50 marks. The curriculum is to be completed in 180 working days as per the UGC norms & conforming to the directives of the Govt. of Chhattisgarh. The Theory papers are of 60 hrs. each duration & the practical work of 180 hrs. duration.

PAPER - I

INORGANIC CHEMISTRY M.M. 33

(Paper Code - 0845)

UNIT-I CHEMISTRY OF ELEMENTS OF FIRST TRANSITION SERIES

Characteristic properties of d-block elements. Properties of the elements of the first transition series, their binary compounds and complexes illustrating relative stability of their oxidation states, coordination number and geometry.

UNIT-II CHEMISTRY OF ELEMENTS OF SECOND & THIRD TRANSITION SERIES

General characteristics, comparative treatment with their 3d-analogues in respect of ionic radii, oxidation states, magnetic behaviour, spectral properties and streochemistry.

UNIT-III A. OXIDATION AND REDUCTION

Use of redox potential data analysis of redox cycle, redox stability in water-Frost, Latimert & Pourbaix diagrams. Principles involved in the extraction of the elements.

B. COORDINATION COMPOUNDS

Werner's coordination theory and its experimental verification, effective alomic number concept, chelates, nomenclature of coordination compounds, isomerism in coordination compounds, vcalencey bond theory of transition metal complexes.

UNIT-IV A. CHEMISTRY OF LANTHANIDE ELEMENTS

Electronic structure, oxidation states and ionic radii and lanthanide contraction, complex formation, occurrence and isolation, lanthanide compounds.

B. CHEMISTRY OF ACTINIDES

General features and chemistry of actinides, chemistry of separation of Np, Pu and Am from uranium, similarities between the later actinides and the later lanthanides.

UNIT-V A. ACID AND BASES

Arrhenius, Bronsted-Lowry, the Lux-flood, solvent system and Lewis concepts of acids and bases.

N. NON-AQUEOUS SOLVENTS 06 HRS.

Physical properties of a solvent, types of solvents and their general characteristics, reaction in non-aqueous solvents with reference to liquid ammonia and liquid sulphur dioxide.

REFERENCE BOOKS :

1. Basic Inorganic Chemistry, F.A. Cotton, G. Wilkinson and P.L. Gaus, Wiley

2. Concise Inorganic Chemistry, J.D. Lee, ELBS.
3. Concepts of models of Inorganic Chemistry, B. Douglas, D. Mc Daniel and J. Alexander, John Wiley.
4. Inorganic Chamistry, D.E. Shriver, P.W. Atkins and C.H. Langford, Oxford.
5. Inorganic Chamistry, W.W. Porterfield. Addison - Wesley.
6. Inorganic Chamistry. A.G. Sharp, ELBS.
7. Inorganic Chamistry, G.L. Miessler and D.A. Tarr, Prentice Hall.
8. Advanced Inorganic Chemistry, Stayas Prakash.
9. Advanced Inorganic Chemistry, Agarwal & Agarwal.
10. Advanced Inorganic Chemistry, Purl & Sharma, S. Naginchand
11. Inorganic Chemistry, Madan, S, Chand
12. Aadhunik Akarbanic Rasayan, A.K. Shrivastav & P.C. Jain, Goel Pub.
13. Ucchattar Akarbanic Rasayan, Satya Prakash & G.D. Tuli, Shyamlal Prakashan
14. Ucchattar Akarbanic Rasayan, Puri & Sharma.
15. Selected topic in Inorgaic Chemistry by Madan Malik, & Tuli, S. Chand.

PAPER - II

ORGANIC CHEMISTRY 60 Hrs. MM. 33

(Paper Code - 0846)

UNIT-I ALCOHOLS

A. Dihydric alcohols - nomenclature, methods of formation, chemical reactions of vicinal glycols, oxidative cleavage [$Pb(OAc)_4$ and HIO_4] and pinacol - pinacolone rearrangement.

B. Trihydric alcohols - nomenclature and methods of formation, chemical reactions of glycerol.

PHENOLS

A. Structure and bonding, in phenols, physical properties and acidic character. Comparative acidic strength of alcohols and phenols, resonance stabilization of phenoxide lon. Reactions of phenols, acylation and carboxylation.

B. Mechanisms of Fries rearrangement, Claisen rearrangement, Gatterman synthesis, Hauben - Hoesch reaction, Lederer - Manasse reaction and Reimer-Tiemann reaction.

EPOXIDES

Synthesis of epoxides. Catalysed ring opening of epoxides, orientation of epoxide ring opening, reactions of Grignard and organolithium reagents with epoxides. Anti 1,2 dihydroxylation of alkenes via epoxides. Crown eithers.

UNIT-II ALDEHYDES AND KETONES

A. Nomenclature and Structure of the carbonyIs group. Synthesis of aldehydes and ketones using 1,3 - dithianes, synthesis of ketones from nitriles.

Mechanism of nucleophilic additions to carbonyIs group Benzoin, Aldol, Perkin and Knoevenagel condensations. Condensations with ammonia and its derivateves, Wittig reaction, Mannich reaction.

B. Use of acetate as protecting group, Oxidation of aldehydes, Baeyer - Villiger oxidation of ketones, Cannizzaro reaction, MPV, Clemmensen Condensation, Wolff-Kishner reaction, $LiAlH_4$ and NaBH4 reduction. Halogenation of enolizable ketones.

An introduction to α,β unsaturated aldehydes and ketones.

UNIT-III A. CARBOXYLIC ACIDS 05 HRS.

Structure and bonding, Physical properties, acidity of carboxylic acids, effects of substituents on acid strength. Hell-Volhard Zeilinsky reaction. Reduction of carboxylic acids. Mechanism of Decarboxylation.

Methods of formation and chemical reactions of unsaturated mono carboxylic acids. Di carboxylic acids : methods of formation and effect of heat and dehydrating agents.

B. SUBSTITUTED CARBOXYLIC ACIDS

Hydroxy and Halo-substituted Acids.

C. CARBOXYLIC ACID DERIVATIVES

Structure of acid chloredes, esters, amides and acid anhydrides. Relative stability of acyl derivatives. Physical properties, interconversion of acid derivatives by nucleophilic acyl substitution.

Mechanisms of acid and base catalyzed esterification and hydrolysis.

UNIT-IV ORGANIC COMPOUNDS OF NITROGEN

A. Preparation of nitroalkanes and nitroarenes. Chemical reactions of nitroalkanes. Mechanisms of nucleophilic substitution in nitroarenes and their reduction in acidic, neutral and alkaline medium.

B. Reactivity, Structure and nomenclature of amines, physical properties. Stereo-chemistry of amines. Separation of mixture of primary, secondary and tertiary amines. Structural features affecting basicity of amines. Prepatation of alkyl and aryl amines (reduction of nitro compounds, nitriles), reductive amination of aldehydic and ketonic compounds. Gabriel - phthalimide reaction, Hofmann bromamide reaction, Reactions of amines, electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid. Synthetic transformations of aryl diazonium salts, azo coupling.

UNIT-V HETEROCYCLIC COMPOUNDS

A. Introduction

Molecular orbitl picture and aromatic character of pyrrole, furan, thiophene and pyridine, methods of synthesis and chemical reactions with emphasis on the mechanism of electrophilic substitution. Mechanism and nucleophilic substitution reaction in pyridine derivatives. Comparison of basicity of pyridine. Piperidine and pyrrole.

B. Preparation and reaction of Indole, quinoline and isoquinoline and with special reference to Fisher Indole synthesis and skraup synthesis and Bisher-Napieralski synthesis, Mechanism of electrophilic substitution reactions of indole, quinoline and isoquinoline.

Amino acids and Peptides :

A. Classification, Structure and stereochemistry of amino acids. Acid-base behaviour, isoelectric point and electrophoresis. Preparation and reaction of - amino acids.

B. Structure and nomenclature of peptides. Peptide synthesis, solid - phase peptide synthesis.

REFERENCE BOOKS :

1. Organic Chamistry, Morrison and Boyd, Prentice-Hall.
2. Organic Chamistry, L.G. Wade Jr. Prentice-Hall.
3. Fundamentals of Organic Chamistry, Solomons, John Wiley
4. Organic Chamistry, Vol. I, II, III, S.M. Mukherjee, S.P. Singh and R.P. Kapoor, Wiley-Eastern (New-Age)
5. Organic Chamistry, F.A. Carey, McGraw Hill
6. Introduction to Organic Chemistry, Struiweisser, Heathcock and Kosover, Macmillan.
7. Organic Chamistry, P.L. Soni
8. Organic Chamistry, Bahi & Bahl
9. Organic Chamistry, Joginder Singh
10. Carbanic Rasayan, Bashi & Bahi
11. Carbanic Rasayan, R.N. Singh, S.M.I. Gupta, M.M. Bakodia & S.K. Wadhwa
12. Carbanic Rasayan, Joginder Singh

PAPER - III

PHYSICAL CHEMISTRY 60 Hrs. M.M. 34

(Paper Code - 0847)

UNIT-I A. Thermodynamics - I **12 Hrs.**

Fundamental of thermodynamics system, surroundings etc. Types of systems, intensive and extensive properties, state and path functions themodynamic operations Internal energy, enthalpy, Heat capacity of gases at constant volume and at constant pressure and their relationship.

First Law of Thermodynamics limitation of first law. Joule-Thompson expansion, inversion temperature of gases. Calculation of w,q, dU & dH for the liquification expansion of ideal gases under isothermal and adiabatic conditions.

B. **Thermo chemistry**

Standard state,- Hess's law of heat summation. Enthalpy of reaction at constant pressure and constant volume. Enthalpy of neutralizations. Enthalpy of combustion, Enthalpy of formation, Calculation of Bond enthalpy. Elirchhoff's equation.

UNIT-II A. Thermodynamics-II

Second Law of Thermodynamics : Spontaseous process need of second law, statements of Carnot cycle and effciency of heat engine, Carnot theorem. Thermodynamic state of temperature.

Concept of entropy : entropy change in a reversible and irreversible process, Entropy change in insothermal reversible expansion of an ideal gas, Entropy

change in isothermal mixing of ideal gases, physical signification of entropy.

B. Gibbs and Helmholtz free energy variation of G and A with pressure, volume temperature, Gibbs Helmholtz equation.

UNIT-III PHASE EQUILIBRIUM

A. Gibbs Phase rule, Phase components and degree of freedom, Limitation of phase rule.

Applications of phase rule to one component system - water system, suplhur system.

Application of phase rule to two component systems : pb-Ag system, Zn, Mg system, ferric chloride-water system, desilverization of ____ congruent and incongruent, melting point, eutectic point.

Three component systems : solid solution liquid pairs.

Liquid liquid mixture : (Partially miscible liquids) : phenol-water, trimethylamine-water nicotine systems, constant temperature, azeotrops.

B. Nerst distribution law, Henry's law, application, solvent extraction.

UNIT-IV ELECTROCHEMISTRY-I **10 HRS.**

A. Electrolytic Conductance : Specific and equivalent conductance, measurement of equivalent conductance, effect of dilution on conductance, kohlrausch's law; application of kohlrausch's law in determination of dissociation constant of weak electrolyte, solubility of sparingly soluble electrolyte, absolute velocity of ions, ionic product of water, conductometric titration.

B. Theories of strong electrolytes – limitations of ostwald dilution law, weak and strong electrolyte, Debye-Huckel- Onsagar (DHO) equation for strong electrolyte, relaxation and electrophoretic effect.

C. Migration of ions : Transport number, definition and determination by Hittorf method and moving boundary method.

UNIT-V ELECTROCHEMISTRY-II **10 HRS.**

A. Electrochemical cell or Galvenic cell : reversible and irreversible cells conventional representation of electrochemical cells, EMF of the cell, effect of temperature on EMF of the cell, Nernst equation, calculation of ΔG, ΔH and ΔS for cell reaction.

B. Single electrode potential : standard hydrogen electrode, calomel electrode quinhydrone electrode, redox electrodes, electrochemical series.

C. Concentration cells with & without transport, liquid junction potential, application of concentration cell in determining valency of ions, solubility product, activity coefficient.

D. Determination of pH and pka using hydrogen and quinhydrone electrode potentiometric titrations, buffer solutions; Henderson-Hazel Equation, Hydrolysis of salts, Corrosion : type theories and prevention.

REFERENCE BOOKS :

1. Physical Chemistry, G.M. Barrow, International student edition-McGraw Hill
2. University general chemistry, C.N.R. Rao, Macmillan.

3. Physical Chemistry, R.A. Alberty, Wiley Eastern.
4. The elements of Physical Chemistry, Eastern.
5. Physical Chemistry through problems, S.K. Dogra & S. Dogra, Wiley Eastern.
6. Physical Chemistry, B.D. Khosla.
7. Physical Chemistry, Puri & Sharma
8. Bhoutic Rasayan, Puri, Sharma & Pathania, Vishal Publishing Company.
9. Bhoutic Rasayan, P.L. Soni
10. Bhoutic Rasayan, Bahl & Tuli
11. Physical Chemistry, R.L. Kapoor, Vol. I-IV

PAPER - IV

LABORATORY COURSE 180 Hrs.

Inorganic Chemistry

Calibration of fractional weights, pipettes and burettes. Preparation of standard solutions, Dilution-0.1 M to 0.01 M. solutions.

Quantitative Analysis

Volumetric Analysis

(a) Determination of acetic acid in commercial vinegar using NaOH.

(b) Determination of alkali content-antacid tablet using HCl.

(c) Estimation of calcium content in chalk as calcium oxalate by permanganometry.

(d) Estimation of hardness of water by EDTA.

(e) Estimation of ferrous & ferric by dichromate method.

(f) Estimation of copper using thiosulphate.

Instrumentation

Colorimetry

(a) Job's method

(b) Mole-ratio method

Adulteration-Food Stuffs.

Effluent analysis, water analysis

Solvent Extraction

Separation and estimation of Mg (H) and Fe (H).

Ion Exchange Method

Separation and estimation of Mg (H) and Zn (H).

Organic Chemistry

Laboratory Techniques

A. Thin layer Chromatography

Determination of R_f values and identification of organic compounds.

(a) Separation of green leaf pigments (spinach leave may be used)

(b) Preparation and separation of 2, 4-dinitrophenyl hydrazones of acetone, 2-butanone, hexan-2 and 3-one using toluene and light petroleum (40:60)

(c) Separation of a mixture of dyes using cyclohexane and ethyl acetate (8.5:1.5).

B Paper Chromatography : Ascending & Circular.

Determination of R_f values and identification of organic compounds.

(a) Separation of mixture of phenylalanine and glycine. Alanine and aspartic acid, Leucine and glutamic acid, Spray reagent-ninhydrin.

(b) Separation of mixture of D, L-alanine, glycine, and L-Leucine using n-butanol : acetic acid : water (4:1:5), Spray reagent-ninhydrin.

(c) Separation of monosaccharides- a mixture of D-galactose and d-fructose using n-butanol : acctone : water (4:5:1), Spray reagent-aniline hydrogen phthalate.

Qualitative Analysis

Identification of an organic compound through the functional group analysis, determination of M.Pt. and preparation of derivatives. (Aliphatic and Aromatic)

Physical Chemistry

Transition Temperature

Determination of the transition temperature of the given substance by thermometric/ dialometric method (e.g. $MnCl_2 . 4H_2O/SrBr_2 . 2H_2O$).

PHASE EQUILIBRIUM

1. To study the effect of asolute (e.g. NaCl, Succinic acid) on the critical solution temperature of two partially miscible liquide (e.g. Phenol-water system and to determine the concentration of that solute in the fiven phenol-water system.
2. To construct the phose diagram of two component system (e.g. diphenylamine-benzophenone) by cooling curve method.

THERMO CHEMISTRY

1. To determine the solubility of benzoic acid at different temperatures and to determine ΔH of the dissolution process.
2. To determine the enthalpy of neutralisation of a weak acid / weak base versus strong base / strong acid and determine the enthalpy of ionisation of the weak acid weak base.
3. To determine the enthalpy of solution of solld calclum chloride and calculate the lattice energy of caloium ohiofide from ite enthaply data using Born Haber cycle.

Regerence Book -

1. Vogel's qualitative Analysis, revised Svehla, Orient Longman.
2. Standered method of chemical analysis, W.W.Scott, the Technical press.
3. Experimental Organic Chemistry, Vol. I & II, P.R.Singh, D.S. Gupta and K.S.Bajpai, Tata McGraw Hill.
4. Laboratory Manual in Organic Chemistry, R.K. Bansal, Wiley Eastern.
5. Vogel's Text Book of Practical Organic Chemistry, B.S. Furnis, A.J. Hannaford, V.Rogers, P.W.G. S----ith and A.R. Tatchel, ELBS.
6. Experiments in General Chemistry C.N.R.Rao & U.C. Agrawal.
7. Experiments in Phyeical Chemistry R.C. Das & B.Behra, Tata McGraw Hill.
8. Advanced Practical Phvsical Chemistry, J.B. Yadav, Goel Publishing House.

5 Hrs. **PRACTICAL EXAMINATION** **M.M. 50**

Three Experiments are to be Performed.

1. Inorganic - One experiment from synthesis and analysis by preparing the standard solution be given. 12 marks

OR One Experiment from instrumentation either by colorimetry / solvent extraction/ion exchange method.

2. (a) Identification of the given organic compound & determine its M.Pt./B.Pt. 6 marks
   (b) Determination of R_f value and identification of organic compounds by paper chromatography. 6 marks
3. Any one physical experiment that can be completed in two hours inciuding calculations. 12 marks
4. Viva 10 marks
5. Sessional 04 marks

In case of Ex-Students one marks will be added to each of the experimets.

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PHYSICS

Objectives :

Present course is aimed to provide ample knowledge of basics of physics which are relevant to the understanding of modern trends in higher physics.

The first paper is aimed at preparing the background of thermodynamics and statistical physics essential for any advanced study of physics of condensed matter and radiations.

The second paper is mainly concerned with a course on geometrical and Physical optics and the laser Physics. It deals with important phenomenon like inter-ference, diffraction and polarisation with stress on the basic nature of light. It also introduces the basics of laser physics with some of its important applications.

The experiments are based mostly on the contents of the theory papers so as to provide comprehensive insight of the subject.

Scheme of Examination :

1. There shall be two theory papers of 3 hours duration each and one practical paper of 4 hours duration. Each paper shall carry 50 marks.
2. Each theory paper will comprise of 5 units. Two questions will be set from each unit and the student will have the choice to answer one out of two.
3. Numerical problems of about 30 percent will compulsorily be asked in each theory paper.
4. In practical paper each students has to perform experiments during examination.
5. Practical examination will be of 4 hours duration. The distribution of practical marks will be as follows :

Experiments	:	15 + 15 = 30
Viva-Voce	:	10
Internal Assessment	:	10

PAPER - I

THERMODYNAMICS, KINETIC THEORY AND STATISTICAL PHYSICS

(Paper Code - 0843)

UNIT-I The laws of thermodynamics : The Zeroth law, concept of path function and point function, various indicator diagrams, work done by and on the system, first law of thermodynamics, internal energy as a state function, reversible and irreversible change, carnot theorem and the second law of thermodynamics. Different versions of the second law. Claussius theorem inequality. Entropy, Change of entropy in simple cases (i) Isothermal expansion of an ideal gas (ii) Reversible isochoric process (iii) Free adiabatic expansion of an ideal gas. Entropy of the universe. Principle of increase of entropy. The thermodynamic scale of temperature, its identity with the perfect gas scale. Impossibility of attaining the absolute zero, third law of thermodynamics.

UNIT-II Thermodynamic relationships : Thermodynamic variables, extensive and intensive, Maxwell's general relationships, application to Joule-Thomson cooling and adiabatic cooling in a general system, Van der Waals gas, Clausius-Clapeyron heat equation.

Thermodynamic potentials and equilibrium of thermodynamical systems, relation with thermodynamical variables. Cooling due to adiabatic demagnetization, production and measurement of very low temperatures. Blackbody radiation : Pure temperature dependence, Stefan-Boltzmann law, pressure of radiation, Special distribution of BB radiation, Wien's displacement law, Rayleigh-Jean's law, the ultraviolet catastrophy, Planck's quantum postulates, Planck's law, complete fit with experiment.

UNIT-III Maxwellien distribution of speeds in an ideal gas : Distribution of speeds and of velocities, experimental verification, distinction between mean, rms and most probable speed values. Doppler broadening of spectral lines.

Transport phenomena in gases : Molecular collisions, mean free path and collision cross sections. Estimates of molecular diameter and mean free path. Transport of mass, momentum and energy and interrelationship, dependence on temperature and pressure.

Liquifaction of gases : Boyle temperature and inversion temperature. Principle of regenerative cooling and of cascade cooling, liquifaction of hydrogen and helium. Refrigeration cycles, meaning of efficiency.

UNIT-IV The statistical basis of thermodynamics : Probability and thermodynamic probability, principle of equal a priori probabilities, statistical postulates. Concept of Gibb's ensemble, accessible and inaccessible states. Concept of phase space, canonical phase space, Gamma phase space and mu phase space. Equilibrium before two systems in thermal contact, probability and entropy, Boltzmann entropy relation. Boltzmann canonical distribution law and its applications, law of equipartition of energy. Transition to quantum statistics : 'h' as a natural constant and its implications, cases of particle in a one-dimensional box and one-dimensional harmonic oscillator.

UNIT-V Indistinguishability of particles and its consequences, Bose-Einstein & Fermi-Dirac conditions, Concept of partition function, Derivation of Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac Statistics Through Canonical partion function. Limits of B.E. and F-D statistics to M-B statistics. Application of BE statistics to black body radiation, Application of F-D statistics to free electrons in a metal.

TEXT AND REFERENCE BOOKS :

1. B.B. Laud, "Introduction to Statistical Mechanics" (Macmillan 1981)
2. F. Reif : "Statistical Physics" (Mcgraw-Hill, 1998).
3. K, Haung : "Statatistical Physics" (Wiley Eastern, 1988).
4. Thermal and statistical Physics : R.K. Singh, Y.M. Gupta and S. Sivraman
5. Physics (Part-2) : Editor, Prof : B.P. Chandra, M.P. Hindi Granth Academy.

PAPER - II

WAVES, ACOUSTICS AND OPTICS

(Paper Code - 0844)

UNIT-I Waves in media : Speed of transverse vaves on a uniform string, speed of longitudinal vaves in a fluid, energy density and energy transmission in waves, typical

measurements. Waves over liquid surface : gravity waves and ripples. Group velocity and phase velocity, their measruements.

Harmonics and the quality of sound ; examples. Production and detection of ultrasonic and infrasonic waves and applications.

Reflection, refraction and diffraction of sound : Acoustic impedance of a medium, percentage reflection & refraction at a boundary, impedence matching for transducers, diffraction of sound, principle of a sonar system, sound ranging.

UNIT-II Fermat's Principle of extremum path, the aplanatic points of a sphere and other applications.

Cardinal points of an optical system, thick lens and lens combinations. Lagrange equation of magnification, telescopic combinations, telephoto leneses.

Monochromatic aberrations and their reductions ; aspherical mirrors and schmidt corrector plates, aplanatic points, oil imersion objectives, meniscus lens.

Optical instruments : Entrance and exit pupils, need for a multiple lens eyepiece, common types of eyepieces. (Ramsdon and Hygen's eyepieces)

UNIT-III Interference of light : The principle of superpositions, two slit interference, coherence requirement for the sources, optical path retardations, lateral shift of fringes, Rayleigh refractometer Localised fringes ; thin films. Haldinger fringes : fringes of equal indination. Michelson interferometer, its application for precision defermination of wavelength, wavelength difference and the width of spectral lines, Twymann. Green interferometer and its uses, intensify distribution in multiple beam interference. Tolansky fringes, Fabry-Perot interferometer and etalon.

UNIT-IV Fresnel half-period zones, plates, straight edge, rectilinear propagation, Fraunhefer diffraction : Diffraction at a slit, half-period zones, phasor diagram and integral calculus methods, the intensity distribution, diffraction at a circular aperture and a circular disc, resolution of images, Rayleigh criterion, resolving power of telescope and microscopic systems.

Diffraction gratings : Diffraction at N parellel slits, intensity distribution, plane diffraction grating, relection grating and blazed gratings, Concave grating and different mountings, resolving power of a grating and comparison with resolving powers of prism and of a Fabry-Perot etalon.

Double refraction and optical rotation : Refraction in uniaxial crystals, Phase retardation plates, double image prism. Rotation of plane of polarisation, origin of optical rotation in liquids and in crystals.

UNIT-V Laser system : Purity of a spectral line, coherence length and coherence time, spatial coherence of a source, Einstein's A and B coefficients, Spontaneous and induced emissions, conditions for laser action, population inversion, Types of Laser : Ruby and, He-Ne and Semiconductor lasers.

Application of lasers : Application in communication, Holography and non linear optics. (Polarization P including higher order terms in E and generation of harmonics).

TEXT AND REFERENCE BOOKS :

1. A.K. Ghatak, 'Physical Optics'

2. D.P. Khandelwal, Optical and Atomic Physics' (Himalaya Publishing House, Bombay,

1988)

3. K.D. Moltev ; 'Optics' (Oxford University Press)
4. Sears : 'Optics'
5. Jenkins and White : 'Fundamental of Optics' (McGraw-Hill)
6. B.B. Laud : Lasers and Non-linear Optics (Wiley Eastern 1985)
7. Smith and Thomson : 'Optics' (John Wiley and Sons)
8. Berkely Physics Courses : Vol.-III, 'Waves and Oscilations'
9. I.G. Main, 'Vibratiens and Waves' (Cambridge University Press)
10. H.J. Pain : 'The Physics of Vibrations and Waves' (MacMillan 1975)
11. Text Book of Optics : B.K. Mathur
12. B.Sc. (Part III) Physics : Editor : B.P. Chandra, M.P. Hindi Granth Academy.
13. F. Smith and J.H. Thomson, Manchester Physics series : optics (English language book soeiety and Jehu wiley, 1577)
14. Bern and Woif : 'Opties'.

PRACTICALS

Minimum 16 (Sixteen) out of the following or similar experiments of equal standard.

1. Study of Brownian motion
2. Study of adiabatic expansion or a gas.
3. Study of conversion of mechanical energy into heat.
4. Heating efficiency of electrical kettle with varying voltages.
5. Study of temperature dependence of total radiation.
6. Study of termperature dependence of spectral density of radiation.
7. Resistance thermometry.
8. Thermoemf thermometry.
9. Conduction of heat through poor conductors of different geometries.
10. Experimental study of probability distribution for a two-option system using a coloured dice.
11. Study of statistical distributions on nuclear distintergration data (GM Counter used as a black box)
12. Speed of waves on a stretched string.
13. Studies on torsional waves in a lumped system.
14. Study of interference with two coherent sources of sound.
15. Chlandi's figures with varying excitation and loading points.
16. Measurement of sound intensities with different situation.
17. Characteristics of a microphone-loudspeaker system.
18. Designing an optical viewing system.
19. Study of monochromatic defects of images.
20. Determining the principal points of a combination of lenses.

21. Study of interference of light (biprism or wedge film)
22. Study of diffraction at a straight edge or a single slit.
23. Study of F-P elaton fringes.
24. Use of Deffraction grating and its resolving limit.
25. Resolving limit of a telescope system.
26. Polarization of light by reflection ; also cos-squared law.
27 Study of Optical rotation for any systems.
28. Study of laser as a monochromotor coherent sourec.
29. Study of a divergenee of a Laser beam.
30. Calculation of days between two dates of a year.
31. To check if triangle exists and the type of the triangle.
32. To find the sum of the sine and cosine series and print out the curve.
33. To solve simultaneous equations by elimination method.
34. To prepare a mark-list of polynomials.
35. Fitting a straight line or a simple curve to a given data.
36. Convert a given integer into binary and octal systems and vice-versa.
37. Inverse of a matrix.
38. Spiral array.

TEXT AND REFERENCE BOOKS :

D.P. Khandelwal : "Optics and Atomic Physics" (Himalaya Publishing House, Bombay 1988)

D.P. Khandelwal : "A Laboratory Manual for Undergraduate Classes" (Vani Publishing House, New Delhi)

S. Lipschutz and A Poe : "Schaum's Outline of Theory and Problems of Programming with Fortran" (McGraw-Hill Book Company 1986)

C. Dixon : "Numerical Analysis".

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MATHEMATICS

There shall be three compulsory papers. Each paper of 50 marks is divided into five units and each unit carry equal marks.

PAPER - I

ADVANCED CALCULUS

(Paper Code - 0848)

UNIT-I Definition of a sequence. Theorems on limits of sequences. Bounded and monotonic sequences. Cauchy's convergence criterion. Series of non-negative terms. Comparison tests, Cauchy's integral test, Ratio tests, Raabe's, logarithmic, De Morgan and Bertrand's tests. Alternating series, Leibnitz's theorem. Absolute and conditional covergence.

UNIT-II Continuity, Sequential continuity, Properties of continuous functions, Uniform continuity, Chain rule of differentiability, Mean value therorems and their geometrical interpretations. Darboux's intermediate value theorem for derivatives Taylor's theorem with various forms of remainders.

UNIT-III Limit and continuity of functions of two variables, Partial differentiation Change of variables, Euler's theorem on homogeneous functions, Taylor's theorem for functions of two variables, Jacobians.

UNIT-IV Envelopes, Evolutes, Maxima, minima and saddle points of functions, two variables, Lagrange's multiplier method.

UNIT-V Beta and Gamma functions, Double and triple integrals, Dirichet's integrals, Change of order of intergration in double integrals.

REFERENCES :

1. Gabriel Klaumber, Mathematical Analysis, Marcel Dekkar, Inc. New York, 1975.
2. T.M. Apostol, Mathematical Analysis, Narosa Publishing House, New Delhi, 1985.
3. R.R. Goldberg, Real Analysis, Oxford & I.B.H. Publishing Co., New Delhi, 1970.
4. D. Soma Sundaram and B. Choudhary, A First Course in Mathematical Analysis, Narosa Publishing House, New Delhi, 1997.
5. P.K. Jain and S.K. Kaushik, An introduction to Real Analysis, S. Chand & Co., New Delhi, 2000.
6. Gorakh Prasad, Differential Calculus, Pothishala Pvt. Ltd., Allahabad.
7. Murray R. Spiegel, Theory and Problems of Advanced Calculus, Schaum Publishing Co., New York.
8. Gorakh Prasad, Integral Calculus, Pothishala Pvt. Ltd., Allahabad.
9. S.C. Malik, Mathematical Analysis, Wiley Eastern Ltd., New Delhi.
10. O.E. Stanaitis, An Introduction to Sequences, Series and Improper Integrals, Holden-Dey, Inc., San Francisco, California.
11. Earl D. Rainville, Infinite Series, The Macmillan Company, New York.
12. Chandrika Prasad, Text Book on Algebra and Theory of Equations, Pothishala Pvt. Ltd., Allahabad.

13. N. Piskunov, Differential and Integral Calculus, Peace Publishers, Moscow.

14. Shanti Narayan, A Course of Mathematical Analysis, S.Chand and Company, New Delhi.

PAPER - II

DIFFERENTIAL EQUATIONS

(Paper Code - 0849)

UNIT-I. Series solutions of differential equations- Power series method, Bessel and Legendre, Functions and their properties-convergence, recurrence and generating relations, Orthogonality of functions, Sturm-Liouville problem, Orthogonality of eigen-functions, Reality of eigen values, Orthogonality of Bessel functions and Legendre polynomials.

UNIT-II Laplace Transformation - Linearity of the Laplace transformation, Existence theorem for Laplace transforms, Laplace transforms of derivatives and integrals, Shifting theorems, Differentiation and integration of transforms, Convolution theorem, Solution of integral equations and systems of differential equations using the Laplace transformation.

UNIT-III Partial differential equations of the first order, Lagrange's solution, Some special types of equations which can be solved easily by methods other than the general method, Charpit's general method of solution.

UNIT-IV Partial differential equations of second and higher orders, Classification of linear partial differential equations of second order, Homogeneous and non-homogeneous equations with constant coefficients, Partial differential equations reducible to equations with constant coefficients, Monge's methods.

UNIT-V Calculus of Variations - Variational problems with fixed boundaries- Euler's equation for functionals containing first order derivative and one independent variable, Externals, Functionals dependent on higher order derivatives, Functionals dependent on more than one indepedent variable, Variational problems in parametric form, invariance of Euler's equation undercoordinates transformation.

Variational Problems with Moving Boundaries - Functionals dependent on one and two functions, One sided variations.

Sufficient conditions for an Extremum - Jacobi and Legendre conditions, Second Variation, Variational principle of least action.

REFERENCES :

1. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons, Inc., New York, 1999.

2. D.A. Murray, Introductory Course on Differential Equations, Orient Longman, (India), 1967.

3. A.R. Forsyth, A Treatise on Differential Equations, Macmillan and Co. Ltd., London.

4. Lan N. Sneddon, Elements of Partial Differential Equations, McGraw-Hill Book Company, 1988.

5. Francis B. Hilderbrand, Advanced Calculus for Applications, Prentice Hall of India Pvt. Ltd., New Delhi, 1977.

6. Jane Cronin, Differential equations, Marcel Dekkar, 1994.

7. Frank Ayres, Theory and Problems of Differential Equations, McGraw-Hill Book Company, 1972.
8. Richard Bronson, Theory and Problems of Differential Equations, McGraw-Hill, Inc., 1973.
9. A.S. Gupta, Calculus of variations with-Applications, Prentice-Hall of India, 1997.
10. R. Courant and D. Hilbert, Methods of Mathematical Physics, Vots. I & II, Wiley-Interscience, 1953.
11. I.M. Gelfand and S.V. Fomin, Calculus of Variations, Prentice-Hill, Englewood Cliffs (New Jersey), 1963.
12. A.M. Arthurs, Complementary Variational Principles, Clarendon Press, Oxford, 1970.
13. V. Kornkov, Variational Principles of Continuum Mechanics with Engineering Applications, Vol. I, Reidel Publ. : Dordrecht, Holland, 1985.
14. T. Oden and J.N. Reddy, Variational Methods in Theoretical Mechanics, Springer-Verlag, 1976.

PAPER - III

MECHANICS

(Paper Code - 0850)

STATICS

UNIT-I Analytical conditions of Equilibrium, Stable and unstable equilibrium, virtual work, Catenary.

UNIT-II Forces in three dimensions, Poinsot's central axis, Null lines and planes, Dynamics.

UNIT-III Simple harmonic motion, Elastic strings, velocities and accelerations along radial and transverse directions, Projectile, Central orbits.

UNIT-IV Kepler's laws of motion, velocities and acceleration in tangential and normal directions, motion on smooth and rough plane curves.

UNIT-V Motion in a resisting medium, motion of particles of varying mass, motion of a particle in three dimensions, acceleration in terms of different co-ordinate systems.

REFERENCES :

1. S.L. Loney, Statics, Macmillan and Company, London.
2. R.S. Verma, A Text Book on Statics, Pothishala Pvt. Ltd., Allahabad.
3. S.L. Loney, An Elementary Treatise on the Dynamics of a particle and of rigid bodies, Cambridge University Press, 1956.

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BOTANY

PAPER - I

DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS

(Paper Code - 0861)

M.M. : 50

UNIT-I.
1. Characteristics of seed plants ; evolution of the seed habit ; seed plants with (angiosperms) and without (gymnosperms) fruits ; fossil and living seed plants.
2. General features of gymnosperms and their classification ; evolution and diversity of gymnosperms ; geological time scale, fossilization and fossil gymnosperms.

UNIT-II
3. Morphology of vegetative and reproductive parts ; anatomy of roots, stem and leaf, reproduction and life cycle of Pinus, Cycas and Ephedra.

UNIT-III
4. Angiosperms : origin and evolution, some examples of primitive angiosperms.
5. Angiosperms taxonomy : brief history, aims and fundamental components; identification, keys taxonomic literature.
6. Botanical nomenclature : Principles and rules; taxonomic ranks; type concept; principle of priority.

UNIT-IV
7. Classification of angiosperms ; salient features of the systems proposed by Bentham and Hooker and Engler and Prantl.
8. Major contributions of cytology, phytochemistry and taximetrics to taxonomy.

UNIT-V
9. Diversity of flowering plants : General account of the families Ranunculaceae, Brassicaceae, Malvaceae, Rutaceae, Fabaceae, Apiaceae, Acanthaceae, Apocynaceae, Asclepiadaceae, Solanaceae, Lamiaceae, Chenopodiaceae, Euphorbiaceae, Liliaceae and Poaceae.

PAPER - II

STRUCTURE DEVELOPMENT AND REPRODUCTION IN FLOWERING PLANTS

M.M. 50

(Paper Code - 0862)

UNIT-I.
1. The basic body plan of a flowering plant : modular type of growth.
2. Diversity in plant form in annuals, biennials and perennials ; convergence of evolution of tree habit in gymnosperms, monocotyledons and dicotyledons ; trees-largest and longest-lived organisms.

UNIT-II
3. The shoot system : the shoot apical meristem and its histological organization ; vascularization of primary shoot in monocotyledons and dicotyledons ; formation of internodes, branching pattern ; monopodial and sympodial growth ; canopy architecture ; cambium and its functions ; formation of secondary xylem, a general account of wood structure in relation to conduction of water and minerals ; characteristics of growth rings, sapwood and heart wood ; role of woody skeleton ; secondary phloem - structure-function relationships, periderm.

UNIT-III
4. Leaf : origin, development, arrangement and diversity in size and shape ; internal structure in relation to photosynthesis and water loss ; adaptations to water stress ; senescence and abscission.
5. The root system : the root apical meristem ; differentiation of primary and secondary tissues and their roles ; structural modification for storage, respiration, reproduction and for interaction with microbes.

UNIT-IV 6. Flower : a modified shoot ; structure, development and varieties of flower, functions, structure of anther and pistil, the male and female gemetophytes ; types of pollination ; attractions and rewards for pollinators ; pollen-pistil interaction, self incompatibility, double fertilization, formation of seed-endosperm and embryo ; fruit development and maturation.

UNIT-V 7. Significance of seed : suspended animation ; ecological adaptation ; unit of genetic recombination and replenishment, dispersal strategies.

8. Vegetative reproduction : vegetative propagation, grafting, economic aspects.

PRACTICAL SCHEME

TIme : 4 Hrs. **M.M. : 50**

1.	Plant Description	08
2.	Gymnosperm	07
3.	Anatomy	07
4.	Embryology	04
5.	Spotting (1-5 Spots)	10
6.	Field Report (Local Flora : Rainy/Winter/Summer Season)	04
7.	Viva-Voce	05
8.	Sessional	05
	Total Marks : 50	

BOTANY (PRACTICAL)
SUGGESTED LABORATORY EXERCISES

ANGIOSPERMS

The following species are suitable for study. This list is only indicative. Teachers may select plants available in their locality.

1. Ranunculaceae : Ranunculus, Delphinium
2. Brassicaceae : Brassica, Alyssum, Iberis, Coronoupus
3. Malvaceae : Hibiscus, Abutilon
4. Rutaceae : Murraya, Citrus
5. Fabaceae : Faboideae : Lathyrus, Cajanus, Melilotus, Trigonella, Caesalpinioideae ; Cassia, Caesalpinia ; Mimosoideae ; Prosopis, Mimosa, Acacia.
6. Apiaceae : Coriandrum, Foeniculum, Anethum
7. Acanthaceae : Adhatoda, Peristrophe
8. Apocynaceae : Vinca, Thevetia, Nerium
9. Asclepiadaceae : Calotropis
10. Solanaceae : Solanum, Withania, Datura
11. Euphorbiaceae : Euphorbia, Phyllanthus
12. Lamiaceae : Ocimum, Salvia
13. Chenopodiaceae : Chenopodium, Beta
14. Liliaceae : Asphodelus, Asparagus
15. Poaceae : Avena, Triticum, Hordeum, Poa, Sorghum

GYMNOSPERMS

CYCAS

i Habit, armour of leaf bases on the stem (if specimen is not available show photograph), very young leaf (circinate vernation) and old foliage leaves, scale leaf, bulbils, male cone (specimen), microsporophyll, megasporophyll, mature seed.

ii. Study through permanent slides - normal root (T.S.), stem (T.S.) (if sections are not available show photographs), ovule (L.S.).

iii. Study through hand sections or dissections - coralloid root (T.S.), rachis (T.S.), leaflet (V.S.), microsporophyll (V.S.), pollen grains (W.M.).

PINUS

i Habit, long and dwarf shoot showing cataphylls and scale leaves, T.S. wood showing growth rings, male cone, 1st year, 2nd year female cones, winged seed.

ii. Study through permanent slides - root (T.S.), female cone (L.S.), ovule (L.S.), embryo (W.M.) showing polycotyledonous condition.

Study through hand sections or dissections - young stem (T.S.), old stem (wood) (T.L.S. and R.L.S.), needle (T.S.), male cone (L.S.), male cone (T.S.), pollen grains (W.M.).

EPHEDRA

i Habit and structure of whole male and female cones.

ii. Permanent slides - female cone (L.S.)

iii. Hand sections/dissections-node (L.S.), internode (T.S.), macerated stem to see vessel structure, epidermal peel mount of vegetative parts to study stomata, male cone (T.S. and L.S.), pollen grains.

SUGGESTED LABORATORY EXERCISES :

Embryology, Anatomy and Vegetative Propogation etc.

1. Study of commonly occuring dicotyledonous plant (for example Solanum nigrum or Kalanchoe) to understand the body plan and modular type of growth.
2. Life forms exhibited by flowering plants (by a visit to a forest or a garden), study of tree like habit in cycads, bamboos, banana, traveller's tree (Ravenala madagasariensis) or yucca and comparison with ture trees as exemplified by conifers and dicotyledons.
3. L.S. shoot tip to study the cytohistological zonation and origin of leaf primordia.
4. Monopodial and Sympodial types of branching in stems (especially rhizomes).
5. Anatomy of primary and secondary growth in monocots and dicots using hand sections (or prepared slides), structure of secondary phloem and xylem, Growth rings in wood, Microscopic study of wood in T.S., T.L.S. and R.L.S.
6. Field study of diversity in leaf shape, size, thickness, surface properties, internal structure of leaf, structure and development of stomata (using epidermal peels of leaf).
7. Anatomy of the root, Primary and secondary structure.
8. Examination of a wide range of flowers available in the locality and methods of their pollination.
9. Structure of anther, microsporogenesis (using slides) and pollen grains (using whole mounts), pollen viability using in vitro pollen germination.
10. Structure of ovule and embryo sac development (using serial sections)
11. Test of self-incompatibility (using Petunia axillaris, Brassica campestris, B. olderacea or suitable available material) using field pollinations.
12. Nuclear and cellular endosperm, embryo development in monocots and dicots (using slides/dissections).
13. Simple experiments to show vegetative propagation (leaf cuttings in Bryophyllum, Sansevieria, Begonia, stem cuttings in rose, salix, money plant, sugarcane and Bougainvillea).
14. Germination of non-dormant and dormant seeds.

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ZOOLOGY

PAPER - I

ANATOMY & PHYSIOLOGY

M.M. : 50

(Paper Code - 0863)

UNIT-I Comparative Anatomy of various organ systems of vertebrates.

1. Integument and its derivatives : structure of scales, hair and feathers.
2. Alimentary canaland digestive glands in vertebrates.
3. Respiratory Organs

Gills and lung, Air-Sae in birds

UNIT-II

1. Endoskeleton-Limbs, girdles and vertebrae.
2. Circulatory System - Evolution of heart and aortic arches.
3. Urinogenital System - Kidney and excretory ducts.

UNIT-III

1. Nervous System - General plan of brain and spinal cord.
2. Endocaine glands - classification and histology.
3. Gonads and genital ducts.

UNIT-IV

1. Digestion and absorption of dietary components.
2. Physiology of heart, Cardiac cycle and ECG.
3. Blood Coagulation.
4. Respiration-Mechanism and control of breathing.

UNIT-V

1. Excretion-Physiology of excretion, Osmoregulation.
2. Physiology of Muscle contraction.
3. Physiology of nerve impulse, Synaptic transmission.
4. Ear and Eye - structure and function.

LIST OF RECOMMENDED BOOKS :

1. Conn, Stumpy RK, Bruening and D.C. : Outlines of Biochemistry.
2. Gaviong : Review of Medical Physiology.
3. Eckest, R. : Animal Physiology (W.H. Freeman)
4. Hildbrand : Analysis of Vertebrate structure
5. Kingsley : Outlines of Comparative Anatomy (Central Book Depot)
6. Rouer & Parsons : The Vertebrate Body, (Saunders)
7. Walta & Gyles : Biology of the Vertebrates (Macmillan)

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PAPER - II

VERTEBRATE ENDOCRINOLOGY, REPRODUCTIVE BIOLOGY BEHAVIOUR, EVOLUTION AND APPLIED ZOOLOGY

(Paper Code - 0864)

UNIT-I

1. General Characters of Hormones.
2. Hormone Receptor
3. Biosynthesis and secretion of thyroid, Admal ; Ovarian and testicular hormones.
4. Endocrine disorder due to hormones and other gland.

UNIT-II

1. Reproductive cycle in vertebrate.
2. Menustration, Lactation and pregnancy.
3. Mechanism of parturition.
4. Hormonal regulation of gametogenesis.
5. Extra embryonic membrane.

UNIT-III
1. Evidences of organic evolution.
2. Theories of organic evolution.
3. Variation, Mutation, Isolation and Natural selection.
4. Evolution of Horse.

UNIT-IV
1. Introduction to Ethology.
2. Patterns of Behaviour Taxes, Rellexes, Drives and Stereotyped Behaviour.
3. Reproductive Behavioural Patterns.
4. Hormones, Drugs and Behaviour.

UNIT-V
1. Aquaculture
2. Sericultural
3. Apiculture
4. Pisciculture
5. Poultry keeping
6. Elements of Pest Control -
    1. Chemical control
    2. Biological Control

PRACTICAL WORK

The practical work in general shall be based on the syllabus prescribed in theory. The students will be required to show the knowledge of the following.

1. Study of the representative examples of the different chordates (Classification and character)
2. Dissection of various systems of scoliodon-Afferent and Efferent branchial vessels, cranial nerves, internal ear.
3. Simple microscopic technique through unstained or stained permanent mounts.
4. Study of prepared slides histological, as per theory papers.
5. Study of limb girdles and vertebrae of frog, varanus, fowl and Rabbit.
6. Identification of species and individuals of honey bee.
7. Life cycle of honey bee and silkworm.

PRACTICAL WORK - DISTRIBUTION OF MARKS

1.	Major dissection (Cranial nerves/Efferent branchial vessel)	12
2.	Minor dissection (Afferent branchial/Internal ear)	08
3.	Permanent mount	09
4.	Spotting-8 (Slides-4, bones-2, specimens-2)	16
5.	Viva	05
6.	Sessional marks	**Total : 50**

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MICROBIOLOGY

B.SC. PART II

SCHEME OF EXAMINATION

Paper	-	Title	
First	-	Microbial Physiology and Genetics	50
Second	-	Principles of Bioinstrumentation and Techniques	50
Practical	-		50
			Total : 150

PAPER - I

MICROBIAL PHYSIOLOGY AND GENETICS

(Paper Code - 0869) **M.M. : 50**

UNIT-I Plasma membrane and transport across membrane, Energy transformation, Physiology of bacterial growth, phases of growth, growth conditions, differentiation in bacterial cells-sporulation, germination; bacterial cell division replication of chromosome, partition of chromosome into daughter cell.

UNIT-II Primary and Secondary metabolism.

UNIT-III Bacterial plasmids; structure and properties, replication, incopatibility, plasmid amplification.

Bacteriophages; lytic development cycle - T4; lytic and lysogenic development of phage, single stranded DNA phage.

Transposition; Structure of bacterial transposons, types of bacterial transponsons. Mechanism of antibiotic resistance and speard of antibiotic resistance.

UNIT-IV Genetic recombination; requirements, molecular basis, genetic analysis of recombination in bacteria.

UNIT-V DNA Repair and restriction; Types of repair systems, restriction endonuclease, various types of restriction enzymes, dam and dcm methylases.

Text Book :

1. Gene Cloning by T.A. Brown.
2. General Microbiology by Power and Daganiwala.
3. Zinssers Microbiology by KJ Wolfgang, McGraw- HJill Company.
4. Microbial Genetics by RM Stanley, F David and EC John.
5. Bacteriological Techniques by FJ Baker.

PAPER II

PRINCIPLES OF BIONISTRUMENTATION AND TECHNIQUES

(Paper Code - 0870) **M.M. : 50**

UNIT-I Colorimetry and spectrophotometry.

Spectrofluorimoty, turbidometry, nepholometry, luminometry.

pH metery.

UNIT-II Chromatography; adsorption partition, column, gas, ion-exchange, gel filtation, and affinity, Chromatography, HPLC, FPLC.

UNIT-III Centrifugation and ultracentrifugation.

Microscopy- light, phase-contrast, fluorescence, dark field, electron microscopy.

Laser, confocal, microscopy and digital image analysis

UNIT-IV Tissue culture techniques; Principal and requirements of animal tissue culture, Decontamination, sterilization and disinfection.

UNIT-V Electrophoreses techniques- types and their application; Electrophoresis of proteins and mucleic acids. Immunoelectrophoresis
Sequencing of proteins and nucleic acids.
Redioisotope techniques; nature of radioactivity, detection measurement, counter, safety aspects.
Enzyme purification and assay techniques.

Text Books :

1. Introduction to Istrumental analysis by Robert Braun.
2. Instrumental Techniques by Upadhyay and Upadhyay.
3. Instrumental Methods of Chemical Analysis by BK Sharma.

PRACTICAL

M.M. - 50

Determination of growth phase of *E.coli* by measurement of OD and colony froming units.

Rrelationship between OD and Cfu measurements.

Measurement of growth by dry weight and wet weight - *Penicillium* spp.

Determination of antibiotic resistance by plating method.

Assaying of microbial enzymes; Catalase, Proteases, Peroxidases, Cellulase, Cellobioases, Amylase, Diastase.

Exercise on colourimeter/spectrophotometer/pH metery.

Exercise on paper, thin layer, column chromatography.

Exercise on paper and gel electrophoresis.

Exercise on tissue culture techniques.

Absorbance curve for dyes.

Testing of Beer's law

SCHEME OF PRACTICAL

Time - 4 hors **M.M.: 50**

1.	Exercise on spectrophotometry / colorimetry / pH metery	08
2.	Exercise on Chromatography / Electrophoresis	07
3.	Measurement of microbial growth / microbial Enzymes / antibiotic sensitivity test	10
4.	Spotting (1-5)	10
3.	Viva-Voce	05
4.	Sessional	10
	Total	**50**

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विषय - भू-विज्ञान

सैद्धांतिक प्रश्न पत्र - 1

भू-गतिकी एवं संरचनात्मक भू-विज्ञान

पूर्णांक - 50

(पेपर कोड - 0851)

इकाई-1
1. पृथ्वी की भू-भौतिकी स्थिति : गुरूत्व, चुम्बकीयता तथा पुराचुम्बकीयता ।
2. समस्थिति की अवधारणायें एवं सिद्धांत ।
3. पर्वतीय एवं महादेशभवनी गतियां । वैश्विक पर्वतनिर्माणकारी गतिविधियां ।
4. पर्वतनिर्माणकारी, कायानतरण, चुम्बकत्व एवं धातुनिर्मितीकालों में अन्तर्सम्बन्ध ।
5. महाद्वीपीयविस्थापन एवं समुद्रतलविस्तारण के साक्ष्य एवं सिद्धांत ।

इकाई-2
1. मध्य समुद्री पर्वत, खाइयों, द्वीपीयचापों की उत्पत्ति, वितरण एवं महत्व ।
2. प्लेट-विवर्तनिकी के सिद्धांत । प्लेट सीमाओं की प्रकृति एवं प्रकार ।
3. समुद्रों तथा महाद्वीपों का उद्विकास ।
4. महाद्वीपीय सीमाओं की विवर्तनिकी : महाद्वीपीय शैल्प, अपसरितटट, सक्रियतट एवं सीमांतीय द्रोणियाँ।
5. नवविवर्तनिकी : सक्रियभ्रंश, भू-आकृतिक संसूचक, अपवाहपरिवर्तन, पुनर्धारा भूकम्पीयता ।

इकाई-3
1. विषमविन्यासों का अभिनिर्धारण एवं भू-वैज्ञानिक महत्व ।
2. वलन आकारिकी एवं ज्यामितिक वर्गीकरण ।
3. वलन का जननिक वर्गीकरण ।
4. वलन का यांत्रिकी एवं कारण ।
5. मानचित्र एवं स्थल में वलयों का अभिनिर्धारण । वलन का दृश्यांश पर प्रभाव ।

इकाई-4
1. भ्रंश का ज्यामितिक एवं जननीय वर्गीकरण ।
2. भ्रंश का दृश्यांशों पर प्रभाव ।
3. संधियां : ज्यामितिक एवं जननीय वर्गीकरण । लवण-गुम्बद ।
4. पत्रण : वर्णनात्मक शब्दविज्ञान, उत्पत्ति एवं दीर्घ संरचनाओं से सम्बन्ध ।
5. रेखण : वर्णनात्मक शब्दविज्ञान, प्रकार एवं उत्पत्ति तथा दीर्घ संरचनाओं से संबंध ।

इकाई-5
1. प्राथमिक आग्नेय एवं अवसादी संरचाओं के आधार पर अधों एवं शीर्ष की अभिनिर्धारण ।
2. शैल विरूपण की प्रारमिभक जानकारियां । प्रतिवल एवं विकृति की अवधारणाएं । प्रतिबल एवं विकृति दीर्घवृत्तज ।
3. भ्रंशयांत्रिकी की मूलभूत जानकारियाँ ।
4. स्टिरियोग्राफिक प्रक्षेपण एवं संरचनात्मक भू-विज्ञान में अनुप्रयोग ।
5. भारत की विवर्तनिकी संरचना ।

REFERENCE :

1. Keary F. & Vine, F.J. 1990 : G;pna; Tednic, Blackwell.
2. Storetyedt, K.N. 1997 : Our Evolving planet : Earth's Histror in New perspective.
3. Summesfield, M.A. 2000 : Geomorphology and Global Tectonics, Spinges-verlag.
4. Stanislave, M. 1984 : Introduction to applied Geophysics, Reidel publ.
5. Vogalsan. D. 1995 : Environmental Geophysics - A Practical Guide, Spinges Verlag.
6. Bryant, E. 1985 : Natural hazords, Cambridge, University press.
7. Patwardhan, A.. 1999 : The Dynastic Earth system - Practice Hall
8. Bell, F.G. 1999 : Geological Hazards. Roulledge, London.

9. Smith, K. 1992 : Invironmental Hazards : Routledge, London
10. वल्दिया, ख. सिंह, 19971 : सामान्य भू-विज्ञान, कुछ ज्वलंत समस्यायें, उ.प्र. हि.ग्रंथ अकादमी, लखनउ ।
11. Mch, P & Duff, D, 1994 : Holm's Principles of physical Geology 1st ed. ELES. U.K.

BOOKS RECOMMENDED :

1. Hobbs, B.E. Means, M.D. & Williams 1976 : Structural Galogy.
2. Davis, G.R. 1984 : Structural Geology of Rocks & Region - Jhonwiky.
3. Ramsay, J.G. and Hober, M.I. 1987 : Modern Structural Geology Vol. I-II,
4. Price, N.J. and Cosgove, I.W. 1990 : Analysis of Geological structure, Cambridge Uni. Press.
5. Ghosh, S.K. 1995 : Structural Geology fundamentals of modern Developments
6. संरचनात्मक भू-विज्ञान : एस.डी. के. श्रीवास्तव, म.प्र. हि.ग्रंथ, अकादमी भोपाल
7. भारत सिंह राठौर - संरचनात्मक भू-विज्ञान : म.प्र. हि. ग्रंथ अकादमी, भोपाल

सैद्धांतिक प्रश्न पत्र - 2

शैलिकी एवं भू-इतिहास

पूर्णांक -50

(पेपर कोड - 0852)

इकाई-1
1. दिक्काल में शैल-संलग्नता । शैल ग्रंथियों की अवधारणा, तंत्र-प्रावस्था एवं घटक ।
2. साम्यावस्था - उष्मागतिकी के मूल सिद्धांत । द्वि एवं त्रिघटकीय सिलिकेट तंत्र में प्रावसी साम्य (ऐल्बाइट-एनार्थइट). (डायोप्साइड - एनार्थाइट) (डायोप्साइड-एल्बाइट-एनार्थाइट)
3. अम्लीय आग्नेय शैलों का शिलाविवरणात्मक अध्ययन।
4. शारीय एवं अल्पसिलिक आग्नेय शैलों का शिलाविवरणात्मक अध्ययन ।
5. अत्यल्पसिलिक आग्नेय शैलों का शिलाविवरणात्मक अध्ययन ।

इकाई-2
1. कायात्तरण प्रक्रियाओं की साम्य एवं असाम्य अभिक्रियाएं ।
2. पेराजिनेटिक आरेख : प्रक्षेपीय विश्लेषण, ए.सी.एफ. एवं ए.के.एफ. आरेख ।
3. ताप-दाब-संगठन के संदर्भ में मृण्मय शैलों का उद्विकास ।
4. ताप-दाब-संगठन के सन्दर्भ में अल्पसिलिक तथा चूनामय शैलों का उद्विकास ।
5. अपक्षय प्रक्रियाओं की रासायनिकी : स्थलजात एवं रासायनिक अवसासों का प्रसंघनन ।

इकाई-3
1. वायूढ़, जलोढ़, तटीय एवं गंभीर समुद्री विक्षेपणीय वातावरण की गतिकी ।
2. अवसादी एवं स्तरविज्ञानी संलक्षणाओं की अवधारणायें ।
3. पुरापर्यावरण एवं पुराजलवायु विश्लेषण के मूलभूत सिद्धांत ।
4. संस्तरविज्ञानी वर्गीकरण एवं सहसंबंधन ।
5. स्तरविज्ञानी आंकड़ें एकत्रीकरण की विधियां : स्तरविज्ञानी संस्पर्श एवं विषम विन्यासों का अभिनिर्धारण ।

इकाई-4 वर्गीकरण, भौगोलिक वितरण, शैलकीय लक्षण, संचित जीवाश्म तथा आर्थिक महत्व निम्न स्तर विज्ञानी समुद्रों का-
1. धारवार, सिंहभूम, बस्तर, अरावली के महासंघ के पूर्व क्रेम्ब्रियन शैल ।
2. सासर, कड़प्पा, विन्ध्य, छत्तीसगढ़ महासंघ के पूर्व केम्ब्रियन शैल ।
3. साल्ट रेंज के पुराजीवी शैल एवं गोंडवाना महासंघ ।
4. स्पिटी, कच्छ, विचनापल्ली के मध्यजीवी महाकल्पीय शैल, डेक्कन ट्रेप्स और अन्तरट्रेपीय संस्तर ।
5. आसाम के तृतीयक शैल एवं शिवालिक संघ । हिम. नदीय युग, हिम नदीय युगों के कारण, व हिम-नदी स्थिति ।

इकाई-5 1. व्यक्तित्व एवं जीवाश्म समूहन में विभिन्नता, चित्रण, वर्गीकरण एवं क्रमबद्ध नामकरण ।

2. स्तरविज्ञान, पुरापारिस्थितिकी एवं पुरा-भूगोल के अध्ययन में जीवाश्मविज्ञान का महत्व ।

3. मोलस्का एवं ब्रेक्रियोपोडा जीवाश्मों की अकारिकी, पर्यावरण तथा भू-वैज्ञानिक वितरण ।

4. इकाइनोडरमेटा, आर्थोपोडा एवं एन्थोजोआ वर्ग के जीवाश्मों की आकारिकी, पर्यावरण तथा भू-वैज्ञानिक वितरण।

5. सूक्ष्मजीवाश्म विज्ञान एवं सूक्ष्मजीवाश्मों के अध्ययन की मूलभूत जानकारियाँ । पृष्ठरज्जुकधारी एवं पादप जीवाश्मों का संक्षिप्त अध्ययन ।

प्रायोगिक

1. प्राकृतिक स्थूलदर्शी नमूनों एवं कृत्रिम संरचनात्मक प्रादर्शों में संरचनाओं का सचित्र वर्णन ।
2. भू-वैज्ञानिक नक्शों में परिच्छेदिका, भू-वैज्ञानिक काट की रचना एवं विवेचना।
3. संरचनात्मक आंकड़ों के लिये स्टिरियोग्राफिक प्रक्षेपण की निर्मिती ।
4. स्थलाकृतिक मानचित्रों से आकार मितिक विश्लेषण ।
5. सैद्धांतिक पाठ्क्रम में शामिल जीवाश्म संघों के प्रमुख जीवाश्मों की आकारिकी का अध्ययन ।
6. भारत के मानचित्र पर मुख्य स्तर वैज्ञानिक एवं शैलविवर्तनिक इकाई का वितरण दर्शाना ।
7. मुख्य आग्नेय, अवसादी एवं कायान्तरित शैलों के स्थूलदर्शी नमूनों का अध्ययन ।
8. मुख्य आग्नेय, अवसादी एवं कायान्तरित शैलों के काटों का सूक्ष्मदर्शी अध्ययन ।

भू-वैज्ञानिक क्षेत्रीय अध्ययन :

10 दिवसीय भू-वैज्ञानिक मानचित्रण कार्य एवं आर्थिक खनिज निक्षेपों का अध्ययन ।
नमूना संग्रहण (अयस्क, शैल, जीवाश्मों के रूप में) एवं उनका विशेष अध्ययन ।

BOOKS RECOMMENDED : FOR PAPER II

1. Jurner, F.J. 1980 - Metamorphic Petrology, Megraw Hill, New York
2. Best, M.G. 1986 - Igneous Petrology - CBS Publication
3. Bose, M.K. 1997 - Igneous Petrology - World Press
4. Sengupta, S. 1997 - Introduction to sedimentology-oxford-IBH
5. Readings, H.G. 1996 - Sedimentary Environments, Blackwell
6. Bhattacharya, A. and Chakraborti, C. 2000 - Analysis sedimentary successions, Oxford
7. Ravindra Kumar - Statigraphi of India
8. S. Anantharaman - Palaeontology
9. Claskson, E.N.K. 1998 - Investitrate palaconlogy and evolution-IV edi., Blackwell
10. Boggs, Sam Jr. 1995 - Principles of sedimentology and statigraphy, practics hall.
11. Naqvi S.M. and Roger, J.J.W. 1987 - Pre. Geology of India, Oxford-uni Press.
12. Nordstorn, D.K. and Manoj, J.L. 1986 - Geochemical, Thermodynamics, Blackwell

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ANTHROPOLOGY

PAPER - I

ARCHAEOLOGICAL ANTHROPOLOGY

(Paper Code - 0865)

AIM : The main aim of this course is to introduce the students about the basic elements of Prehistoric Archaeology.

UNIT-I Meaning and scope of the different kinds of Archaeology : Classical Archaeology, Historical Archaeology, Prehistoric Archaeology and Protohistoric Archgeology as Anthropology, Differences between the Old world and New world Dating, Archgeology Traditions. Absolute Dating Relation Dating..

UNIT-II Geological time scale. The Great Ice Age. Stratigraphy and other evidences of Ice Age : River terraces, Moraines etc. Alpine and Himalayan glaciations. Pluvials and interpluvials, Stone Age tools : Types and Technology.

UNIT-III Age of palaeolithic savegery : European lower, plaeolithic period : Stone tools and culture, Indian lower Palaeolithic period : Sohan Culture, Madrasian Culture. European Middle Palaeolithic Period : Tools & culture. Flake took complex in India. European Upper Palaeolithic period ; Tools and Culture. Main characteristics of the European Palaeolithic Home and Cave art and its significance.

UNIT-IV Mesolithic complex in North Europe. Mesolithic complex in Western Europe. Mesolithic Culture in India. Chief feature of Neolithic revolution. Neolithic complex in India.

UNIT-V Metal Age : Copper, Bronze and Iron age : General feature of Urban revolution. The Chief characteristics and the decay of Indus valley civilization. Megalithic culture in India.

RECOMMENDED READINGS :

1. Auchin, B. and Allchire R. (1968) : The birth of Indian Civilization
2. Rorder, F. (1970) : The Old Stone Age
3. Burkitt, M. : The Stone Age
4. Burkitt, M. : Our Early Ancestors
5. Childe, V.G. (1970) : Man Makes Himself
6. Oakley, K.P. (1972) : Man the Tool maker
7. Shaprio, H.L. (Editor) : Man Culture and Society
8. Bhattacharya, D.K. : Prehistoric Archaeology
9. Misra, V.N. & M.S. mate (eds) : Indian Prechistory : 1964
10. Sankalia, H.D. : Prehistory and Portohistory of Indian & Pakistan
11. Wheeler, R.E.M. (1968) : The Indus civilization
12. Sankalia, H.D. (1964) : Stone Age Tools : Their Techniques Names & Functions.
13. मजूमदार डी.एन. तथा शरणजी : प्रागैतिहासिक
14. चौबे रमेश : पुरातात्विक मानवविज्ञान

PAPER - II

TRIBAL CULTURE OF INDIA

(Paper Code - 0866)

AIM : The main aim of this course is to introduce the students about the basic-cultural life of Indian tribes.

UNIT-I Define tribe and scheduled tribe, Geographical distribution of Indian tribes and their social and linguistic classification. Anthropological contribution in the study of Indian tribes. Sacred complex, Universalisation and parochialisation, Sanskritisation and westernisation dominant caste. Tribe & caste difference between S.C. and S.T. characteristic features. Primitive tribes of Chhattisgarh (Kamar, Birhor, Hill Korwa, Abujhmarh, Baisa)

UNIT-II Tribal economy : Hunting, food gathering, fishing, shifting and settled agriculture of property and ownership in tribal societies, problems of tribal people : land alienation, bonded labour, indebtedness, shifting, cultivation, irrigation, forest and tribals, unemployment, agricultural labour, the inter relationship of tribals with agricultural merchants, money lenders, excise officers and forest contractors, stage of tribal economy.

UNIT-III The problems of culture contact : problems due to urbanisation and industrialisation, regionalism economic and psychological folk traditions, tribal religion : origin & function, animistic, totemistic, concept and practices : Magic and witchcraft, shamanism, head hunting.

UNIT-IV Political and social organisation of Indian tribes : Political organisation of Indian tribes, Distinction between state and stateless society, law in primitive society, matriarchal and patriarchal family, lineage and clan. Ways of acquiring mates in tribal societies. Youth dormitories : Type, organisation and functions.

UNIT-V Tribal development : History of tribal development, the constitutional safeguards for the scheduled tribes, tribal problem : isolation, migration, acculturation, detribalizations, policies, plans and programmes of tribal development and their implements, tribal revolts in India, Response of the tribal people to the Governmental measures meant for them, the role of anthropology in tribal development.

PAPER - III

PRACTICAL

OBJECTIVES

The objective of this practical course is to introduce the students with the primitive material culture and technology used by primitive man and the students will be introduced with various techniques commonly used by social anthropology.

MATERIAL CULTURE :

PART-I Identification and technological descriptions of the following.

1. Implements for food gathering, hunting, fishing and agriculture.
2. Five making implements.
3. Types of habitations

4. Land and water transport

PART-II Sketching, identification and the description of palaeolithic, mesolithic and neolithic tools.

(It is essential that students should draw at least five tools of each age)

RESEARCH TOOLS :

Construction of schedules, Geneology and Questionnaire :

Each student should collect information through above tools from 05 Repodents.

The student will be required to maintain practical records of all work done in the practical class.

RECOMMENDED BOOKS :

1.	Beals, R. and Hoijar, N.	:	Introduction to Anthropology
2.	Leakey, L.S.B.	:	Adam's Ancestors
3.	Sankalia, H.L.	:	Prehistoric tools and their techniques
4.	Murdock, G.P.	:	Outlines of cultural material
5.	Shapiro, H.L. (Editor)	:	Man, culture and society (Eng. & Hindi)
6.	चौबे, रमेश	:	पुरातात्विक मानव विज्ञान
7.	विद्यार्थी व सिंग	:	भौतिक-संस्कृति के आदित्य चरण

RECOMMENDED READINGS :

1.	Bose, N.K.	:	Tribal India : National integration
2.	Bose, N.K.	:	Tribal life of India
3.	Elwin, V.	:	A new deal of Tribal India
4.	Fuchs, S.	:	The Aboriginal Tribes of India
5.	Government of India	:	Adivasi
6.	Ghurye, G.S.	:	The scheduled tribes
7.	Mamvria	:	Tribal demography
8.	Vidyarthi, L.P.	:	The tribal culture of India
9.	नदीम हसनैन	:	जनजातीय भारत
10.	Verma, R.C.	:	Indian tribes through ages
11.	उपाध्याय तथा शर्मा	:	भारत की जनजाति संस्कृति
12.	तिवारी शिवकुमार	:	मध्यप्रदेश की जनजातियाँ
13.	श्रीवास्तव, ए.आर.एन.	:	जनजाति विकास के चार दशक

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STATISTICS

PAPER - I (Paper Code - 0853)

STATISTICAL METHODS

UNIT-I Sampling from a distribution : Definition of a random sample, simulating random sample from standard distributions, concept of a derived distributions of a function of random variables. Concept of a statistic and its sampling distribution, Point estimate of a parameter, Concept of bias and standard error of an estimate. Standard errors of sample mean, sample proportion. Sampling distribution of sum of binomial, Poisson and mean of normal distributions. Independence of sample mean and variance in random sampling from a normal distribution (without derivation).

UNIT-II Statistical Tests and Interval Estimation : Null and alternative hypotheses, Types of errors, p-values, Statement of chi-square, t, and F statistics. Testing for the mean and variance of univariate normal distribution, testing of equality of two means and testing of equality of two variances of two univariate normal distributions. Related confidence intervals. Testing for the significance of sample correlation coefficient in sampling from bivariate normal distribution and for the equality of means and equality of variances in sampling from bivariate normal distributions.

UNIT-III Large Sample Tests : Use of central limit theorem for testing and interval estimation of a single mean and a single proportion and difference of two means and two proportions, Fisher's Z transformation and its uses. Pearson's chi-square test for goodness of fit and for homogeneity for standard distributions. Contingency table and test of independence in a contingency table.

UNIT-IV Nonparametric tests : Definition of order statistics and their distributions, Non-parametric tests, Sign test for univariate and bivariate distributions, Wilcoxon-Mann-Whitney test, Run test, Median test and Spearman's rank correlation test.

UNIT-V Four short notes, one from each unit will be asked. Students have to answer any two.

REFERENCES -

- Freund, J.E. (2001) : Mathematical Statistics, Prentice Hall of India.
- Goon A.M., Gupta M.K., Das Gupta B. (1991) : Fundamentals of Statistics, Vol. I, World Press, Calcutta.
- Hodges J.L. and Lehman E.L. (1964) : Basic Concepts of Probability and Statistics, Holden Day.
- Mood A.M., Graybill F.A. and Boes D.C. (1974) : Introduction to the Theory of Statistics, McGraw Hill.

ADDITIONAL REFERENCES -

- Bhat B.R. Srivenkatramana T and Rao Madhava K.S. (1997) : Statistics : A Beginner's Text, Vol. II, New Age International (P) Ltd.
- Rohatgi V.K. (1967) : An Introduction to Probability Theory and Mathematical Statistics, John Wiley & Sons.
- Snedecor G.W. and Cochran W.G. (1967) : Statistical Methods. Lowa State University Press.

PAPER - II (Paper Code - 0854)

A - SAMPLE SURVEYS

UNIT-I Sample Surveys, Concepts of population and sample, need for sampling, Census

and sample survey, basic concepts in sampling, organizational aspects of survey sampling, sample selection and sample size.

Some basic sampling methods - simple random sampling (SRS) with and without replacement.

UNIT-II Stratified random sampling, Systematic sampling, ratio and regression methods of estimation under SRS.

Non sampling errors, acquaintance with the working (questionnaires, sampling design, methods followed in field investigation, principal findings etc.) of NSSO, and other agencies undertaking sample surveys.

B - ANALYSIS AND DESIGN OF EXPERIMENTS

UNIT-III Analysis of variance for one way and two-way classifications.

Need for design of experiments, fundamental principles of design, basic designs- CRD, RBD, LSD and their analysis.

UNIT-IV Factorial designs - 2^n designs, illustrations, main effects and interaction effects and confounding in 2^3 design.

UNIT-V Four short notes, one from each unit will be asked. Students have to answer any two.

REFERENCES -

- Cochran W.G. and Cox G.M. (1957) : Experimental Designs, John Wiley and Sons.
- Das M.N. and Giri (1986) : Design and Analysis of Experiments, Springer Verlag.
- Murthy M.N. (1967) : Sampling Theory and Methods, Statistical Publishing Society, Calcutta.
- Sampath S. (2000) : Sampling Theory and Methods, Narosa Publishing House.
- Sukhatme B.V. (1984) : Sample Survey Method and its Applications, Indian Society of Agricultural Statistics.

ADDITIONAL REFERENCES-

- Des Raj (2000) : Sample Survey Theory, Narosa Publishing House.
- Goon A.M., Gupta M.K., Das Gupta B. (1986) : Fundamentals of Statistics, Vol.II, World Press, Calcutta.
- Kempthorne O. (1965) : The Design and Analysis of Experiments, Wiley Eastern.

PRACTICAL

1. Drawing random samples from standard univariate discrete and continuous distributions such as binomial, Possion, Normal, Cauchy and Exponential.
2. Tests of significance based on t, chi-square, F. Testing of significance of sample correlation coefficient, Use of Z transformation. Testing of equality of means and equality of variances in sampling from bivariate normal.
3. Large sample tests for means and proportions, tests of goodness of fit and independence of attributes in contingency tables.
4. Nonparametric Tests : Sign, Run, Median and Wilcoxon-Mann-Whitney tests, Selection of sample and determination of sample size, Simple random sampling, Stratified SRS, and systematic sampling, Allocation problems in stratified SRS, Ratio and Regression methods of estimation in SRS.
5. Analysis of variance for one-way and two-way classifications, Analysis of CRD, RBD, and LSD, Analysis of 2^2 and 2^3 factorial designs.

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DEFENCE - STUDIES

PAPER - I

WESTERN MILITARY HISTORY

(Paper Code - 0867)

Note : The aim of this paper is to give a historical, political & social back ground of the state engaged in the conflicts under study and the factors influencing the development of different forms of warfare and weapons system.

Note : Question will be set from each unit there will be only Internal choice.

UNIT-I Age of Valour

1. Military System of Greek; Tactics of Phalanx.
2. Alexander the Great and his reforms.
3. Military system of Roman; Tactics of Legion, Jullius Caesar.
4. Battle of Arbela 311 B.C.
5. Battle of cannae 216 B.C.

UNIT-II Age of chivalry

1. Emergence and decline of cavalry.
2. Battle of Adrianopole 378 A.D.
3. Battle of Hastings 1066 A.D.
4. Cavalry tactics of Zenghiz Khan.
5. Battle of Cracee 1346 A.D.

UNIT-III Age of Gun Powder & Steam

1. Impact of Gun Powder in war.
2. Contribution of Gustavas adolphus & Fredrik the Great.
3. The Revolution in tactics - Causes of war of american Independence 1775-83.
4. The Revolution in tactics - Causes of French Revolution.
5. Nepoleanic art of warfare and his military reforms.

UNIT-IV World War - I & II

1. First World War - Causes of W.W., Policies and Strategic plans of the powers.
2. Role of Air Force with reference to theory of Douhet.
3. Role of Navy with reference of theory of Mahan.
4. Second World War - Causes of W.W., Objective and Strategy of Allied and Axis forces.
5. Personalities of Rommel.

UNIT-V World War - II

1. Armament and Mechanical warfare with reference to the theories of J.F.C. Fuller and Liddell Hart.
2. Role of air power, weapons, doctrines, tactics.
3. Role of naval power, weapons, doctrine tactics.

4. Tactics of Second World War.
5. Advent of Nuclear weapons and their impact on warfare.

SELECTED READING :

1. Harkabi Y. : Nuclear war and Nuclear peace
2. Earl E.M. : Makers of Modern strategy.

PAPER-II

THEORY AND PRACTICE OF WAR

(Paper Code - 0868)

Aim : The aim of this paper it to acquaint the students with the concepts of theory and practice of war.

Note : Questions will be set from each unit and there will be only internal choice.

UNIT-I
1. Sunt Zu - Founderof MilitaryTheory and philosophy.
2. Clausewitz - War and its relationship with politics.
3. Macheavelli - Renaissance of Art of war.
4. Jomini- Concept of mass armies.

UNIT-II
1. Churchil.
2. Mahatma Gandhi.
3. Kautilya.
4. A. Hitler.

UNIT-III
1. Mao Tse Tung.
2. Che Guevara.
3. Economic and Psychological war.
4. Collective Security.

UNIT-IV
1. Indo-China War - 1962 Causes of war, political & military lesson.
2. Indo - Pak War - 1965 Causes of war, political & military lesson.
3. Indo - Pak War - 1971 Causes of war, political & military lesson.
4. Kargil Conflict 1999.

UNIT-V
1. Internal & External threats of National Security.
2. Insurgency and Counter-Insurgency.
3. Terrorism-Problem and Solution.
4. Naxalism - Problem and solution.

REFRENCE BOOKS :

1. Howard M. : Theory and Practice of war
2. ---,,--- : Clausewitz
3. Mao Tse Tung : Guerilla war fare
4. Palit, D.k. : The lightning War Tadit Yudh
5. Mankekar : War of 1971

6. आर.सी. जोहरी : पाश्चात्य सैन्य विचारक

7. शर्मा व निगम : सैन्य विचारक

PRACTICAL

There shall be a practical examination of 3.5 hours duration carrying 50 Marks. The division of marks shall be as follow :

(a) Exercise based on Map-reading : 15 marks

(b) T.W.E.S.T. : 15 marks

(c) Sessional work : 10 marks

(d) Viva-Voce : 10 markss

PART - A

Map-reading :

1. Scales - Definition, method of expressing, construction of simple, time, diagonal and comparative.
2. Relief and its representation.
3. Slopes and Gradient.
4. Visibility and inter-visibility by Gradient, proportionate and section method.
5. Re-section and inter-section.
6. Grid system-Map reference, Indexto map. Four figure and Six figure.

PART - B

7. Organisation and equipment of infantry Platoon and Section.
8. Section Formation.
9. Indication of Target by various methods.
10. Fire control order.
11. Patrols.
12. Battle Procedures (ROFT).
13. Verbal Order.
14. Message-Writing.

BOOKS RECOMMENDED :

1. Manual of Map Reading : London Her.
2. युद्ध स्थल कला : चौ. नरेन्द्र सिंह
3. एन.सी.सी. परिचय : विष्णु कान्त शर्मा

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INDUSTRIAL CHEMISTRY

PAPER - I **M.M. 34**

(Paper Code - 0871)

UNIT-I **Material Science :** Mechanical Properties of materials and change with respect to temperature. **02L**

Material of constructions used in Industry :

Metals and Alloys : Important metals & alloys; iron, copper, aluminium lead, nikel, titanium and their alloys- Mechanical and chemical properties and their applications. **06L**

Cement : Types of cement, composition, manufacturing process, setting of cement. **04L**

Ceramics : Introduction, Types, Manufacturing process, Applications. Refractories. **04L**

UNIT-II **Polymeric Mateials :** Industrial polymer and composite materials- Their constitution, Chemical and physical properties, Industrial applications. **06L**

UNIT-III **Glass :** Types, composition, manufacture, physical and chemical properties, Applications. **04L**

Corrosion : Various types of corrosion relevant to chemical Industry-Machanism, Preventive methods. **04L**

UNIT-IV **Pollution :** Air, Oxygen, nitrogen cycle, water, Biosphere, flora and fauna, Energy, soil. **05L**

Pollutants and their statutory limits, pollution evaluation methods. **04L**

UNIT-V Air pollution-various pollutants. water pollution-organic/inorganic pollutants, Noise pollution, sewage analysis, pesticide pollution, Radiation pollution, green house effect, future. **10L**

Books Recommended :

1. Pollution control in chemical & Allied Industries, S.P. Mahajan.
2. Poolution Control in Industries, A Sories of Books by Jones, H.P.
3. Air Pollution - Vol.1 to 4, Editor, STERN, A.C.; Academic Press.
4. Environmental Engineering, G.N. Pandey, Tata McGraw Hill.
5. Homd Book of Air Pollution, A. Parker, Tata McGraw Hill.
6. Science of Ceromic chemical Processing, Hench, L.L.
7. Science of Ceramics, Stewarts, G.H.
8. Chemistry of Cement.
9. Properties of Glass, Morcy, G.W.
10. Chemistry of Glasses, Paul, A.
11. Corrosion, causes & Prevention, Spellur, F.N.

PAPER - II **M.M. 33**

(Paper Code - 0872)

UNIT-I Unit processes in organic chemicals manufacture -

Nitration : Introduction - Nitrating agents, Kinetics and mechanism of nitration processes such as nitration of :

i. Paraffinic hydrocarbons
ii. Benzene to nitrobenzene and m-dinitrobenzene
iii. Chlorobenzene to o and p nitrochloro benzenes.

iv. Acetanilide to p-nitroacentanilide

v. Toluene

Continous vs batch nitration. **12L**

UNIT-II **Helogenation :** Introduction-Kintics of helogenation reactions reagents for helogenation, Helogenation of aromatics-side chain and nuclear helogenations, commercial manufacture of chlorobenzenes, chloral, monochloracetic acid and chloromethanes, dichloro fluormethane. **09L**

UNIT-III **Sulphonation :** Introduction-sulphonating agents, chemical and physical factors in sulphonation, Kinetics and mechanism of sulphonation reaction, commercial sulfonation of benzene, naphthalene, alkyl benzene, Batch vs continous sultphonation. **09L**

UNIT-IV **Effluent Treatment and waste Management :** Principles and equipments for aerobic, anaerobic treatment, adsorption, filtration, sedimentation. **09L**

UNIT-V Bag fillters, electrostatic precipitator, mist eliminators, wet scrubbers, absorbers, solid waste management, industrial safety. **09L**

Books Recommended :

1. Unit process in Organic synthesis P.M. Groggins, McGraw Hill.
2. Effluent Treatment in process Industries - Inst. of Cham. Engg.
3. Effluent Treatment and waste Disposal - Inst. of Chem. Engg.
4. Effluent Treatment and Disposal - Inst. of Chem. Engg.

PAPER - III **M.M. 33**

(Paper Code - 0873)

UNIT-I **Oxidation :** Introduction-Types of oxidation reactions, oxidizing agents, kinetics and mechanism of oxidation of organic compounds liquid phase oxidation, vapor phase oxidation, commercial manufacture of benzoic acid, maleic anhydride, phthalic anhydride, acrolein, acetaldehyde, acetic acid. **07L**

UNIT-II **Hydrogenation :** Introduction-Kenetics and thermo-dynamics of hydrogenation reactions, catalysts for hydrogenation reactions, hydrogenation of vegetable oil. manufacture of methanol from carbon monoxide and hydrogen, hydrogenation of acids and esters to alcohols, catalytic reforming. **07L**

Alkylation : Introducton; Types of alkylation, Alkylating agents, Thermodynamics and mechanism of alkylation reactions, manufacture of - alkyl benzenes (for detergent manufacture), ethyl benzene, phenyl ethyl alcohol, N-alkyl anilines (mono and di-methyl anilines) **03L**

UNIT-III **Esterification :** Introduction; Hydrodynamics and kinetics of esterification reactions, Esterification by organic acids, by addition of unsaturated compounds, esterification of carboxy acid derivaives, commercial manufacture of ethyl acetate, dioctyl phthalate, vinyl acetate, cellulose acetate. **04L**

Amination : (A) By reduction : Intoduction, Methods of reduction-metal and acid, catalytic, sulfide, electrolytic, metal and alkali sulfites, metal hydrides, sodium metal, concentrated caustic oxidation, reduction, commercial manufacture of aniline, m-nitroaniline, p-amino phenol.

(B) By aminolysis : Introduction, aminating agents, factors affecting. **09L**

Hydrolysis : Introduction; hydrolysing agents, kinetics, thermodyanics and mechanism of hydrolysis. **02L**

UNIT-IV **Procees Instrumentation :** concept of measurement and accurcy **12L**
Principle, construction and working of following measuring instruments.
Temperature : Glass thermometers, bimetallic thermometer pressure spring thermometer, vapour filled thermometers resistance thermometers. radiation pyrometers.
Pressure : Manometers, barometers, bourdon pressure gauge ; bellow type, diaphragm type pressure gauges, macleod gauges, pirani gauges, etc.

UNIT-V **Liquid level :** Direct-indirect liquid level measurement, Float type liquid level gauge, ultrasonic level gauges; bubbler system, density mesurement, viscocity measurement. **07L**

Books Recommended :

1. Unit process in organic synthesis, P.M. Groggins, McGraw Hill.
2. Industrial Instrumentation, Bekmen, D.P., John wrleys.
3. Applied Instrumentation in process Industries, Vol. I, II & III, Andrews, W.G., Gulf Publication.
4. Instrumentation and Control for the process Industries, Borer, S. Elsevier Applied Science Publishers.
5. Chemical Enggineer's Hand book, Perry, J.H. and Green, D. McGraw Hill.

Time : 4 Hours **PRACTICALS** **M.M. 50**

Unit Process : One to two examples of each of the following unit processes.
Nitration, sulphonation, friedel-crafts reaction, esterification, hydrolysis, oxidation, Halogenation, chloro-sulfhonation, reduction, polymerization, reactions of diazonium salts.
Instrumental methods of analysis : Use of colourimeter pH meter, potentiometer, conductometer, refractometer, polarimeter
Material testing : Testing of alloys identification of plastics/rubber estimation of yield point, young's modulus, flaredness; Optical, thermal mechanical and electrical properties.
Process Instrumentation : Transducers of different types. use of Tranducer for measuring flow control. Determinatiaon of flash point and ignition points of liquids.
Water analysis : Solid contents, Hardness, COD and other tests as per industrial specifications.
Flow measuring devices : Floats
Monographs of reprsentative raw materials such as sulphuric acid, toluene, sodium, carbonate, sodium hyroxide, carbon tetrachloride benzoic acid (5-6 compounds).
Limit tests for heavy metals Pb, AS, Hg, Fe and ash content.

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VOCATIONAL COURSE IN ELECTRONIC EQUIPMENT MAINTENANCE

SCHEME OF EXAMINANTION

		Max. Marks	Min. Pass Marks
Paper - I	Operational Principles of Audio	50	17
Paper - II	Microprocessor Based Instrumentation and Control	50	17
	Practicals	50	17

1. **SUBJECT OBJECTIVE :**

The objective of this syllabus is to familiarize students with the fundamentals of electronics and prepare him/her to keep in track with fast change in this field so that he/she is prepared to takenup advance studies or go for self employment. It is proposed to give the students an idea of basics of all the developments in the field of electronics. Efforts are directed to impart some knowledge of computer hardware and software too, which fall in the realu of electronics so that the students become aware of fast changing scene of information superhigh wey also.

2. **JOB POTENTIALS :**

The students in (by) taking up this course may find adequta job- opportunities in industries or manufacturing firms. They may opt for setting up their own small scale industries of electronics, thus enhancing self employment.

3. **Contents :**

As per attached syallbus.

4. Subject scheme.
5. On the job training will be imparted in Summer days.
6. As detailed out in the prospectus.
7. As per the draft given in the syllabus.
8. Permissible combination of subject Physics, Mathemetics & Electonic equipment mathematics.

PAPER - I

(Paper Code - 0859)

OPERATIONAL PRINCIPLES OF AUDIO AND VIDEO EQUIPMENTS M.M. 50

UNIT-I Revision of All and FH, communication bands, signal sources, Basic Principles of propagation of e.m. wave through atmosphere and ionosphere; ground waves, sky waves, space waves, dead zones etc.

RECEIVING ANTENNAE : Antenna Parameters like gain, radiation pattern, effective aperture. Ferrite AE. Type of antennae like wire, loop, dish, Yagi, telescopic, their construction and operating principles.

SUPERHETERODYNE RECEIVERS : Principles, advantages, block diagram, RF input and AE co upling arrangments, RF amplifiers, mixer, local oscillator, IF amp. detector, audio amplifier, loud speaker, power requirements, tuning/aligning of receivers, waveforms and voltages at different check points. Circuit reading of various radio sets, repair and trouole shooting, automobile radios.

UNIT-II **ELEMENTS OF A TELEVISION SYSTEM :** Picture transmission, sound transmission, picture reception, sound reception, synchronisation.

TYPE VIDEO SIGNAL : Scanning sequence details, sync details of the 625 line system, channel bandwidth, vestigial sideband transmission, reception of vestigial sidepand signals, frequency modulation, FH channel band-width, channel bandwidth for colour transmission, allocation of frequancy bands for television bandwidth for colour transmission, allocation or frequancy bands for television signel transmission, television standards.

Picture tubes- monochrome and colour : Beam deflection, face plate, picture tube charecteristics, picture tube circuit controls.

UNIT-III **TELEVISION RECEIVERS :** Types of television receivers, receiver sections, video detector, video section fundamantals, video emplifiers-design principles, video amplifier circuits, autometic gain control and noise cancelling circuits, syno seperation circuits, syno-processing and AFC circuits, deflection circuits, sound system, RF tuner, video IF amplifiers, receiver power supplies, television receiver antennae, colour television antennae.

TELEVISION APLICATIONS : Television broadcasting, cable television, closed circuit television, theatre television, picture phone and facsimile, video tape recording (VTr, television via satellite, TV games, HDTV, flatoanel TV teleconferancing.

UNIT-IV **TAPE RECORDERS :** Principles of magnanic recording, characteristies of magnetism, the hysterists loop, recording head, recorded wave-length, response of head during reply, the effect of gap length, low frequency loss, other losses, equalization, the effect of non-linear characeristic of magnification recording bias, A.C. bias, erasin the tape, block diagram of audio tape recorder.

Oscillator, preamplifier, dolby, amplifier, record (play back) head, erase head, tapes (metal polymer), mechanical transport system, stereo recording, double deck, single deck, microphones (RF, Cable), noise, maintenance of mechanial parts, head cleaners, head alignment, graphic equalisers.

UNIT-V **TELEPHONES :** Modulation, demodulation, modem, subscribar frequency allotment, channel organisation, signalling, svitching, manual exchanges, STD, ISD, EFABX, Intercom-stress on equipment and EPABX, Value added services like FAX E mail.

MEASURING INSTRUMENTS : Multimeters analog/digital, oscilloscopes, signal generators, noise and sound level meters, frequency counters, error sources and precautions during measurement.

GENERAL NOTE : Familiarisation with catalogues, standard specification, knowledge about companies referring to service manual.

PAPER - II

MICROPROCESSOR BASED INSTRUMENTATION AND CONTROL

(Paper Code - 0860)

M.M. 50

UNIT-I **MICROCOMPUTER FUNDAMENTALS :** Introduction, simplified microcomputer architecture, simplified memory organization, instruction set, simplified CPU

organisation, microcomputer operation, Personal computer organization and Word Processor.

Data sheet descriptions, pin diagram and function, microprocessor architecture, using the data/address register, using the stack pointer.

UNIT-II THE INTEL 8080/8085 MICROPROCESSOR : Introduction, the 8085 pin diagram and functions, the 8085 architecture, addressing modes, the 8080/8085 instructions set, the 8080/8085 date transfer instructions, the 8080/8085 arithmatic instructions, the 8080/8085 logical instructions, the 8080/8085 stack, I/O, and machine control instructions.

UNIT-III PROGRAMMING THE MICROPROCESSOR : Machine and assembly languages, simplified instruction set, instruction set, arithmetic operations, instruction set-logical operations, instruction set-date transfar operations, instruction set branch operations, instruction set-subroutne all and return operations, instruction set-miscellaneous operations, writing a program, addressing modes, program branching, program looping using subroutines.

Programming the 8080/8085 microprocessor : Introduction, straight-line programs, looping programs, mathematical programs.

UNIT-IV INTERFACING THE MICROFROCESSOR : Introduction, interfacing with ROM, interfacing with RAM, input/output interfacing basics, interfacing with practical I/O ports, synohronizing I/O data transfers using interrupts. address decoding.

UNIT-V Application to illustrate the use of microprocessor in :

(i) Traffic control

(ii) Tempereture control

(iii) Digital clock

(iv) Stepper motor control

(v) Washing machine control

PRACTICALS

A student is required to do atleast 12 experiments in an academic year, and one month Summer Training. The scheme of practical examination will be as follows :

(i) One experiment of 3 hours duration and one Month Summer Training.

(ii) Marks

Experiment	:	25 Marks
Sessional	:	10 Marks
One Month Summer Training	:	15 Marks
Total		**50 Marks**

* The marks for summer training will be awarded by the thachers teadhing the students on the basis of the certificate issued by the external supervisor of the summer training.

LIST OF PRACTICALS

1. Development of soldering skill by constructing a fewcircuits and testing.
2. PCB making.
3. Study of modulator.
4. Study of oscillator.
5. Tape recorder-testing, assembly and dis-assembly.
6. Radio receiver-testing.
7. Study of PA system and i.s. testing.
8. Study of EPABK, wiring and connectivity with telephone instruments.
9. Familiarisation with 8085 Based microprocessor trainer kit. Location of 8085, 8279, 8253 keyboard, display fields, EPROM Programmer, expansion s lot, TTY and serial lines.
10. Entering and executing an assembly language program, codes for insertion, deletion, memory move, block fill, setting and examining ragisters and memory, single step execution of a program.
11. Writing of a prgram to add. subtract and multiply two numbers stored in memory (nnnn & nnnn * 1) and place the result in the subsequent memory, (nnn * 2).
12. Writing of a program to test R.H. for errors by writing O's & 1's in altornaco location and reading it for chaecking.
13. Making of a board with a 3LED's and four switches to connect to the 8085 kit on the expansion slot (8279).
14. Making of a board with a 8 LED's and four switches to connect to the 8-85 kit on the expansion slot (8255).
    (a) Program the 8255 to glow/switch of LED's.
    (b) Program the 8255 to switch on and OFF the LED's every few second according to a given pattern (Hint : The pattern can be 01010101 and 10101010 or 001001100, or any other).

Reference Books :

1.	Fundamentals of acoustics	:	Kinsler & Frey
2.	System trouble shooting Handbook	:	Luces K, Faulken Berry (John Wiley & Sons)
3.	Monochrom & Colour Television	:	P.R. Gulati
4.	Television Engineering	:	Dhake
5.	Microprocessor	:	Gaonkar
6.	Microprocessor	:	B. Ram
7.	Microprocessor	:	Shaum Saries

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COMPUTER SCIENCE

PAPER - I

COMPUTER HARDWARE

(Paper Code - 0855)

Duration 3 hours **Max.Marks 50**

AIM - The emphasis in on the desing concepts & organisational details of the common PC, leauing the complicated electronics of the system of the computer Engineers.

OBJECT OF THE COURSE -

1. To introduce the overall organisation of the microcomputers.
2. To introduce the common peripheral devices used in computers.
3. To introduce the hardware components, use of micro processor and function of various chips used in microcomputer.

N.B. : Since the computer organisation study is very vast & complicated, so the study is restricted to only the description and understanding part, fence the paper setter is requested to keep this important factor in mind.

UNIT-I CLASSIFICATION AND ORGANIZATION OF COMPUTERS

Digital and analog computers and its evolution. Major components of digital computers; Memory addressing capability of CPU; word length and processing speed of computes. Microprocessors single chip microcomputers; large and small computers. Users interface Hardware software and firmware. multi programming multi user system. Dumb smart and intelligent terminals computer network and multi processing, LAN parallel processing. Flinn's classification of computers. Computer flow and data flow computers.

UNIT-II CENTRAL PROCESSING UNIT.

CPU organization, ALU control unit registers. Instructions for INTEL 8085, Instruction word size, Various addressing mode interrupts and exceptions, some special Control signals and I/O devices. Instruction cycle fetch and execute operation, time Diagram, data flow.

UNIT-III MEMORY OF COMPUTERS.

Main memory secondary memory, backup memory, cache memory; real and virtual Memory Semiconductor memory. Memory controller and magnetic memory; RAM; disks, optical disks Magnetic bubble memory; DASD, destructive and non destructive. readout. Program of data Memory and MMU.

UNIT-IV I/O DEVICES.

I/O devices of micro controller; processors. I/O devices, printer, plotter, other out put devices, I/O port serial data transfer scheme, Micro controller, signal processor, I/O processor I/O processor arithmetic processor.

UNIT-V SYSTEM SOFTWARE AND PROGRAMMING TECHNIQUE.

ML, AL, HLL, stac subroutine debugging of programs macro, micro programming, Program Design, software development, flow & chart multi programming, multiuser, multi tasking Protection, operating system and utility program, application package.

RECOMMENDED BOOKS :

1. Computer Fundamentals : Architecture and Organization - By B.Ram (Wilwy Eastern Ltd.)
2. Computers Today - By Donal H. Sanders
3. Computers Fundamental - By Rajaraman.
4. IBM PC - XT Clones - By Govinda Rajalu

PAPER - II

SOFTWARE

(Paper Code - 0856)

AIM - Introduction to the web-language-HTML & problem solving throgh the concept of object oriented programming.

OBJECT OF THE COURSE -

1. To introduce the internet & web related technology & learn the intricacies of web-page designing using HTML.
2. To introduce the object oriented programming concept using C++ language.
3. To introduce the problem solving methodology using the C++ programming features.

N.B. : Examiners are requested to prepare unit-wise Questions papers.

UNIT-I HTML BASICS & WEB SITE DESIGN PRINCIPLES

Concept of a Web Site, Web Standards, What is HTML? HTML Versions, Naming Scheme for HTML Documents , HTML document/file, HTML Editor , Explanation of the Structure of the homepage , Elements in HTML Documents ,HTML Tags, Basic HTML Tags, Comment tag in HTML, Viewing the Source of a web page, How to download the web page source? XHTML, CSS, Extensible Markup Language (XML), Extensible Style sheet language (XSL), Some tips for designing web pages, HTML Document Structure. HTML Document Structure-Head Section, Illustration of Document Structure,<BASE> Element,<ISINDEX> Element,<LINK> Element ,META, <TITLE> Element,<SCRIPT> Element ,Practical Applications, HTML Document Structure-Body Section:-Body elements and its attributes: Background; Background Color; Text; Link; Active Link (ALINK); Visited Link (VLINK); Left margin; Top margin, Organization of Elements in the BODY of the document: Text Block Elements; Text Emphasis Elements; Special Elements — Hypertext Anchors; Character-Level Elements; Character References ,Text Block Elements: HR (Horizontal Line); Hn (Headings) ; P (Paragraph); Lists; ADDRESS ; BLOCKQUOTE; TABLE; DIV (HTML 3.2 and up) ; PRE (Preformatted); FORM ,Text Emphasis Elements, Special Elements — Hypertext Anchors ,Character-Level Elements: line breaks (BR) and Images (IMG), Lists , ADDRESS Element, BLOCKQUOTE Element, TABLE Element, COMMENTS in HTML ,CHARACTER Emphasis Modes, Logical & Physical Styles, Netscape, Microsoft and Advanced Standard Elements List, FONT, BASEFONT and CENTER.

UNIT-II IMAGE, INTERNAL AND EXTERNAL LINKING BETWEEN WEBPAGES

Netscape, Microsoft and Advanced Standard Elements List, FONT, BASEFONT and CENTER Insertion of images using the element IMG (Attributes: SRC (Source),

WIDTH, HEIGHT, ALT (Alternative), ALIGN),IMG (In-line Images) Element and Attributes; Illustrations of IMG Alignment, Image as Hypertext Anchor, Internal and External Linking between Web Pages Hypertext Anchors ,HREF in Anchors ,Links to a Particular Place in a Document ,NAME attribute in an Anchor ,Targeting NAME Anchors ,TITLE attribute, Practical IT Application Designing web pages links with each other, Designing Frames in HTML. Practical examples.

UNIT-III INTRODUCTION TO OOP

Advantages of OOP, The Object Oriented Approach, Characteristics of object oriented languages- Object, Classes, Inheritance, Reusability, Polymorphism and C++.

Function: Function Declaration, Calling Function, Function Defines, Passing Argument to function, Passing Constant, Passing Value, Reference Argument, returning by reference, Inline Function, Function Overloading, Default Arguments in function.

UNIT-IV OBJECT CLASSES AND INHERITANCE

Object and Class, Using the class, class constructor, class destructors, object as function argument ,copy constructor ,struct and classes , array as class member, Static Class Data, Static Member Functions, , Friend function, Friend class, operator overloading. Type of inheritance, Base class, Derive class. Access Specifier: protected. Function Overriding, member function, String, Template Function.

UNIT-V POINTERS AND VIRTUAL FUNCTION

pointers: & and * operator pointer variables, .pointer to pointer, void pointer,pointer and array, pointer and function, pointer and string, memory management, new and delete, pointer to object, this pointer Virtual Function: Virtual Function, Virtual member function, accesses with pointer,pure virtual function

File and Stream: C++ streams, C++ Manipulators, Stream class, string I/O, char I/O, Object I/O, I/O with multiple object, Disk I/O,

RECOMMENDED BOOKS :

1. Introduction to HTML : Kamlesh Agarwala, O.P.Vyas, Prateek A. Agrawala (Kitab Mahal Publication)
2. Let us C++ : Y. Kanetkar B.P.B Publication
3. Programming in C++ : E. Balaguruswami
4. Mastering in C++ : Venu Gopal
5. Object Oriented Programming in C++ : Lafore R, Galgotia Publications.

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ELECTRONICS

PAPER - I (Paper Code - 0857)

DIGITAL ELECTRONICS M.M. 50

UNIT-I Number Systems : Binary numbers, binary to decimal conversion, decimal to binary conversion, Binary additions, binary substraction, L'S Complements, 2S Complements, binary multiplication and division, Octal and Hexadecimal numbers, BCD code and gray cone. Logic Gates : OR, AND, NOT NAND, NOR, X OR X-NOR gates, positive and nigative logic, universal building blocks.

UNIT-II Booleam Algebra : De Morgan's theorem, Laws and theorems of Boolean algebra, sum of product and product of sums sumplification, equivalence between AND, OR AND NAND-NAND and equivalence between OR-AND, AND NOR-NOR networks. Karnaugh map simplification.

Arithmetic circuits : Half and full adders, half and full substractors, binary adders, 8421 adders, 2's complement adder Subractor.

UNIT-III Logic familiers : Various logic families RTL, DTL, TTL, ECL, MOS, I^2L, (MOS) and their characteristics, basic gates used in these families. Flip flop, D flip flop, JK flip flops, possitive and negative edgetriggered flip flops, JK master slave vlip lop, idea of astable and monostable multivibrators.

UNIT-IV Registers and counters : Data register, shiuft registers, synchronous counter, ripple counter, up-down counter, ring counter, decade counter. A/D and D/A converters : basic D/A converters, Ladder method, counter methods of A/D converter.

UNIT-V Memoris : Volatile and Non-Volatile memories, ROM, PROM, EPROM, RAM, dynamic and static RAMS floppy disc. Microprocessor : Interoduction to a microprocessor, and popular digital IC's of 8085 family. INTEL 8085-A-Architecture and pin out diagrams, The programme, CPU, Processing of instruction inside a CPU, Timing in CPU, CPU used in a system, Instruction set for 8085 Microprocessor.

PAPER - II (Paper Code - 0858)

ELECTRONIC INSTRUMENTS M.M. 50

UNIT-I **Regulated Power Supplies :** Power supply characteristics, Zener regulator, series voltage regulator, series regulator with pass transistor to large load currents, Shunt regulator, idea of Darlington pair, Regulator with Op-amp, inverting, non-inverting, Amplifiers, Zener reference, IC regulated circuits (IC 78XX series).

Regulator features : Current l.imiting, short circuit shut down, fold back, precision regulator.

UNIT-II CRO : Block diagram, basic operation, electro-static focussing, electrostatic deflection, screens for CRT, CRT circuits, Horizontal defelection system, Sweep generator, Synchronizing the wave, vertical deflection system, vertical amp., Lissajous figures, frequency and phase measurement, Introduction to storage CRO, dual trace dual beam, samp CRO.

UNIT-III Signal Generators : Sweep frequency Gerenator, pulse and aquare wave generator, pulse charactoristics and terminoloty, astable multivibrator, block diagram of pulse generation function, 555 timer for frequency generation, Blocking Oscillator wave generator, Introduction to IC 8038 as omplete function generator.

UNIT-IV O Meter : Basic circuit; Measuring methods, direct series and parallel connections, sources of errors, Electronic Voltmeter, D.C. Voltmeter direct coupled amp. and

Chopper type D.C. amp., A.C. Voltmeter, true RMS responding Voltmeter, multirange voltmeter sensitivity.

Power meter : Single phase, double phase and three phase Watt-meter Watt hour meter.

Digital Voltmeter: LED's digital display seven segment display, integrating DVM, Ramp DVM, Stair case Ramp, Successive approximation DVM, Sample and hold circuits.

UNIT-V Analog/Digital Multimeter : Analog multimeter, AC and DC measurment, conversion of analog output to digital form (A/D), Dual ramp A/D converter, digital measuring system, multimeter block diagram, voltage, current and resistance measurments.

Frequency counter : Elements of electronic counter, decade counting assembly temperature compensated prystal oscillator, universal counter, measurement modes; frequency measurement, period measurement, time interval measurement, measurement errors : gating errors, time base error, trigger level error.

ELECTRONICS

PRACTICAL M.M. 50

Antudent is required to do ntleast 14 experiments in an academic year. ---- setl---- of Practical examination will be as follows :

(i) One Experiment in 3 hours.

(ii) Marks :

Experiment	-	30
Viva-Voce	-	10
Sessional	-	10
Total	**-**	**50**

1. Sqare Wave response of amplifer.
2. Verification of :
   (i) Truth tables of basic logic gates. (ii) De Morgens theorem.
3. Study of half adders and full adders using IC's.
4. Study of RS flip flops.
5. Study of JK Master slave flip flop.
6. Study of the decade counter and divided by N. circuits.
7. Study of D/A Converter.
8. Study of A/D Converter.
9. Study of OP Amp : inverting and non invertind amplifiers of different gains.
10. Study of OP-Amp adder, subtractor, integrator and differentiator.
11. Study of IC regulated power supply.
12. Study of astable and distable multivibrator using 555 timer.
13. Study of 8083 based function generator.
14. Addition of two binary number with microprocessor (8035).
15. Data transfer from memory to register and vice versa using 8085 microprocessor.
16. Study of frequency by Wien's bridge.

Note : Other experiments of equal standard may also be set.

REFERENCES :

1. Microprocessor by Gaonkar
2. Electronic & Electrical Instruments by Sawhoe
3. Fundamental of Microprocessors by B. Ram
4. Digital Electronics by R.P. Jain
5. Digital Electronics by Flloyd

INFORMATION TECHNOLOGY

PAPER - I

DIGITAL CIRCUITS & COMPUTER H/W

(Paper Code - 0874)

UNIT-I (A) Number Systems :

Octal and hexadecimal number, decimal rep., complements, addition, subtraction, multiplication, division, fixed point rep, floating point rep., other binary code-gray code, excess 3 gray, excess-3, 2421, etc. error detection code.

(B) Boolean Algebra :

Laws, demorgan's theorm, Simplification boolean expression & logic diagram, positive & negative logic, K-map and simplification of K-map.

UNIT-II Combinational circuits :

Half adder, full adder, flip-flop : SR, JK, D,T, sequential circuits : encoder, decoder, multiplexer, shift resister, binary counters, BCD adder.

UNIT-III Multivibrator circuits :

Monostable, astable, bistable, smitt trigger, clocked RS, master-slave flip-flop, edge triggered flip-flop, latch.

Intergrated circuits :

RTL, DITL, TTL, CMOS, MOS.

UNIT-IV (A) Central Processing Unit :

Introduction, register organisation, stack organisation, Instruction formats, Addressing modes.

(B) I/O organisatin :

I/O interfaces, Data transfer, types and modes, interrupts, DMA, IOP.

UNIT-V Memory organisation :

Memory hierarcy, main memory, Auxiliary memory, Associative memory, cache memory, virtual memory, memory management techniques.

REFERENCE TAXT BOOK :

1. Integrated Electronics - Millman & Halkias
2. Principle of Electronics - V.K. Mehta
3. Digital Electronics - R.P. Jain
4. Computer System Architecture - Morris Mano
5. Digital Electronics & Computer Hardware - Morris Mano

PAPER - II

(Paper Code - 0875)

UNIT-I Ingroduction to OPP : Advantages of OPP, the Object oriented approach, characteristics of object oriented languages : object, classes, inheritance, reusability, polymorphism and C++.

UNIT-II Function : function declaration, calling function, function definition, passing arguments to function, passing constant, passing value, fegerence argument, returning by reference, inline function, function overloading, default arguments in function.

UNIT-III Object and olasses, using the olasses, olass construotor, class destructor, object as function argument, copy constructor, struct and classes, array as class member, static class data, static member funotions, friend funotion, friend class, operator overloading, type of inheritance, bass class derive class, access percifier, protectedc, member function.

UNIT-IV Pointers : & and * operator pointer variables, pointer to pointer, void pointer, pointer and array, pointer and functions, pointer and string, memory management, new and delete, pointer to object, this pointer, virtual function : virtual function, virtual member function, accesses with pointer, pure virtual function.

UNIT-V File and stream : C++ steams, C++ manipulators, Stream class, string I/O, char I/O; object I/O, I/O with multiple objects, disk I/O.

REFERENCE TEXT BOOKS :

1. Programming in C++ - E. Balaguruswami
2. Mastering in C++ - Venu Gopal
3. Object Oriented Programming in C++ - Robert Lafore
4. Let us C++ - Y. Kanetkar

PRACTICAL WORK

1. The sufficient Practical work should be done for understanding the paper 2.
2. At least five programs on each unit from unit 2 to unit 5 be prepared.
3. All practical works should be prepared in form of print outs and be valuated while practical examination.

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INDUSTRIAL MICROBIOLOGY

Paper	Title	Time	Marks
First	Environmental Microbiology and Biostatistics	3 hrs.	50
Second	Microbial Physiology and Immunobiotechnology	3 hrs.	50
	PRACTICAL Examination	4 hrs.	50
	(including sessionals)		(40+10)

Note : During Two months Summer Vacation, students will visit some Industries. He/She will submit "Summer Job-Training Report" in B.Sc. IIrd Year Viva Voce Exam.

PAPER - I

ENVIRONMENTAL MICROBIOLOGY AND BIOSTATISTICS M.M.50

(Paper Code - 0876)

UNIT-1 Our environment : Soil, water and air. Concept of environment in relation to microbes. Environment included physiological adaptations in microorganisms. Nature of microbial population in soil, water and air. Biogeochemical cycling - Carbon, Nitrogen, Sulphur and Phosphorus.

UNIT-2 Population interactions : Neutralism, Commensalism, Synergism, Mutualism, Antagonistic relationships. Mycorrhizal associations. VAM and its importance.

UNIT-3 Nitrogen fixation by symbiotic and non-symbiotic microorganisms. Use of microorganisms as biofertilizers. Mass cultivation of Rhizobium and Azotobacter. Use of blue-green algae as biofertilizers.

UNIT-4 Liquid waste disposal. Nature of domestic and municipal waste and sewage. Sewage treatment. Solid waste disposal. Methods of disposal of Agricultural waste.

UNIT-5 Basic idea of probability, normal, binomial and poisson distribution. Mean, Mode and Median. Chi-Square test. Exponential and Logarithemic Functions.

PRACTICALS

1. Isolation of Microorganisms from Air.
2. Isolation of Microorganisms from Water.
3. Isolation of Microorganisms from soil.
4. Determination of MPN of faecal contaminants in water.
5. Measurment & confirmation of E. coli in water sample.
6. Biochemical tests for identification of enteric bacteria.
7. Study of Rhizobium from root nodules.
8. Study of symbiotic and non-symbiotic blue-green algae.
9. Problems based on the determination of Mean, Madian and Mode.
10. Problems on Chi-Square Test.
11. Experiments to demonstrate Symbiotic, Antagonistic acticvities and relations amongst microbes and their interactions with plants.

RECOMMENDED BOOKS :

1. Introduction to Soil Microbiology by Martin Alexander.
2. General Microbiology by Pelczar, Reid & Chan.

3. Biofertilizers in Agriculture by N.S. Subba Rao.
4. Statistics by Mishra & Mishra.
5. General Microbiology, Vol. II, by Power & Daginawala.

PAPER - II

MICROBIAL PHYSIOLOGY AND IMMUNABIOTECHNOLOGY M.M. 50

(Paper Code - 0877)

UNIT-1 Diffusion, gaseous exchange, Osmosis, Plasmolysis, Biochemical properties of membernes, Passive and Active trnaport mechanism. Role of ionophores, group translocation across the memberanes.

UNIT-2 Photosynthetic microbes, Osygenic and non-oxygenic reaction centre. Electron transport, Photophosphorylation, Calvin Cycle. Photorespiration and its significance. Effect of various factors on rate of photosynthesis.

UNIT-3 Respiration mechanisms - Breakdown of carbohydrates through glycolysis, Kreb's cycle. Fermentation. Pentose Phosphate Pathway. Fermentation of alcohol, Citric acid and acetic acid.

UNIT-4 Methanogens and Methylotrophs. Sulphur utilizing bacteria. Sulphate reduction pathway. Economic importance of Methylotrophs and sulphur utilizing bacteria.

UNIT-5 History and Scope of immunology, Types of immunity. Antigen-Antibody reactions. Immunoglobulins - Structure and functions.

Production of Vaccines and Monoclonal antibodies.

PRACTICAL O_2

1. Isolation of photosynthetic bacteria and cyanobacteria from soil.
2. Isolation and characterisation of Methanogens.
3. Study of Hydrogen-production by bacteria.
4. Measurement of nitrate uptake by microorganisms.
5. Study of nitrate and nitrite reduction by microorganisms.
6. Demonstration of evolution during photosynthesis.
7. Demonstration of plasmolysis, osmosis, active and passive transport mechanism.
8. Testing of Blood Groups.
9. Titration of Antigen and Antibody.
10. Precipitation reaction of antigens and antibodies.

BOOK RECOMMENDED :

1. Cell Biology by Pawar.
2. General Microbiology, Vol. II, by Power and Daginawala.
3. Immunology by Davis.
4. Immunology by G.P. Talwar.

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BIOCHEMISTRY

PAPER - I

ENZYMOLOGY M.M. 50

UNIT-I INTRODUCTION

History, general characteristics, nomenclature, IUB enzyme classification (rationale, over view and specific examples), significance of numbering system. Definitions with examples of holoenzyme, apoenzyme, coenzymes. cofactors, activators, inhibitors, active site (identification of groups excluded), metallo-enzymes, units of enzyme activity, specific enzymes, Isoenzymes, monomeric enzymes, oligomeric enzymes and multienzyme complexes. Enzyme specificity.

Hostorical perspective, nature of non-enzymatic and enzymatic catalysis. Measurement and expression of enzyme activity-enzyme assays. Definition of IU, Katal, enzyme turn over number and specific acitivity. Role of non-protein organic molecules and inorganic ions coenzyme, prosthetic groups. Role of vitamins as coenzymes precursors (general treatment).

UNIT-I ENZYME CATALSIS

Role of cofactors in enzyme catalysis : NAD/NADP+, FMN/FAD, coenzyme A, biocytin, cobamide, lipoamide, TPP, pyridoxal phosphate, tetrahydrofolate and metal ions with special emphasis on coenzyme functions. Acid-base catalysis, covalent, proximity and orientaton effects, strain and distortion theory. Mechanism of action of chymotrypsin, carboxypeptidase, ribonuclease and lysozyme.

UNIT-III ENZYME PURIFICATION

Methods for isolation, purification and characterization of enzymes.

UNIT-IV ENZYME KINETICS

Factors affecting enzyme activity : enzyme concentration, substrate concentration, pH and temperature. Derivation of Michaelis-Menten equation for uni-substrate reactions. Km and its significance. Line weaver-Burk plot and its limitations. Importance of K_{cat}/K_m. Bi-substrate reactions-brief introduction to sequential and ping-pong mechanism with examples.

Kinetics of zero and first order reactions. Significance and evaluation of energy of activation and free energy.

Reversible and irreversible inhibition, competitive, non-competitive and uncompetitive inhibitions. determination of K_m & V_{max} in presence and absence of inhibitor. Allosteric enzymes.

UNIT-V INDUSTRIAL AND CLINICAL APLLICATION OF ENZYME.

Immobilization of enzyme and their industrial applications. Production of glucose from starch, cellulose and dextran; use of lactase in dairy industry; production of glucose-fructose syrup from sucrose; use proteases in food, detergent and leather industry; medical application of enzymes. use of glucose oxidase in enzyme electrodes.

PAPER - II

INTERMEDIARY METABOLISM M.M. 50

UNIT-I INTRODUCTION TO METABOLISM

General features of metabolism, experimental approaches to study metabolism; use of intact organism, becterial mutants, tissue slices, stable and radioactive isotopes.

CARBOHYDRATE METABOLISM

Reactions and energetics of glycolysis. Alcoholic and lactic acid fermentations. Entry of fructose, galactose, mannose etc. Reactions and energetics of TCA cycle. Gluconeogenesis, glycogenesis and glycogenolysis, Reactions and physiological signifacance of pentose phosphate pathway. Regulation of glycolysis and TCA cycle. Photosynthesis, a brief review.

UNIT-II ELECTRON TRANSPORT CHAIN AND OXIDATIVE PHOSPHORYLATION

Structure of mitochondria, sequence of electron carriers, sites of ATP production, inhibitors of electron transport chain. Hypothesis of mitochondrial oxidative phosphorylation (basic concepts). Inhibitors and uncouplers of oxidative phosphorylation. Transport of reducing potentials into mitochondria.

UNIT-III LIPID METABOLISM

Introduction, hydrolysis of triacylglycerols, transport of fatty acids into mitochondria. β – oxidation of saturated fatty acids, ATP yield from fatty acid oxidation. biosynthesis of saturated and unsaturated fatty acids. Metabolism of ketone bodies, oxidation of unsaturated and odd chain fatty acids. Biosynthesis of triglycerides and important phospholipids, glycolipids, sphingolipids and cholesterol. Regulation of cholesterol metabolism.

UNIT-IV AMINO ACID METABOLISM

General reactions of amino acid metabolism : transmination, oxodative deamination and decarboxylation. Urea cycle. Degradation and biosynthesis of amino acids. Glycogenic and ketogenic amino acids.

UNIT-V NUCLEOTIDE METABOLISM

Sources of the atoms in the purine and pyrimidine molecules. Biosynthesis and degradation of purines and pyrimidines. Regulation of purine and pyrimidine biosynthesis.

PORPHYRIN METABOLISM

Biosynthesis and degradation of porphyrins. Production of bile pigments.

PRECTICAL

1. Separation of Blood Plasm and Serum
   a. Estimation of proteins from serum by biuret and lowry methods.
   b. Determination of albumin and A/G ratio in serum.
2. Estimation of bilirubin (conjugated and unconjugated) in serum.
3. i. Estimation of total lipids in serum by vanillin method.

ii. Estimation of cholesterol in serum.

4. Estimation of lipoproteins in plasma.

5. Estimation of lactic acid in blood before and after exercise.

6. Estimation of blood urea nitrogen from plasma.

7. Separation and identification of amino acids by (a) paper chromatography and (b) thin-layer chromatography.

8. Separation of polar and non-polar lipids by thin-layer chromatography.

9. Estimation of SGPT and SGOT in serum.

10. a. Assay of serum alkaline phosphatase activity.

    b. Inhibition of alkaline phosphatase activity by EDTA.

    c. Effect of substrate concentration on alkaline phosphatase activity and determination of its K_m value.

11. a. Effect of temperature on enzyme activity and determination of activation energy.

    b. Effect of pH on enzyme activity and determination of optimum pH.

    c. Effect of enzyme concentration on enzyme activity.

12. a. Preparation of starch from potato and its hydrolysis by salivary amylase.

    b. Determination of achromatic point in salivary amylase.

    c. Effect of sodium chloride onamylases.

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BIOTECHNOLOGY

PAPER - I

MOLECULAR BIOLOGY & BIOPHYSICS M.M. 50

UNIT-I 1. DNA : Structure, types and replication

2. RNA : Structure, and type and Function

3. Structure of gene, old and new concept.

UNIT-II 1. Genetic code : Properties, codon assignment, Secondary genetic code,

2. Protein synthesis.

3. Mitochondrial genome.

4. Chloroplast genome

UNIT-III 1. Gene Therapy

2. Transposable elements.

3. DNA damage and repair

4. Tissue engineering : General Concept

UNIT-IV 1. Law of Thermodynamics.

2. Beer lambert's law

3. Radioisotopes techniques.

4. Autoradiography

UNIT-V 1. Biophysics Introduction, scope and application

2. Principle, structure, functions of the following

a.	Spectroscopy	b.	Electrophoresis
c.	Centrifugation	d.	Colorimeter
e.	Chromatography	f.	ELISA

List of Books :

1. C.B. Power-Cell Biology, First Edition (2005), Himalaya Publishing House.
2. Gerald Karp - Cell and Molecular biology, 4th Edition (2005).
3. Lewis J.Klein Smith and Valerie M.Kish-Principles of cell and molecular biology-Third Edition (2002)
4. P.K. Gupta- Cell and molecular biology, Second Edition (2003), Rastogi publications.
5. Tortora, Funke and Case-Microbiology : An introduction 6th Edition (1998), Binjamin/ Cummings Publishing Co.
6. Richard M-Twyaman-Advanced Molecular Biology, First South Asian Edition (1998), Viva Books Pvt. Ltd.
7. K. Wilson and J.Walker :Principle and Techniques of Biotechnology and Molecular Biotechnology.
8. Upadhya and Upadhya : Biophysical Chemistry.
9. David, I. Nelson and Michael M.Cox : Lehniger : Principal of Biochemistry 4th Edition. W.H. Freeman and Company, New York.

PAPER - II

RECOMBINANT DNA TECHNOLOGY

M.M. 50

UNIT-I
1. Scope and aim of the Biotechnology.
2. Recombinant DNA Technology : General concept and Application. Strategies of recombinant DNA technology in Prokaryotes.
3. Restriction Enzymes : End O nublease (type, Nomenclature, Restriction, Sequence, and Cleavage Pattern).
   a. Modification of cut ends.
   b. Steps in gene cloning
   d. Isolation of the desired gene.
4. cDNA Library, Genomic Library.

UNIT-II
1. Vectors (Animal and Plant vectors)
2. Bacteriophage Vectors
3. Introduction of vectors into apropriate host.

UNIT-III
1. PCR:- Procedure (denaturation, Annealing, extension)
2. Types of PCR
3. Applications Advantages and Limitation of PCR.

UNIT-IV
1. Monoclonal Antibodies : Structure, Production, Application.
2. In vitro fertilization and embryo transfer.
3. Genome map and Genome Project.
5. Apoptosis.

UNIT-V
1. Stem cell technology
2. Targeted Gene Transfer
3. DNA fingerprinting
4. Transgenic animals and Plants.

List or Books :

1. B.D. Singh (2004) Biotechynology, Expanding Horizons. First Edition. Kalyani Publishers, Ludhiana.
2. P.K. Gupta (2005) Biotechnology and Genomics, Rastogi Publication, Meerut.
3. Stan bury and Whittaker - Principles of Sterilization techniques, First Indian reprint Edition (1997). Aditya Book (P) Ltd. New Delhi.
4. L.E. Casida- Industrial Microbiology Edition (1994).
5. A.H. Patel - Industrial Microbiology 4th Edition (2003)
6. K.S. Bilgrami and A.K. Pandey - Introduction to Biotechnology Edition 2nd (1998)
7. U Satyanarayan Biotechnology, First Edition (2005) Books and Allied (P) Ltd. Kolkata.
8. Atul kumar and Vandana A.Kumar (2004) Plant Biotechnology and tissue culture, Principle and Perspectives, International Books Distributing Co. Luchnow.

PRACTICAL LIST :

1. Isolation of DNA.
2. Isolation RNA.
3. Estimation of DNA from Plant Cells.
4. Laminar Flow, Autoclave, Oven Incubator water bath Quebec colony counter, Centrifuge, Spectrophotodmeter, Electrophoresis, Camera Lucida.
5. Experiments (at least - two) on the basis of electrophoresis.

SCHEME FOR PRACTICAL EXAMINATION

Time : 4 hrs. M.M. : 50

1.	DNA Isolation	10 marks
2.	RNA Isolation	10 marks
3.	Practical based on Biophysics	10 marks
4.	Spotting based on paper I and II (5 spots) at least two from each paper	10 marks
5.	Viva - Voce	05 marks
6.	Record / Sessional	05 marks

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पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़)

पाठ्यक्रम

बी.एस.सी. भाग-3 (कोड-303)

B. Sc. Part - III (Code - 303)

परीक्षा : **2016-17**

कुलसचिव पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़) की ओर से

PT. RAVISHANKAR SHUKLA UNIVERSITY RAIPUR (C.G.)

REVISED ORDINANCE NO. 21

BACHELOR OF SCIENCE

1. The three year course has been broken up into three Parts. Part-I known as B.Sc. Part-I examination at the end of the first year, Part-II known as B.Sc. Part-Ii examination at the end of the second year and Part-III known as B.Sc. Part-III examination at the end of the third year.

2. A candidate who after passing (10+2) Higher Secondary or Intermediate examination of C.G. Board of Secondary Education Bhopal or any other Examination recognised by the University or C.G. Board of Secondary Education as equivalent thereto, has attended a regular course of study in an affiliated College or in the Teaching Department of the University for one academic year shall be eligible for appearing at the B.Sc. Part-I examination.

3. A candidate who, after passing the B.Sc.-I examination of the University or any other examination recognised by the University as equivalent thereto, has attended a regular course of study for one academic year in an affiliated college or in the Teaching Department of the University shall be eligible for appearing at the B.Sc. Part-II examination.

4. A candidate who, after passing the B.Sc. Part-Ii examination of the University, has completed a regular course of study for one academic year in an affiliated college or in the Teaching Department of the University shall be eligible for appearing at the B.Sc. Part-III examination.

5. Besides regular students, subject to their compliance with this Ordinance ex-student and non-collegiate candidates shall be permitted to offer only such subjects/papers as are taught to the regular student at any of the University Teaching Department or College.

6. Every candidate appearing in B.Sc. Part-I, Part-II and Part-III examination shall be examined in -

   (i) Foundation Course :

   (ii) Any one of the following combinations of three subjects :-

      1. Physics, Chemistry & Mathematics.
      2. Chemistry, Botany & Zoology.
      3. Chemistry, Physics & Geology.
      4. Chemistry, Botany & Geology.
      5. Chemistry, Zoology & Geology.
      6. Geology, Physics & Mathematics.
      7. Chemistry, Mathematics & Geology.
      8. Chemistry, Botany & Defence Studies.
      9. Chemistry, Zoology & Defence Studies
      10. Physics, Mathematics & Defence Studies.
      11. Chemistry, Geology & Defence Studies
      12. Physics, Mathematics & Statistics
      13. Physics, Chemistry & Statistics
      14. Chemistry, Mathematics & Statistics.
      15. Chemistry, Zoology & Anthropology.
      16. Chemistry, Botany & Anthropology.
      17. Chemistry, Geology & Anthropology.
      18. Chemistry, Mathematics & Statistics.

19. Chemistry, Anthropology & Defence Studies.
20. Geology, Mathematics & Statistics.
21. Mathematics, Defence Studies & Statistics
22. Anthropology, Mathematics & Statistics
23. Chemistry, Anthropology & Applied Statistics
24. Zoology, Botany & Anthropology
25. Physics, Mathematics & Electronics.
26. Physics, Mathematics & Computer Application
27. Chemistry, Mathematics & Computer Application
28. Chemistry, Bio-Chemistry & Pharmacy
29. Chemistry, Zoology & Fisheries.
30. Chemistry, Zoology & Agriculture
31. Chemistry, Zoology & Sericulture
32. Chemistry, Botany & Environmental Biology
33. Chemistry, Botany & Microbiology
34. Chemistry, Zoology & Microbiology
35. Chemistry, Industrial Chemistry & Mathematics
36. Chemistry, Industrial Chemistry & Zoology
37. Chemistry, Biochemistry, Botany
38. Chemistry, Biochemistry, Zoology
39. Chemistry, Biochemistry, Microbiology
40. Chemistry, Biotechnology, Botany
41. Chemistry, Biotechnology, Zoology
42. Geology, Chemistry & Geography
43. Geology, Mathematics & Geography
44. Mathematics, Physics & Geography
45. Chemistry, Botany & Geography

(iii) Practical in case prescribed for core subjects.

7. Any candidate who has passed the B.Sc. examination of the University shall be allowed to present himself for examination in any of the additional subjects prescribed for the B.Sc. examination and not taken by him at the degree examination. Such candidate will have to first appear and pass the B.Sc. Part-I examination in the subjects which he proposes to offer and then the B.Sc. Part-II and Part-III examination in the same subject. Successful candidates will be given a certificate to that effect.

8. In order to pass at any part of the three year degree course examination an examinee must obtain not less than 33% of the total marks in each subject/ group of subjects. In subject/ group of subjects where both theory and practical examination are provided an examinee must pass in both theory and practical parts of the examination separately.

9. Candidate will have to pass separately at the Part-I, Part-II and Part-III examinations. No division shall be assigned on the result of the Part-I and Part-II examination. In determining the division of the final examination, total marks obtained by the examinees in their Part-I, Part-II and Part-III examination in the aggregate shall be taken in to account. Provided in case of candidate who has passed the examination through supplementary examination having failed in one subject/ group only, the total aggregate marks being carried over for determining the division shall include actual marks obtained in the subject/ group in which he appeared at the supplementary examination.

10. Successful examinee at the Part-III examination obtaining 60% or more marks shall be places in the First Division, those obtaining less than 60% but not less than 45% marks in the Second Division and other successful examinees in the Third Division.

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In clause 6(ii) after serial No. 41, 42-45 inserted. Approved in 23rd Co-Ordination committee Dated 15-01-2014.

B. Sc. Part - III

विषय–सूची

SCHEME OF EXAMINATION

Subject		Paper	Max. Marks	Total Marks	Min. Marks
(A)	Compulsory Subject Foundation Course				
	1) Hindi Language	I	75	-	26
	2) English Language	I	75	-	26
(B)	Three Elective Subject :				
2.	Chemistry	I	33		
		I	33	100	33
		III	34		
		Practical		50	17
1.	Physics	I	50		
		I	50	100	33
		Practical		50	17
3.	Mathematics	I	50		
		I	50	150	50
		III	50		
4.	Botany	I	50		
		I	50	100	33
		Practical		50	17
5.	Zoology	I	50		
		I	50	100	33
		Practical		50	17
6.	Geology	I	50		
		I	50	100	33
		Practical		50	17
7.	Statistics	I	50		
		I	50	100	33
		Practical		50	17
8.	Anthropology	I	50		
		I	50	100	33
			Practical	50	17
9.	Inde. chemistry	I	34		
		I	33	100	33
		III	33		
		Practical		50	17

Subject	Paper		Max. Marks	Min. Marks
10. Defence Studies	I	50	100	33
	I	50		
	Practical		50	17
11. Micro Biology	I	50	100	33
	I	50		
	Practical		50	17
12. Electronics	I	50	100	33
	I	50		
	Practical		50	17
13. I.T.	I	50	100	33
	I	50		
	Practical		50	17
14. Computer Science	I	50	100	33
	I	50		
	Practical		50	17
15. Biochemistry	I	50	100	33
	I	50		
	Practical		50	17

USE OF CALCULATORS

The Students of Degree/P.G. Classes will be permitted to use of Calculators in the examination hall from annual 1986 exammination on the following conditions as per decision of the standing committee of the Academic Council at its meeting held on 31-1-1986.

1. Student will bring their own Calculators.
2. Calculators will not be provided either by the University or examination centres.
3. Calculators with, memoty and following variables be permitted +, -, x, , square, reciprocal, expotentials log, square root, trignometric functions, wize, sine, cosine, tangent etc. factiorial summation, xy, yx and in the light of objective approval of merits and demerits of the viva only will be allowed.

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आधार पाठ्यक्रम

हिन्दी भाषा

(पेपर कोड-0891)

प्रथम प्रश्न पत्र **पूर्णांक - 75**

(बी.ए., बी.एस.सी., बी.एच.एस-सी., बी.काम., तृतीय वर्ष के पुनरीक्षित एकीकृत आधार पाठ्यक्रम एवं पाठ्य सामग्री का संयोजन 2000-2001 से लागू है)

।। सम्प्रेषण कौशल, हिन्दी भाषा और सामान्य ज्ञान ।।

आधार पाठ्यक्रम की संरचना और अनिवार्य पाठ्य पुस्तक- हिन्दी भाषा एवं समसामयिकी- का संयोजन इस तरह किया गया है कि सामान्य ज्ञान की विषय वस्तु- विकासशील देशों की समस्याओं- के माध्यम और साथ-साथ हिन्दी भाषा का ज्ञान और उसमें सम्प्रेषण कौशल अर्जित किया जा सके । इसी प्रयोजन से व्याकरण की अन्तर्वस्तु को विविध विधाओं की संकलित रचनाओं और सामान्य ज्ञान की पाठ्य सामग्री के साथ अन्तर्गुम्फित किया गया है । अध्ययन-अध्यापन के लिए पूरी पुस्तक की पाठ्य सामग्री है और अभ्यास के लिये विस्तृत प्रश्नावली है । यह प्रश्नपत्र भाषा का है अत: पाठ्य सामग्री का व्याख्यात्मक या आलोचनात्मक अध्ययन अपेक्षित नहीं है । पाठ्यक्रम और पाठ्य सामग्री का संयोजन निम्नलिखित पाँच इकाइयों में किया जाता है । प्रत्येक इकाई को दो भागों में विभक्त किया गया है ।

इकाई - 1 **(क) भारत माता :** सुमित्रानंदन पंत, परशुराम की प्रतीज्ञा : रामधारी सिंह दिनकर, बहुत बड़ा सवाल : मोहन राकेश, संस्कृति और राष्ट्रीय एकीकरण : योगेश अटल ।

(ख) कथन की शैलियाँ : रचनागत उदाहरण और प्रयोग ।

इकाई -2 (क) विकासशील देशों की समस्यायें, विकासात्मक पुनर्विचार, और प्रौद्योगिकी एवं नगरीकरण ।

(ख) विभिन्न संरचनाएँ ।

इकाई - 3 (क) आधुनिक तकनीकी सभ्यता, पर्यावरण प्रदूषण तथा धारणीय विकास ।

(ख) कार्यालयीन पत्र और आलेख ।

इकाई - 4 (क) जनसंख्या : भारत के संदर्भ में और गरीबी तथा बेरोजगारी ।

(ख) अनुवाद ।

इकाई - 5 (क) ऊर्जा और शक्तिमानता का अर्थशास्त्र ।

(ख) घटनाओं, समारोहों आदि का प्रतिवेदन और विभिन्न प्रकार के निमंत्रण-पत्र ।

मूल्यांक योजना : प्रत्येक इकाई से एक-एक प्रश्न पूछा जायेगा । प्रत्येक प्रश्न में आंतरिक विकल्प होगा । प्रत्येक प्रश्न के 15 अंक होंगे । प्रत्येक इकाई दो-दो खंड (क्रमश: 'क' और 'ख' में) विभक्त है, इसलिए प्रत्येक प्रश्न के भी दो भाग, (क्रमश: 'क' और 'ख') होंगे । 'क' अर्थात पाठ एवं सामान्य ज्ञान से संबद्ध प्रश्न के अंक 8 एवं 'ख' अर्थात भाषा एवं सम्प्रेषण कौशल से संबद्ध प्रश्न के अंक 7 होंगे । इस प्रकार पूरे प्रश्न पत्र के पूर्णांक 75 होंगे ।

PART - II

(Paper Code-0892)

ENGLISH LANGUAGE M.M. 75

The question paper for B.A./B.Sc./B.Com./B.H.Sc. III Foundation course, English Language and General Answers shall comprise the following items :

Five question to be attempted, each carrying 3 marks.

UNIT-I Essay type answer in about 200 words. 5 essay type question to be asked three to be attempted. 15

UNIT-II Essay writing 10

UNIT-III Precis writing 10

UNIT-IV (a) Reading comprehension of an unseen passage 05

(b) Vocabulary based on text 10

UNIT-V Grammar Advanced Exercises 25

Note : Question on unit I and IV (b) shall be asked from the prescribed text. Which will comprise of popular create writing and the following items. Minimum needs housing and transport Geo-economic profile of M.P. communication Educate and culture. Women and Worm in Empowerment Development, management of change, physical quality of life. War and human survival, the question of human social value survival, the question of human social value, new Economic Philosophy Recent Diberaliation Method) Demoration docontralisation (with reference to 73, 74 constitutional Amendment.

Books Prescribed :

Aspects of English Language And Development - Published by M.P. Hindi Granth Academy, Bhopal.

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CHEMISTRY

The new curriculum will comprise of Three papers of 33,33, & 34 marks each and Practical work of 50 marks. The curriculum is to be completed in 180 working days as per the UGC norms & conforming to the directives of the Govt. of Chhattisgarh. The theory papers are of 60 hrs. each duration & the practical work of 180 hrs. duration.

PAPER - I (Paper Code-0895)

INORGANIC CHEMISTRY M.M. 33

UNIT-I METAL-LIGAND BONDING IN TRANSITION METAL COMPLEXES

Limitations of valence bond theory, an elementary idea of crystal field theory, crystal field splitting in octahedral, tetrahedral and square planar complexes, factors affecting the crystal field parameters.

Thermodynamic and kirietic aspects of metal complexes.

A brief outline of thermodynamic stability of metal complexes and factors affecting the stability, subsititution reactions of square planar complexes.

UNIT-II MAGNETIC PROPERTIES OF TRANSITION METAL COMPLEXES

Types of magnetic behaviour, methods of determining magnetic susceptibility, spin only formula, L-S coupling, correlation of μs and μ eff. values, orbital contribution to magnetic moments, application of magnetic moment data for 3d metal complexes.

Electronic spectra of Transition Metal Complexes.

Types of electronic transitions, selection rules for d-d transitions, spectroscopic ground states, spectro-chemical series. Orgel-energy level diagram for d^1 and d^2 states, discussion of the electronic spectrum of $[Ti(H_2O)_6]^{3+}$ complex ion.

UNIT-III ORGANOMETALLIC CHEMISTRY

Definition, nomenclature and classification of organo metallic compounds. Preparation, properties, bonding and applications of alkyls and aryls of Li, Al, Hg, Sn, & Ti, A brief account of metal-ethylenic complexes and homogeneous hydrogenation, monouclear carbonyls and nature of bodning in metal carbonyls.

UNIT-IV BIOINORGANIC CHEMISTRY

Essential and trace elements in biological processes, metalloporphyrins with special reference to hemoglobin and myoglobin. Biological role of alkali and alkaline earth metals with special reference to Ca^{21}, nitrogen fixation.

UNIT-V HARD AND SOFT ACIDS AND BASES (HSAB) 07 HRS.

Classification of acids and bases as hard and soft. Perason's HSAB concept, acid-base strength and hardness and softness. Symbiosis

Silicones and Phosphazenes

Silicons and phosphazenes as examples of inorganic polymers, nature of bonding in triphosphazenes.

REFERENCE BOOKS :

1. Basic Inorganic Chemistry, F.A. Cotton, G. Wilkinson and P.L. Gaus, Wiley
2. Concise Inorganic Chemistry, J.D. Lee, ELBS.
3. Concepts of models of Inorganic Chemistry, B. Douglas, D. McDaniel and J. Alexander, John Wiley
4. Inorganic Chemistry, D.E. Shriver, P.W. Atkkins and C.H. Langford, Oxford.

5. Inorganic Chemistry, W.W. Porterfield, Addison-Wesley.
6. Inorganic Chemistry, A.G. Sharp, ELBS.
7. Inorganic Chemistry, G.L. Miessler and D.A. Tarr, Prentice Hall.
8. Advanced Inorganic Chemistry, Satyas Prakash.
9. Advanced Inorganic Chemistry, Agarwal & Agarwal.
10. Advanced Inorganic Chemistry, Puri & Sharma, S. Naginchand
11. Inorganic Chemistry, Madan, S. Chand & Co.
12. Adhunik Akarbanic Rasayan, A.K. Shrivastav & P.C. Jain, Goel Pub.
13. Ucchattar Akarbanic Rasayan, Satya Prakash & G.D. Tuli, Shyamlal Prakashan
14. Ucchattar Akarbanic Rasayan, Puri & Sharma.

PAPER - II (Paper Code-0896)

ORGANIC CHEMISTRY M.M. 33

UNIT-I A. ORGANICMETALLIC COMPOUNDS

Organomegenesium compounds : Grignard reagents-formation, structure and chemical reactions. Organozinc compounds : formation and chemical reactions. Organolithium compounds : formation and chemical reactions.

B. Organosulphur Compounds

Nomenclature, structural features, methods of formation and chemical reactions of thiols, thioethers, sulphonic acids, sulphonamides and sulphaguanidine.

Organic Synthesis via Enolates

Active methylene groupalkylation of diethylmalonate and ethyl acetoacetate. Synthesis of ethyl acetoacetate : the Claisen condensation. Keto-enol tautomerism of ethyl acetoacetate.

UNIT-II BIOMOLECULES

A. Carbohydrates :

Configration of monosaccharides, threo and erytho diastereomers. Formation of glycosides ethers and esters Determination of ring size of monosaccharides. Cyclic structure of D(+) glucose. Structure of ribose and deoxyribose. An introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination.

B. Proteins and Nucleic acids

Classification and structure of protein levels of protein structure, protein denaturation / renaturation, Constituents of amino acids Ribonucleicsids and ribouncleotieds, double helical structure of DNA.

UNIT-III A. Synthetic Polymers

Addition or chain growth polymerization. Free radical vinyl polymerization, Ziegler-Natta polymerization, Condensation or Step growth polymerization, Polyesters, polyamides, phenols- formaldehyde resins, urea- formaldehyde resins, epoxy resins and polyurethanes, natural and synthetic rubbers.

B. Synthetic Dyes

Colour and constitution (Electronic Concept). Classification of Dyes. Chemistry of dyes. Chemistry and synthesis of Methyl Orange, Congo Red, Malachite Green, Crystal Violet, Phenolphthalein, fluorescein, Alizarine and Indigo.

UNIT-IV SPECTROSCOPY

A. Mass spectroscopy : mass spectrum fragmentation of functional groups.

B. InfraRed Spectroscopy : IR absorption Band their position and intensity, Identification of IR spectra.

C. UV-Visible Spectroscopy : Beer Lambert's law, effect of Conjugation max Visible spectrum and colour.

D. Anthocyanin as natural colouring matter (Introduction only)

E. Application of Mass, IR, UV-Visible Spectroscopy to organic molecules.

UNIT-V A. NMR Spectroscopy : Introduction to NMR. Shielding and Number of signal in PMR, Chemical shift and characteristic values, spiltting of Signals and Coupling constant. Application to organic molcules.

B. ^{13}**CMR Spectroscopy :** Principal & Application.

C. Magnetic Resonance Imaging (MRI)- Introductory idea.

REFERENCE BOOKS :

1. Organic Chemistry, Morrison and Boyd, Prentice-Hall
2. Organic Chemistry, L.G. Wade Jr., Prentice-Hall
3. Fundamentals of Organic Chemistry, Solomons, John Wiley
4. Organic Chemistry, Vol.I, II, III, S.M. Mukherjee, S.P. Singh and R.P. Kapoor, Wiley-Eastern (New-Age)
5. Organic Chemistry, F.A. Carey, McGraw Hill
6. Introduction to Organic Chemistry, Streiweisser, Heathcock and Kosover, Macmillan
7. Organic Chemistry, P.L. Soni
8. Organic Chemistry, Bahi & Bahl
9. Organic Chemistry, Joginder Singh
10. Carbanic Rasayan, Bashi & Bahi
11. Carbanic Rasayan, R.N. Singh, S.M.I. Gupta, M.M. Bakodia & S.K. Wadhwa
12. Carbanic Rasayan, Joginder Singh.
13. Carbanic Resayan, P.L., Soni.
14. Corbanic Rasayan, Bhagchandani, Sahitya Bhawan Publication.
15. Rasayan Vigyan, Bhatnagar, Arun Prakashan.

PAPER - III (Paper Code-0897)

PHYSICAL CHEMISTRY **M.M. 34**

UNIT-I QUANTUM MECHANICS

Black body radiation, Plank's radiation law, photoelectric effect, Compton effect. DeBroglie's idea of matter waves, experimental verification Heisenberg's uncertainty principle, Sinosoidal wave equation, Operators : Hamiltonian operator, angular momentum operator, laplacian operators postulate of quantum mechanics Eigen values, Eigen function. Schrodinger time independed wave equation physical significance of and . Applications of schrodinger wave equation : particle in one dimensional box Hydrogenation (separation into three equation's) radial wave function and angular wave function.

UNIT-II QUANTUM MECHANICS-II

Quantum mechanical approach of molecular orbit theory; basic idea criteria for forming M.O and A.O, LCAO approximation, formation of H^{2+} ion, calculation of energy levels from wave functions bonding and antibonding wave functions concept of and

orbitals and their characteristics, Hybrid orbital : SP, SP^2, SP^3, Calculation of coefficients Ad^s used in these hybrid orbitals.

Introduction to valence bond model of H^2, Comparison of M.O. and V.B. model, Huckle theory, application of huckel theory to ethane propene etc.

UNIT-III SPECTROSCOPY-I

A. Introduction, characterization of electromagenetic radiation, regions of the spectrum, representation of spectra width and intensity of spectral transition, rotational spectra of calculated diatomic molecules, energy level of rigid rotator, selection rule, determination of bond length qualitative description of non - rigid rotator isotopic effect.

B. Vibrational spectra - Fundamental vibrational and their symmetry, vibrating diatomic molecules, enegy levels of simple harmonic oscillator. Selection Rule, Pure vibrational Spectrum, determination of force constant, diatomic vibrating operator. Anhormonic Oscillator.

C. Raman Spectra : Concept of polarizability, quantum theory of Raman spectra stokes and anti stokes lines pure rotational and vibrational Raman spectra, Application of Raman spectra stokes and anti stokes lines, pure rotational and vibrational Raman apectra, Applications of Raman spectra.

UNIT-IV SPECTROSCOPY-II

A. Electronic Spectra : Electronic Spectra of diatonic molecule, Frank London principle, types of electronic transitions. Applications of electronic spectra.

B. Photo-chemistry : Interaction of radiation with matter, difference between thermal and photochemical processes. Laws of photochemistry. Grothus-Drapper law, Stark-Elinstein law, Jablonski diagram depicting various process occurring in the excited state, qualitative description of fluorescence, occurring in the excited state, qualitative descripiton of fluorescence, phosphorescence, non-radiative processes (internal conversion, intersystem crossing), quantum yield photosensitized reactions energy transfer processes (simple examples).

UNIT-V A. Thermodynamics

Energy refered to absolute zero, third law of therodynamics Test of III law of thermodynamics Nerst heat theorem application and limitation of Nerst heat theorem.

B. Physical properties and molecular structure : polarization of molecules, {Classius-Mosotti equation. orientation of dipoles in an electric field. Dipol moment, induced dipole moment, measurement of dipole moment. Temperature methods and refractivity methods. Dipole moment and molecular structure.

C. Magnetic Properties : Parmagenetism diamagnetism, ferromagnetism. Determination of magnetic susceptibility, elucidation of molecular structure.

REFERENCE BOOKS :

1. Physical Chemistry, G.M. Barrow, International student edition, McGaw Hill
2. Basic programming with application, V.K. Jain, Tata McGraw-Hill
3. Computers & Common sense, R. Hunt & Shelly, Prentice-Hall
4. University general chemistry, C.N.R. Rao, Macmillan.
5. Physical Chemistry, R.A. Alberty, Wiley Eastern
6. The elements of Physical Chemistry, P.W. Atkin, Oxford

7. Physical Chemistry through problems, S.K. Dogra & S. Dogra, Wiley Eastern
8. Physical Chemistry, B.D. Khosla
9. Physical Chemistry, Puri & Sharma
10. Bhoutic Rasayan, Puri & Sharma
11. Bhoutic Rasayan, P.L. Soni
12. Bhoutic Rasayan, Bahl & Tuli

PAPER-IV

LABORATORY COURSE **180 Hrs.**

Inorganic Chemistry

Synthesis Analysis

(a) Preparation of Sodium trioxalato ferrate (III), $Na_3[Fe(C_2O_4)_3]$ and determination of its composition by permanganometry.
(b) Preparation of Ni-DMG complex, $[Ni(DMG)_2]$
(c) Preparation of copper tetraammine complex, $[Cu(NH_3)_4]SO_4$.
(d) Preparation of cis-and trans-bioxalato diaqua chromate (III) ion.

Gravimetric Analysis

Analysis of Cu as CuSCN or CuO, Ni as $Ni(DMG)_2$, Ba as $BaSO_4$ and Fe as Fe_2O_3

Organic Chemistry

Laboratory Techniques

A Steam Distillation
Napthalene from its suspension in water
Clove oil from cloves
Separation of ortho and para-nitrophenols.

B Column Chromatography
Separation of fluorescein and methylene blue
Separation of leaf pigments from spinach leaves
Resolution of recemic mixture of (+,-) mandelic acid.

Qualitative Analysis

Analysis of an organic mixture containing two solid components using water, $NaHCO_3$, NaOH for separation and preparation of suitable derivatives.

Synthesis of Organic Compounds

(a) Acetylation of salicylic acid, aniline, glucose and hydroquinone. Benzoylation of aniline and phenol.
(b) Aliphatic electrophilic substitution- Preparation of iodoform form ethanol and acetone.
(c) Aromatic electrophilic substitution-
Nitration-Preparation of m-dinitrobenzene, p-nitroacetanilide
Halogenation- Preparation of p-bromoacetanilide, 2,4,6 tribromophenol
(d) Diazotization/Coupling- Preparation of methyl orange and methyl red
(e) Oxidation- Preparation of benzoic acid from toluene
(f) Reduction- Preparation of aniline from nitrobenzene, m-nitroaniline from m-dinitrobenzene.

Physical Chemistry

Electrochemistry

(a) To determine strength of given acid conductometrically using standard alkali solution.
(b) To determine solubility and solubility product of a sparingly soluble electrolyte conductometrically.

(c) To study saponification of ethyl acetate conductometrically.

(d) Determine the ionization constant of a weak acid conductometrically.

(e) To titrate potentionmetrically the given ferrous ammonium sulphate using $KMnO_4/K_2Cr_2O_7$ as titrant and calculate the redox potential of Fe^{2+}/Fe^{3+} system on the hydrogen scale.

Refractometry and Polarimetry

(a) To verify law of refraction of mixtures (e.g. of glycerol and water) using Abbe's refractometer.

(b) To determine the specific rotation of a given optically active compound.

Molecular Weight Determination

(a) Determination of molecular weight of a non-volatile solute by Rast method/Beckmann freezing point method.

(b) Determination of the apparent degree of dissociation of an electrolyte (e.g., NaCl) in aqueous solution at different concentrations by ebullioscopy.

Colorimetry

To verify Beer-Lambert law for $KMnO_4/K_2Cr_2O_7$ and determine the concentration of the given solution of the substance.

REFERENCE BOOKS :

1. Vogel's qualitative Analysis, revised, Svehla, Orient Longman
2. Standard methods of chemical analysis, W.W. Scott, The Technical Press
3. Experimental Organic Chemistry, Vol. I & II, P.R. Singh, D.S. Gupta and K.S. Bajpai, tata McGraw Hill.
4. Laboratory Manual in Organic Chemistry, R.K. Bansal, Wiley Eastern
5. Vogel's Text Book of Practical Organic Chemistry, B.S. Furnis, A.J. Hannaford, V. Rogers, P.W.G. Smith and A.R. Tatchel, ELBS
6. Experiments in general chemistry, C.N.R. Rao & U.C. Agrawal
7. Experiments in Physical Chemistry, R.C. Das & Behra, Tata McGraw Hill
8. Advanced Practical Physical Chemistry, J.B. Yadav, Goel Publishing House.

8 Hrs. PRACTICAL EXAMINATION M.M.50.

Five experiments are to be performed.

1. Inorganic - Two experiments to be performed.
   Gravimetric estimation compulsory carrying 08 marks. (Manipulation 3 marks).
   Anyone experiment from synthesis and analysis carrying 04 marks.
2. Organic-Two experiments to be performed.
   Qualitative analysis of organic mixture containing two solid components.
   compulsory carrying 08 marks (03 marks for each compound and two marks for separation).
   One experiment from synthesis of organic compound (Single step) carrying 04 marks.
3. Physical-One physical experiment carrying 12 marks.
4. Sessional 04 marks.
5. Viva Voce 10 marks.

In case of Ex-Students one mark each will be added to Gravimetric analysis and Qualitative analysis of organic mixture and two marks in Physical experiment.

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PHYSICS

Objectives :

Present course is aimed to provide ample knowledge of basics of Physics which are relevant to the understanding of modern trends in higher physics.

The first paper is aimed at preparing the back ground of modern physics which includes the relativistic and quantum ideas mainly councerned with atomic, molecular and nuclear physics. It consistutes an essential pre-requisite for better understanding of any branch of physics.

The second paper is mainly concerned with Solid State Physics, Solid State Devices and Electronics. This course is quite important from the applicational aspects of modern electronic devices. It also forms the basis of advance electronics including communication technology to be covered at higher level.

The experiments are based mostly on the contents of the theory papers so as to provide comprehensive insight of the subject.

Scheme of Examination :

1. There shall be two theory papers of 3 hours duration each and one practical paper of 4 hours duration. Such paper shall carry 50 marks.
2. Each theory paper will comprise of 5 units. Two questions will be in each unit and the student will have the choice to answer one out of the two.
3. Numerical problems of about 30 percent will compulsorily be asked in each theory paper.
4. In practical paper each student has to perform two experiments during examination.
5. Practical examination will be of 4 hours duration. The distribution of practical marks will be as follows.

   Experiments : 15 + 15 = 30, Viva-voce :10

   Internal Assessment - 10.

PAPER - I (Paper Code-0893)

RELATIVITY, QUANTUM MECHANICS, ATOMIC MOLECULAR AND NUCLEAR PHYSICS.

UNIT-I Reference systems, inertial frames, Galilean invariance and conservation laws, propogation of light, Michelson-Morley experiment, search for ether.

Postulates for the special theory of ralativity, Lorentz tranformations, length contraction,time dilation, velocity additon theorem, variation of mass with velocity, mass-energy equivalence, particle with zero rest mass, Compton effect.

UNIT-II Origin of the quantum theory : Failure of classical physics to explain the phenomena such as black-body spectrum, photoelectric effect.

Wave-particle duality and uncertainty principle : de Broglie's hypothesis for matter waves : the concept of wave and group velocities, evidence for diffraction & interference of particles, experimental demonstration of mater waves. Davisson and Germer's experiment.

Consequence of de Broglie's concepts, quantisation in hydrogen atom, energies of a particle in a box, wave packets.

Consequence of the uncertainty relation : gamma ray microscope, diffraction at a slit.

UNIT-III Quantum Mechanics : Schrodinger's equation. Postulatory basis of quantum mechanics, operators, expectation values, transition probabilities, applications to particle in a one- and three dimensional boxes, harmonic oscillator in one dimension, reflection at a step potential, transmission across a potential barrier.

Hydrogen atom : natural occurrence of n, and m quatum numbers, the related physical quantities.

UNIT-IV Spectra of hydrogen, deuteron and alkali atoms spectral terms, doublet fine structure, screening constants for alkali spectra for s,p, d and f states, selection rules.

Discrete set of elctronic energies of moleculers, quantisation of vibrational and rotational energies, determination of internuclear distance, pure rotatinal and rotation vibration spectra. Dissociation limit for the ground and other electronic states, transition rules for pure vibration and electronic vibration spectra.

Raman effect, Stokes and anti-Stokes lines, complimentary character of Raman and infrared spectra, experimental arrangements for Raman spectroscopy.

UNIT-V Interaction of charged particles and neutrons with mater, working of nuclear detectors, G-M counter, proportional counter and scintillation counter, cloud chambers, spark chamber, emulsions.

Structure of nuclei, basic properties (, μ Q and binding energy), deuteron binding energy, p-p and n-p scattering and general concepts of nuclear forces, Beta decay, range of alpha particle Geiger-Nuttal law. Gamow's explanation of beta decay, alpha decay and continuous and discrete spectra.

Nuclear reactions, channels, compound nucleus, direct reaction (concepts). Shell model & liquid drop model, fission and fusion (concepts), energy production in stars by p-p and carbon cycles (concepts).

TEXT AND REFERENCE BOOKS :

1. H.S. Mani and G.K. Metha : "Introduction to Modern Physics"'' (Affiliated East-West Press, 1989)
2. A Beiser, "Prospective of Modern Physics"
3. H.E. White, Introduction to Atomic Physic"
4. Barrow, "Introduction to Molecular Physics!"
5. R.P. Feynman, R.B. Leighton and M Sands, "The Feynman Lectures on Physics", Vol.III (B.I. Publications, Bombay, Delhi, Calcutta, Madras).
6. T.A. Littlefield and N Thorley, "Atomic and Nuclear Physics" (Engineering Language Book Society)
7. H.A. Enge, "Introduction to Nuclear Physics", (Addision-Wesly)
8. Eisenberg and Resnik, "Quantum Physics of Atoms, Molecules, Solids, Nuclei and Particles" (John Wiley)
9. D.P. Khandelwal, "Optics and Atomic Physics", (Himalaya Publishing House, Bombay, 1988).

PAPER-II (Paper Code-0894)

SOLID STATE PHYSICS, SOLID STATE DEVICES AND ELECTRONICS

UNIT-I Amorphous and crystalline solids, Elements of symmetry, seven crystal system, Cubic lattices, Crystal planes, Miller indices, Laue's equation for X-ray diffraction, Bragg's Law. Bonding in solids, classification. Cohesive energy of solid.

Madelung constant, evaluation of Parameters.

Specific heat of solids, classical theory (Dulong-Petit's law). Einstein and Debye theories. Vibrational modes of one dimensional monoatomic lattice, Dispersion relation, Brillouin Zone.

UNIT-II Free electron model of a metal, Solution of one dimensional Schrodiner equation in a constant potential. Density of states. Fermi Energy, Energy bands in a solid (Kronig-Penny model without mathematical details). Metals, Insulator and Semiconductors. Hall effect.

Dia, Para and Ferromagnetism. Langevin's theory of dia and para-magnetism. Curie-Weiss's Law. Qualitative description of Ferromagnetism (Magnetic domains), B-H. curve and Hysteresis loss.

UNIT-III Intrinsic semiconductors, carrier concentration in thermal equlibrium, Fermi level, Impurity semiconductor, doner and acceptor levels, Diode equation, junctions, junction breakdown, Depletion width and junction capacitance, abrupt junction, Tunnel diode, Zener diode. Light emmitting diode, solar cell, Bipolar transistors, pnp and npn transistors, characteristics of transistors, different configurations, current amplification factor, FET.

UNIT-IV Half and full wave rectifier, rectifier efficiency ripple factor, Bridge rectifier, Filters, Inductor filter, T and N filters, Zener diode, regulated power supply.

Applications of transistors.

Bipolar Transistor as amplifier.

Single stage and CE small signal amplifiers, Emitter followers, Transistoras power amplifier, Transistor as oscillator, Wein-Bridge Oscillator and Hartley oscillator.

UNIT-V Introduction to computer organisation, time sharing and multi programming systems, window based word processing packages, MS Word.

Introduction to C programming and application to simple problems of arranging numbers in ascending / descending orders : sorting a given data in an array, solution of simultaneous euation.

BOOKS RECOMMENDED :

1. Introduction to solid state physics : C.Kittel
2. Solid State Physics : A.J. Dekkar
3. Electronic Circuits : Mottershead
4. Electronic Circuits : Millman and Halkias
5. Semiconductor Devices : S.M. Sze
6. Computer fundamental : balaguara Swami

PRACTICALS

MINIMUM 16 (Sixteen) Out of the following or similar experiment of equal standard :

1. Determination of Planck's constant
2. Determination of e/m by using Thomson's tube
3. Determination of e by Millikan's method
4. Study of spectra of hydrogen and deuterium (Rydberg constant and ratio of masses of electron proton)
5. Absorption spectrum of iodine vapour
6. Study of alkali or alkaline earth spectra using a concave gra's
7. Study of Zeeman effect for determination of Lande g-factor.
8. Analysis of a given band spectrum.
9. Study of Raman spectrum using laser as an excitation source.
10. Study of absorption of alpha and beta rays.
11. Study of statistics in radioactive measurement.
12. Coniometric study of crystal faces.
13. Determination of dielectric constant
14. Hysteresis curve of transformer core
15. Hall-probe method for measuement of magnetic field
16. Specific resistance and energy gap of a semiconductor
17. Characteristics of transistor
18. Characteristics of a tunnel diode
19. Study of voltage regulation system
20. Study of a regulated power supply
21. Study of lissajous figures using a CRO
22. Study of VTVM
23. Study of RC and TC coupled amplifiers
24. Study of AF and RF oscillators
25. Find roots of f(x)=0 by using Newton-Raphson method
26. Find roots of F(x)=0 by using secant method
27. Integration by Simpson rule
28. To find the value of V at
31. String manipulations
32. Towers of Honoi (Nonrecursive)
33. Finding first four perfect numbers
34. Quadratic interpolation using Newton's forward-difference formula of degree two.

TEXT AND REFERENCE BOOKS :

1. B.G. Strechman ; "Solid State Electronic Devices". II Edition (Prentice-Hall of India, New Delhi, 1986)
2. W.D. Stanley ; "Electronic Devices, Circuits and Applications" (Prentice Hall, New Jersey, USA, 1988)
3. S. Lipschutsz and A Poe ; "Schaum's Outline of Theory and Problems of Programming with Fortran" (McGraw-Hill Book Co. Singapore, 1986)
4. C Dixon ; "Numerical Analysis"

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MATHEMATIS

There shall be three theory papers. Two compulsory and one optional Each paper carrying 50 marks is divided into five units and each unit carry equal marks.

PAPER - I (Paper Code-0898)

ANALYSIS

REAL ANALYSIS

UNIT-I Series of arbitrary terms. Convergence, divergence and Oscillation. Abel's and Dirichlet's test. Multiplication of series. Double series.

Partial derivation and differentiability of real-valued functions of two variables. Schwarz and Young's theorem. Implicit function theorem.

Fourier series. Fourier expansion of piecewise monotonic functions.

UNIT-II Riemann integral. Intergrability of continuous and monotonic functions. The fundamental theorem of integral calculus. Mean value theorems of integral calculus.

Improper integrals and their convergence, Comparison tests. Abel's and Dirichlet's tests. Frullani's integral. Integral as a function of a parameter. Continuity, derivability and integrability of an integral of a function of a parameter.

COMPLEX ANALYSIS

UNIT-III Complex numbers as ordered pairs. Geometric representation of Complex numbers. Stereographic projection.

Continuity and differentiability of Complex functions. Analytic functions. Cauchy-Riemann equations. Harmonic functions.

Elementary functions. Mapping by elementary functions.

Mobius transformations. Fixedpoints, Cross ratio. Inverse points and critical mappings. Conformal mappings.

METRIC SPACES

UNIT-IV Definition and examples of metric spaces. Neighbourhoods, Limit points, Interior points, Open and closed sets, Closure and interior. Boundary points, Sub-space of a metric space. Cauchy sequences, Completeness, Cantor's intersection theorem. Contraction principle, Construction of real numbers as the completion of the incomplete metric space of rationals. Real numbers as a complete ordered field.

UNIT-V Dense subsets. Baire Category theorem. Separable, second countable and first countable spaces. Continuous functions. Extension theorem. Uniform continuity, Isometry and homeomorphism. Equivalent metrics. Compactness,Sequential compactness. Totally bounded spaces. Finite intersection property. Continuous functions and compact sets, Connectedness, Components, Continuous functions and connected sets.

REFERENCES :

1. T.M. Apostol, Mathematical Analysis, Narosa Publishing House, New Delhi, 1985.
2. R.R. Goldberg, Real Analysis, Oxford & IBH publishing Co., New Delhi, 1970.
3. S. Lang, Undergraduate Analysis, Springer-Verlag, New York, 1983.
4. D. Somasundaram and B. Choudhary, A First Coarse in Mathematical Analysis, Narosa Publishing House, New Delhi, 1997.
5. Shanti Narayan, A Course of Mathematical Analysis, S. Chand & Co. New Delhi.

6. P.K. Jain and S.K. Kaushik, An introduction to Real Analysis, S. Chand & Co., New Delhi, 2000.
7. R.v. Churchill & J.W. Brown, Complex Variables and Applications, 5*" Edition, McGraw-Hill, NewYork, 1990.
8. MarkJ. Ablowitz & A.S.Fokas, Complex Variables : Introduction and Applications, Cambridge University Press, South Asian Edition, 1998.
9. Shanti Narayan, Theory of Functions of a Complex Variable, S. Chand & Co., New Delhi.
10. E.t. Copson, Metric Spaces, Cambridge University Press, 1968.
11. P.K. Jain and K. Ahmad, Metric Spaces, Narosa Publishing House, New Delhi, 1996.
12. G.F. Simmons, Inroductin to Topology and Modern Analysis, McGraw-Hill, 1963.

PART - II (Paper Code-0899)

ABSTRACT ALGEBRA

UNIT-I Group-Automorphisms, inner automorphism. Automorphism groups and their computations, Conjugacy relation, Normaliser, Counting principle and the class equation of a finite group. Center for Group of prime-order, Abelianizing of a group and its universal property. Sylow's theorems, Sylow subgroup, Structure theorem for finite Abelian groups.

UNIT-II Ring theory-Ring homomorphism. Ideals and Quotient Rings. Field of Quotients of an Integral Domain, Euclidean Rings, Polynomial Rings, Polynomials over the Rational Field. The Eisenstien Criterion, Polynomial Rings over Commutative Rings, Unique factorization domain. R unique factorisation domain implies so is R [x1, x2 ..... xn] Modules, Submodules, Quotient modules, Homomorphism and Isomorphism theorems.

UNIT-III Definition and examples of vector spaces. Subspaces. Sum and direct sum of subspaces, Linear span. Linear dependence, independence and their basic properties. Basis. Finite dimensional vector spaces. Existence theoremfor bases. Invariance of the number of elements of a basis set. Dimension. Existence of complementary subspace of a subspace of a finite dimensional vector space. Dimension of sums of subspaces. Quotient space and its dimension.

UNIT-IV Linear transformations and their representation as matrices. The Algebra of linear transformations. The rank nullity theorem. Change of basis. Dual space. Bidual space and natural isomorphism. Adjoint of a linear transformation. Eigenvalues and eigenvectors of a linear transformation. Diagonalisation. Annihilator of a subspace. Bilinear, Quadratic and Hermitian forms.

UNIT-V Inner Product Spaces-Cauchy-Schwarz inequality. Orthogonal vectors. Orthogonal Complements. Orthonormal sets and bases. Bessel's inequality for finite dimensional spaces. Gram-Schmidt Orthogonalization process.

REFERENCES :

1. I.N. Herstein, Topics in Algebra, Wiley Eastern Ltd., New Delhi, 1975.
2. N. Jacobson, Basic Algebra, Vols. I & II. W.H. Freeman, 1980 (also published by Hindustan Publishing Company).
3. Shanti Narayan, A Text Book of Modern Abstract Algebra, S.Chand & Co. New Delhi.
4. K.B. Datta, Matrix and Linear Algebra, Prentice Hall of India Pvt. Ltd., New Delhi, 2000.
5. P.B. Bhattacharya, S.K. Jain and S.R. Nagpal, Basic Abstract Algebra (2"" Edition) Cambridge University Press, Indian Edition, 1997.

6. K. Hoffman and R. Kunze,Linear Algebra, 2"" Editon, Prentice Hall. Englewood Cliffs, New Jersey, 1971.
7. S.K. Jain, A. Gunawardena & P.B. Bhattacharya, Basic Linear Algebra with MATLAB. Key College Publishing (Springer-Verlag) 2001.
8. S. Kumaresan, Linear Algebra, A.Geometric Approach, Prentice-Hall of India, 2000.
9. Vivek Sahai and Vikas Bist, Algebra, Norosa Publishing House, 1997.
10. I.S. Luther and I.B.S.Passi, Algebra, Vol. I-Groups, Vol. II-Rings. Narosa Publishing House (Vol. I-1996, Vol. II-1999)
11. D.S. Malik, J.N. Mordeson, and M.K. Sen, Fundamentals of Abstract Algebra, McGraw-Hill International Edition, 1997.

PAPER - III - (OPTIONAL)

(I) PRINCIPLES OF COMPUTER SCIENCE (Paper Code-0900)

UNIT-I **Data Storage -** Storage of bits. Main Memory. Mass Storage. Coding Information of Storage. The Binary System. Storing integers, storing fractions, communication errors.

Data Manipulation - The Central Processing Unit. The Stored-Program Concept. Programme Execution. Other Architectures. Arithmetic/Logic Instructions. Computer-Peripheral Communication.

UNIT-II **Operating System and Networks -** The Evolutionof Operating System. Operating System Architecture. Coordinating the Machine's Activities. Handling Competition Among Process. Networks. Networks Protocol.

Software Engineering - The Software Engineering Discipline. The Software Life Cycle. Modularity. Development Tools and Techniques. Documentation. Software Ownership and Liability.

UNIT-III **Algorithms** - The Concept of an Algorithm, Algorithm Representation. Algorithm Discovery. Iterative Structures. Recursive Structures. Efficiency and Correctness. (Algorithms to be implemented in C^{++}).

Programming Languages - Historical Perspective. Traditional Programming Concepts, Program Units. Language Implementation. Parallel Computing. Declarative Computing.

UNIT-IV **Data Structures -** Arrays. Lists. Stacks. Queues. Trees. Customised Data Types. Object Oriented Programming.

File Structure - Sequential Files. Text Files. Indexed Files. Hashed Files. The Role of The Operating System.

Database Structure - General Issues. The Layered Approach to Database Implementation. The Relational Model. Object-Oriented Database. Maintaining Database Integrity. E-R models.

UNIT-V **Artifical Intelligence -** Some Philosophical Issues. Image Analysis. Reasoning, Control System Activities. Using Heuristics. Artificial Neural Networks. Application of Artificial Intelligence.

Theory of Computation - Turning Machines. Computable functions. A Non computable Function. Complexity and its Measures. Problem Classification.

REFERENCES :

1. J. Glen Brookshear, Computer Science : An Overview, Addition -Wesley.
2. Stanley B. Lippman, Josee Lojoie, C^{++} Primer (3rd Edition), Addison-Wesley.

PAPER - III - (OPTIONAL)

(II) DISCRETE MATHEMATICS (Paper Code-0901)

UNIT-I **Sets and Propositions -** Cardinality. Mathematical Induction, Principle of Inclusion and exclusion.

Computability and Formal Languages - Ordered Sets. Languages. Phrase Structure Grammars. Types of Grammars and Languages. Permutations. Combinations and Discrete Probability.

UNIT-II **Relations and Functions -** Binary Relations, Equivalence Relations and Partitions. Partial Order Relations and Lattices. Chains and Antichains. Pigeon Hole Principle.

Graphs and Planar Graphs - Basic Terminology. Multigraphs. Weighted Graphs. Paths and Circuits. Shortest Paths. Eulerian Paths and Circuits. Travelling Salesman Problem. Planner Graphs.

TREES.

UNIT-III **Finite State Machines -** Equivalent Machines. Finite State Machines as Language Recognizers. Analysis of Algorithms - Time Complexity. Complexity of Problems. Discrete Numeric Functions and Generating Functions.

UNIT-IV1 **Recurrence Relations and Recursive Algorithms -** Linear Recurrence Relations with Constant Coefficients. Homogeneous Solutions. Particular Solution. Total Solution. Solution by the Method of Generating Functions. Brief review of Groups and Rings.

UNIT-V **Boolean Algebras -** Lattices and Algebraic Structures. Duality, Distributive and Complemented Lattices. Boolean Lattices and Boolean Algebras. Boolean Functions and Expressions. Prepositional Calculus. Design and Implementation of Digital Networks. Switching Circuits.

REFERENCES :

C.L. Liu, Elements of Discrete Mathematics, (Second Edition), McGraw Hill, International Edition, Computer Science Series, 1986.

PAPER - III - (OPTIONAL)

(III) APPLICATION OF MATHEMATICS IN FINANCE AND INSURANCE (Paper Code-0902)

Application of Mathematics in Finance :

UNIT-I **Financial Management -** An overview. Nature and Scope of Financial Management. Goals of Financial Management and main decisions of financial management. Difference between risk, speculation and gambling.

Time value of Money-Interest rate and discount rate. Present value and future valuediscrete case as well as continuous compounding case. Annuities and its kinds.

UNIT-II Meaning of return. Return as Internal Rate of Return (IRR). Numerical Methods like Newton RaphsonMethod to calculate IRR. Measurement of returns under uncertainty situations. Meaning of risk. Difference between risk and uncertainty. Types of risks. Measurement of risk. Calculation of security and Portfolio Risk and Return-Markowitz Model. Sharpe's Single Index Model Systematic Risk and Unsystematic Risk.

UNIT-III Taylor series and Bond Valuation. Calculation of Duration and Convexity of bonds. Financial Derivaties - Futures. Forward. Swaps and Options. Call and Put Option. Call and Put Parity Theorem. Pricing of contingent claims through Arbitrage and Arbitrage Theorem.

Application of Mathematics in Insurance

UNIT-IV Insurance Fundamentals - Insurance defined. Meaning of loss. Chances of loss, peril, hazard, and proximate cause in insurance. Costs and benefits of insurance to the society and branches of insurance-life insurance and various types of general insurance. Insurable loss exposuresfeature of a loss that is ideal for insurance. Life Insurance Mathematics - Construction of Mortality Tables. Computation of Premium of Life Insurance for a fixed duration and for the whole life.

UNIT-V Determination of claims for General Insurance - Using Poisson Distribution and Negative Binomial Distribution-the Polya Case.

Determination of the amount of Claims in General Insurance - Compound Aggregate claim model and its properties, and claims of reinsurance. Calculation of a compound claim density function. F-recursive and approximate formulae for F.

REFERENCES :

1. Aswath Damodaran, Corporate Finance - Theory and Practice, John Wiley & Sons Inc.
2. John C. Hull, Options, Futures, and Other Derivatives, Prentice-Hall of Indian Private Limited.
3. Sheldon M. Ross, An Introduction to Mathematical Finance, Cambridge University Press.
4. Mark S. Dorfman, Introduction to Risk Management and Insurance, Prentice Hall, Englwood Cliffs, New Jersey.
5. C.D. Daykin, T. Pentikainen and M. Pesonen, Practical Risk Theoryfor Actuaries, Chapman & Hall.

PAPER - III - (OPTIONAL)

Theory component will have maximum marks 30.

Practical component will have maximum marks 20.

(IV) PROGRAMMING IN C AND NUMERICAL ANALYSIS (Thoury & Practical)

(Paper Code-0903)

UNIT-I Programmer's model of a computer. Algorithms. Flow Charts. Data Types. Arithmetic and input/output instructions. Decisions control structures. Decision statements. Logical and Conditional operators. Loop. Case control structures. Functions. Recursions. Preprocessors. Arrays. Puppetting of strings. Structures. Pointers. File formatting.

Numerical Analysis

UNIT-II Solution of Equations : Bisection, Secant, Regula Falsi, Newton's Method, Roots of Polynomials : Interpolation : Lagrange and Hermite Interpolation, Divided Differences, Difference Schemes, Interpolation Formulasusing Differences. Numerical Differentiation. Numerical Quadrature : Newton-Cote's Formulas. Gauss Quadrature Formulas, Chebychev's Formulas.

UNIT-III Linear Equations : Direct Methods for Solving. Systems of Linear Equations (Guass Elimination, LU Decomposition, Cholesky Decomposition), Iterative Methods (Jacobi, GaussSeidel, Relaxation Methods).

The Algebraic Eigenvalue problem : Jacobi's Method, Givens' Method, Householder's Method, Power Method, QR Method, Lanezos' Method.

UNIT-IV Ordinary Differential Equations : Euler Method, Single-step Methods, Runge-Kutta's Method, Multi-step Methods, Milne-Simpson Method, Methods Based on Numerical

Integration, Methods Based on Numerical Differentiation, Boundary Value Problems, Eigenvalue Problems.

Approximation : Different Types of Approximation, Least Square Polynomial Approximation, Polynomial Approximation using Orthogonal Polynomials, Approximation with Trigonometric Functions, Exponential Functions, Chebychev Polynomials, Rational Functions.

Unit-V Monte Carlo Methods Random number generation, congruential generators, statistical tests of pseudo-random numbers.

Random variate generation, inverse tranform method, composition method, acceptancerejection method, generation of exponential, normal variates, binomial and Poisson variates.

Monte Carlo integration, hit or miss Monte Carlo integration, Monte Carlo integration for improper integrals, error analysis for Monte Carlo intergration.

REFERENCES :

1. Henry Mullish& Herbert L. Cooper, Spirit of C : An Introductionto Modern Programming, Jaico Publishers, Bombay.
2. B.W. Kernighan and D.M. Ritchie. The C Programming Language 2"d Edition, (ANSI features) Prentice Hall, 1989.
3. Peter A Darnel and Philip E. Margolis, C : A Software Engineering Approach, Narosa Publishing House, 1993.
4. Robert C. Hutehisonand Steven B. Just, Programming using C Language, McGraw Hill, 1988.
5. Les Hancock and Morris Krieger, The C Primer, McGraw Hill, 1988.
6. V. Rajaraman, Programming in C, Prentice Hall of India, 1994.
7. Byron S. Gottfried, Theory and Problems of Programming with C, tata McGraw-Hill Publishing Co. Ltd., 1998.
8. C.E. Froberg,Introduction to Numerical Analysis, (Second Edition), Addison-Wesley, 1979.
9. James B. Scarborough, Numerical Mathematical Anasysis, Oxford and IBHPublishing Co. Pvt. Ltd. 1966.
10. Melvin J. Maron, Numerical Analysis A Practical Approach, Macmillan publishing Co., Inc. New York, 1982.
11. M.K. Jain, 'S.R.K. lyengar, R.K. Jain, Numerical Methods Problems and Solutions, New Age International (P) Ltd., 1996.
12. M.K. Jain, S.R.K. lyengar, R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International (P) Ltd., 1999.
13. R.Y. Rubistein, Simulation and the Monte Carlo Methods, John Wiley, 1981.
14. D.J. Yakowitz Computational Probability and Simulation, Addison-Wesley, 1977.

PAPER - III - (OPTIONAL)

(IV) PRACTICAL

PROGRAMMING IN C AND NUMERICAL ANALYSIS

LIST OF PRACTICAL TO BE CONDUCTED...

1. Write a program in C to find out the largest number of three integer numbers.
2. Write a program in C to accept monthly salary from the user, find and display income tax with the help of following rules :

Monthly Salary	Income Tax
9000 or more	40% of monthly salary
7500 or more	30% of monthly salary
7499 or less	20% of monthly salary

3. Write a program in C that reads a year and determine whether it is a leap year or not.
4. Write a program in C to calculate and print the first n terms of fibonacci series using looping statement.
5. Write a program in C that reads in a number and single digit. It determines whether the first number contains the digit or not.
6. Write a program in C to computes the roots of a quadratic equation using case statement.
7. Write a program in C to find out the largest number of four numbers using function.
8. Write a program in C to find the sum of all the digits of a given number using recursion.
9. Write a program in C to calculate the factorial of a given number using recursion.
10. Write a program in C to calculate and print the multiplication of given 2D matrices.
11. Write a program in C to check that whether given string palindrome or not.
12. Write a C function seriessum () to calculate the sum of series :
    $1+X+1/2!\ X^2+1/3!\ X^3+\ldots\ldots 1/n!\ X^n$
13. Write a program in C to determine the grade of all students in the class using Structure. Where structure having following members - name, age, roll, sub 1, sub2, sub3, sub4 and total.
14. Write a program in C to copy one string to another using pointers. (Without using standard library functions).
15. Write a program in C to store the data of five students permanently in a data file using file handling.

PAPER - III - (OPTIONAL)

(V) MATHEMATICAL MODELLING (Paper Code-0904)

The Process of Applied mathematics.

UNIT-I Setting up first-order differential equations - Qualitative solution sketching. Difference and differential equation growth models.

UNIT-II Single-species population models. Population growth-An age structure model. The spread of Technological innovation.

UNIT-III Higher-order linear models- A model for the detection of diabetes. Combat modes. Traffic models - Car-following models. Equilibrium speed distributions.

UNIT-IV Nonlinear population growth models. Prey-Predator models. Epidemic growth models. Models from political science - Proportional representation-cumulative voting, comparison voting.

UNIT-V Applications in Ecological and Environmental subject areas- Urban waste water management planning.

REFERENCES :

1. Differential equation models, Eds. Martin Braun, C.S. Coleman, D.A. Drew.
2. Political and Related Models, Steven. J. Brams, W.F. Lucas, P.D. Straftin (Eds.)
3. Discrete and System models, W.F. Lucas, F.S. Roberts, R.M. Thrall.
4. Life Science Models, H.M. Roberts & M. Thompson.

All volumes published as modules in applied Mathematics, Springer-Verlag, 1982.

5. Mathematical Modelling by J.N. Kapur, New Age International, New Delhi.

BOTANY

PAPER-I (Paper Code-0915)

PLANT PHYSIOLOGY, BIOCHEMISTRY AND BIOTECHNOLOGY

M.M. : 50

UNIT-I Plant-water relations : Importance of water to plant life ; physical properties of water; diffusion and osmosis; absorption, transport of water and transpiration ; physiology of stomata.

Mineral nutrition : Essential macro and micro-elements and their role ; mineral uptake; deficiency and toxicity symptoms.

UNIT-II Transport of organic substances : Mechanism of phloem transport ; source-sink relationship ; factors affecting translocation.

Basic of enzymology : Discovery and nomenclature ; characteristics of enzymes ; concept of holoenzyme apoenzyme, coenzyme and cofactors ; regulation of enzyme activity, mechanizm of action.

Photosynthesis : Significance ; historical aspects ; photosynthetic pigments ; action spectra and enhancement effects ; concept of two photosystems; Z-scheme ; photo-phosphorylation ; Calvin cycle ; C4 pathway ; CAM plants ; photorespiration.

UNIT-III Respiration : ATP - the biological energy currency ; aerobic and anaerobic respiration; Kreb's cycle, electron transport mechanism (chemi-osmotic theory) ; redox potential; oxidative phosphorylation ; pentose phosphate pathway.

Nitrogen and lipid metobolism : Biology of nitrogen fixation ;importance of nitrate reductase and its regulations ; ammonium assimilation ; structure and function of lipids; fatty acid biosynthesis ; Beta-oxidation ; saturated and unsaturated fatty acids; storage and mobilization of fatty acids.

UNIT-IV Growth and development : Definitions ; phases of growth and development ; kinetics of growth, seed dormancy, seed germination and factors of their regulation ; plant movements ; the concept of photoperiodism ; physiology of flowering ; florigen concept; biological clocks ; physiology of senescence, fruit ripening ; plant hormones auxins, gibberellins, cytokinins, abscisic acid and ethylene, history of their discovery, biosynthesis and mechanism of action ; photomorphogenesis ; phytochromes and cryptochromes, their discovery, physiological role and mechanism of action.

UNIT-IV Genetic engineering : Tools and techniques of recombinant DNA technology ; cloning vectors ; genomic and cDNA library ; transposable elements ; techniques of gene mapping and chromosome walking.

Biotechnology : Functional definition ; basic aspects of plant tissue culture ; cellular totipotency, differentiation and morphogenesis ; biology of Agrobacterium ; vectors for gene delivery and marker genes ; salient achievements in crop biotechnology.

PAPER-II (Paper Code-0916)

ECOLOGY AND UTILIZATION OF PLANTS M.M. : 50

UNIT-I Plants and environment : Atmosphere (gaseous composition), water (properties of water cycle), light (global radiation, photosynthetically active radiation), temperature, soil (development, soil profiles, physico-chemical properties), and biota.

Morphological, anatomical and physiological responses of plants to water (hydro-phytes and xerophytes), temperature (thermoperiodicity), light (photoperiodism, heliophytes and sciophytes) and salinity.

UNIT-II Community Ecology : Community characteristics, frequency, density, cover, life forms biological spectrum ; ecological succession.

Ecosystems : Structure, abiotic and biotic components ; food chain, food web, ecological pyramids, energy flow ; biogeochemical cycles of carbon, nitrogen and phosphorus.

UNIT-III Population ecology : Growth curves ; ecotypes ; ecads.

Biogeographical regions of India.

Vegetation types of India : Forests and grasslands.

UNIT-IV Utilization of Plants

Food plants : Rice, wheat, maize, potato, sugercane.

Fibres : Cotton and jute.

Vegetable oils : Groundnut, mustard and coconut

General account of sources of firewood, timber and bamboos.

UNIT-V Spices : General account.

Medicinal plants : General account

Beverages : Tea and coffee.

Rubber.

PRACTICAL SCHEME **M.M. 50**

01.	Physiology	08
02.	Ecology	08
03.	Utilization of Plants	05
04.	Biochemistry / Biotechnology	05
05.	Spotting (1-5 spots)	10
06.	Project work	04
07.	Viva V.	05
08.	Sessional	05
		50

Suggested Laboratory Exercises

1. To study the permeability of plasma membrance using different concentrations of organicsolvents.
2. To study the effect of temperature on permeability of plasma membrane.
3. To prepare the standard curve of protein and determine the protein content in unknown samples.
4. To study the enzyme activity of catalase and peroxidase as inflenced by pH and temperature.
5. Comparison of the rate of respiration of various plant parts.
6. Separation of chloroplast pigment by solvents method.
7. Determinig the osmotic potential of vacuolar sap by plsmolytic method.
8. Determining the water potental of any tuber.
9. Separation of amino acids in a mixtue by paper chromatography and their identification by comparison with standards.
10. Bioassay of auxin, cytokinin, GA. ABA and ethylene using appropriate plant material.
11. Demonstration of the technique of micropropagation by using different explants, e.g. axillary buds, shoot meristems.
12. Demonstration of the technique of anther culture.
13. Isolation of protoplasts from different tissues using commercially available enzymes.
14. Demonstration of root and shoot formation from the apical and basal portion of stem segments in liquid medium containing different hormones.

Suggested Laboratory Expercises (Ecology)

1. To determine minimum number of quadrats required for reliable estimate of biomass in grasslands.
2. To study the frequency of herbaceous species in grassland and to compare the frequency distribution with Raunkair's Standard Frequency Diagram.
3. To estimate importance Value Index for grassland species on the basis of relative frequency, relative density and relative biomass in protected and grazed grassland.
4. To measure the vegetation cover of grassland through point frame method.
5. To measure the aboveground plant biomass in a grassland.
6. To determine Kemp's constant for dicot and monocot leaves and to estimate the leaf area index of a grassland community.
7. To determine diversity indices (richness, Simpson, Shannon-Wiener) in grazed and protected grassland.
8. To estimate bulk density and porosity of grassland and woodland soils.
9. To determine moisture content and water holding capacity of grassland and woodland soil.
10. To study the vegetation structure through profile diagram.
11. To estimate transparency, pH and temperature of different water bodies.
12. To measure dissolved oxygen content in polluted and unpolluted water samples.
13. To estimate salinity of different water samples.
14. To determine the percent leaf area injury of different leaf samples collected around polluted sites.
15. To estimate dust holding capacity of the leaves of different plant species.

PRACTICAL

Suggested Laboratory Exercises (for Utilization of Plants)

1. Food Plants : Study of the morphology, structure and simple microchemical tests of the food storing tissues in rice, wheat, maize, potato and sugarcane, Microscopic exmaination of starch in these plants (excepting sugarcane)
2. Fibres : Study of cotton flowers, sectioning of the cotton ovules/developing seeds to trace the origin and development of cotton fibres. Microscopic study of cotton and test for cellulose, Sectioning and staining of jute stem to show the location and development of firbres. Microscopic structure. Test for lignocellulose.
3. Vegetable oils : Study of hand sections of groundnut, mustard and coconut and staining of oil droplets by Sudan III and Sudan Black.
4. Field visits : To study sources of firewood (10 plants), timber-yielding trees (10 trees) and bamboos. A list to be prepared mentioning special features.
5. Spices : Examine black pepper, cloves, cinnamon (hand sections) and opened fruits of cardamom and describe them briefly.
6. Preparation of an illustrated inventory of 10 medicinal plants used in indigenous systems of medicine or allopathy : Write their botanical and common names, parts used and disease/disorders for which they are prescribed.
7. Beverages : Cut Sections of boiled coffee beans and tea leaves to study the characterstic structural features.
8. Rubber : Collect illustrative materials of Hevea brasillensis ; morphology of the plant and tapping practices, history of rubber. List the many uses of rubber.

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ZOOLOGY

Paper-I (Paper Code-0917)

Ecology, Environmental-biology ; Toxicology ; Microbiology and Medical Zology.

2. Attempting one question from each unit will be compulsory. 100% chice be given.

UNIT-I (ECOLOGY)

1. Aims and scopes of Ecology.
2. Major ecosystems of the world-Brief intruduction
3. Population- Characteristics and regualtion of densities.
4. Communities and Ecosystems.
5. Biogeochemical cycles
6. Air and water pollution
7. Ecological succession

UNIT-II (ENVIRONMENTAL BIOLOGY)

1. Laws of limiting factors
2. Food chain in a freshwater ecosystem.
3. Energy flow in ecosystem-Trophic levels
4. Conservation of Natural resources
5. Environmental impact Assessment

UNIT-III (TOXICOLOGY)

1. Definition of Toxicity
2. Classification of toxicants
3. Principle of systematic toxicology
4. Toxic agents and their action- Metallic and inorganic agents
5. Animal poisons - Snake-venom, Scorpion and bee poisoning
6. Food pisoning

UNIT-IV (MICROBIOLOGY)

1. General and Applied microbiology.
2. Microbiology of Domestic water and sewage
3. Microbiology of milk and milk products
4. Industrial microbiology

UNIT-V (MEDICAL MICROBIOLOGY)

1. Brief introduction to pathogenic micro-organisurs, Rickettsia, Spirochaetes and Bacteria.
2. Brief account of life-history and pathogenicity of the following pathogens with reference to man ; Prophylaxis and treatment -
   (a) Pathogenic Protozoans - Entamoeba, Trypanosoma, and Giardia
   (b) Pathogenic helminths - Schistosoma
   (c) Nematode Pathogenic parasites of man
3. Vector insects

PAPER-II

(Paper Code-0918)

(GENETIC'S, CELL PHYSIOLOGY, BIOCHEMISTRY, BIOTECHNOLOGY AND BIOTECHNIQUES)

Note : Ateempting one question from each unit will be compulsory, 100% choice be given.

UNIT-I (GENETIC'S)

1. Linkage and Linkage maps
2. Varieties of gene expression - Multiple alleles ; lithogenesis ; Pleiotropic genes; gene interaction ; epistasis.
3. Sexchromosome systems, and sex-linkage.
4. Mutation and chromosomal alterations ; meiotic consequences.
5. Human genetics - chromosomal and single gene disorders (somatic cell genetics)

UNIT-II (CELL PHYSIOLOGY)

1. General idea about pH and Buffer.
2. Transport across membrane - cell membrane; Mitochondria andEndoplasmic reticulum.
3. Active transport and its mechanism; Active transport in Mitochondria and Endoplasmic reticulum.
4. Hydrolytic enzymes - Their chemical nature, Activation and specificity.

UNIT-III (BIOCHEMISTRY)

1. Amino acids and Peptides - Basic structure and biological function.
2. Carbohydrate and its metabolism - Glycogenesis; Gluconeogenesis; glycolysis, Glycogenolysis; Cosi-cycle.
3. Lipid metabolism - Oxidation of glycerol; oxidation of fatty acid.
4. Protein metabolism - Deamination,Transamination, Transmethylation; Biosynthesis of Protein;

UNIT-IV (BIOTECHNOLOGY)

1. Biotechnology - Scope and importance.
2. Recombinant DNA and Gene cloning.
3. Cloned genes and other tools of biotechnology.
4. Applications of biotechnology in (i) Pharmaceutical industry, and (ii) Food processing industry.

UNIT-V (BIOTECHNIQUE)

Principles and techniques about the following

1. pH meter
2. Colorimeter
3. Microscopy-Light microscopes, Phase contrast and Electron microscopes.
4. Centrifugation
5. Separation of biomolecules by chromatography, and Electrophoresis
6. Histrochemical methods for determination of Protein, Lipids, and carbohydrate

PRACTICAL WORK

The Practical work in general shall be based on syllabus prescribed in theory.

The candidates will be required to show knowledge of the following :

1. Estimation of population density, Percentage frequency, Relative density.
2. Analysis of Producers and consumers in grassland.
3. Detection of gram-negative and gram-positive bacteria.
4. Blood group detection (A,B, AB & O).
6. R.B.C., W.B.C. count.
6. Blood coagulation time.
7. Preparation of Hematin crystals from blood of rat.
8. Observation of Drosophila, wild and mutant.
9. Chromatography-Paper or gel.
10. Colorimetric estimation of hemoglobin.
11. Mitosis in onion root tip.
12. Biochemical detection of Carbohydrate, Protein and Lipid.
13. Study of Permanent slides of Parasites, based on theory paper.
14. Working Principles of pH meter, Colorimeter, centrifuge and microscopes.

SCHEDULE FOR PRACTICAL EXAMINATION

Duration : 4 Hrs. **Max Marks : 50**

1.	Haematological Experiment : (R.B.Cs./W.B.Cs. Counting/Blood group detection)	08 marks
2.	Ecological Experiment : (Estimation of Population Density/Frequency/relative Density)	06 marks
3.	Staining of Gram +ve and Gram -ve Bacteria/cytological experiment : Mitosis in onion root tip	05 marks
4.	Biochemical Experiment : (biochemical detection of carbohydrate/protein lipid)	06 marks
5.	Chromatography	05 marks
6.	Spotting :	10 marks
	Study of permanent slides of Parasites : 3	
	Comments on working Principles of pH meter / Calorimeter / centrifuge and Microscope :	
7.	Viva Voce	05 marks
8.	Sessional :	05 marks

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MICRO-BIOLOGY

SCHEME OF PRACTICAL

Duration : 4 Hrs. **Max Marks : 50**

1.	Characterization and Identification of micro-organism from any given source	15
2.	Biochemical identification of some biodegraded organic molecules	10
3.	Spots (1 to 5)	10
4.	Viva voce	05
5.	Sessional	10
		Total - 50

(PRACTICAL SYLLABUS)

MOLECULAR BIOLOGY AND GENETIC ENGINEERING

Characterization of genetic markers of known bacterial strains.
Phage growth curve.
Isolation of DNA from bacteria.
Isolation of plasmid DNA and restriction analysis.
Simple cloning using plasmid DNA as vector and transformation of competent E. coli cells.
Electrophoretic analysis of proteins.
Isolation of Bacteria from air and soil (crop fields)
Isolation of Fungi from air and soil
Study of rhizospheric & Phyllospheric microbes of some economically important plants
Biodegradation study of some organic molecules
microbial assessment of potable water
Analysis of sewage waste
Analysis of Garbages (soild wastes)

REFERENCE :

Philipp Gorhardt, manual of Methods for general Bacteriology. ASM. 536pp.

PAPER-I (Paper Code-0923)

MOLECULAR BIOLOGY AND GENETIC ENGINEERING M.M.50

UNIT-I History of molecular biology, model systems, concepts of molecular biology, Early history of genetic engineering, genetic engineering concepts, ethical issue.

UNIT-II Mutation; spontaneous and induced, base pair change, fram shift, deletion, inversion, random duplication, insertion, useful phenotypes (auxotrophs, conditional lethal, resistance). Revertion vs suppression, Ame's test.

UNIT-III Function of macromolecules; early observation on the mechanism of heredity, DNA as genetic material; basic mechanism of replication, enzymes involved in replication, Enzymes involved in transcription translation, genetic code, regulation of gene expression-transcription, translation and control of gene expression in microbes.

UNIT-IV DNA repair and restriction, types of repair systems, restriction modification systems, types of restriction enzymes, properties and uses, methylation.

Biology of plasmids. Bacteriophages, lytic vs lysosogenic phages, single standard DNA phages, M 13, restriction modification systems, restriction enzymes.

UNIT-V Plasmid and phage vectors, restriction and ligation of vector and passenger DNA, transformation of host cells, selection vs. screening of recombinant colonies, analysis of recombinant clones, DNA sequencing, protein separation and identification methods.

TEXT BOOKS :

1. Essentials of Molecular Biology by GM Malacinski.
2. Genes IX by Benjamin Lewin
3. Molecular Biology by TA Brown.

PAPER - II (Paper Code-0924)

ENVIRONMENTAL AND MEDICAL MICROBIOLOGY

M.M.50

UNIT-I Aerobiology; definition, droplet nuclei, aerosol assessment of air quality, some important air borne diseases caused by bacteria (Diptheria, Peneumonia, Meningitis), virus (Influenza, Chicken pox, Measels) and fungi (mycosis); their symptoms and preventive measures.

UNIT-II Soil microbiology : Physical and chemical characteristics and micro flora of various soil types, rhizosphere, phyllosphere. Brief account of microbial interactions: symbiosis, mutualism, commensalism, competition, amensalism, synergism, parasitism, and predation.

Biofertilizers - biological nitrogen fixation, nitroginase enzyme, nif genes, symbiotic nitrogen fixation, and non-symbiotic nitrogen fixation (Azotobacter, Azospirillum), VAM-ecto-endo-ectendomycorrhizae.

UNIT-III Aquaticd microbiology; ecosystem, fresh water (ponds, lakes, stream) and marine, Water zonation : upwelling, entrophication.

Potability of water - microbial assessment of water quality.

Brief account of water borne diseases (Typhoid, Dysentery, Cholera, Hepatitis) and preventive measures.

UNIT-IV Food spoilage and food borne infections.

A brief mention about biodegradation, xenobiotics, bioaccunmulation, biopestisides and deterioration.

General concept of industrial microbiology and their applications.

UNIT-V Waste Treatment : types of wastes, characterization of solid and liquid waste, waste treatment solid saccharification, gasification, composting.

Liquid waste treatment - aerobic, anaerobic primary, secondary and tertiary methods.

Useful byproducts, mushroom, fuel, fertilizer, Biodegradation of industrial waste.

REFERENCES :

1. Food Microbiology by WC Frazier and D Westhoff.
2. Agricultural Microbiology by Bhagyaraj and Rangaswamy.
3. Bioremediation by KH Baker and DS Herson.
4. Scott's Diagnostic Microbiology by EJ Baron.

PRACTICAL FOR B.SC. PART III

(MICROBIOLOGY)

Characterization of genetic markers of known bacterial strain

Isolation of DNA from bacteria

Isolation of plasmid DNA

Simple cloning using plasmid DNA as vector and transformation of competent E. coli

Electrophoresis of protein / DNA.

Isolation of microorginsms from air, soil and water.

Isolation of pathogenic microorganisms.

Study of rhizospheric and phyllowpheric microbes from economically important plants.

Biodegradation of some organic molecules.

Microbial assessment of potable water.

Analysis of sewage waste, solid waste (garbage).

Isolation of aquatic fungi (zoosporic) by baiting technique.

Isolation of keratinophilic fungi soil by baiting technique

Demonstration of beacterial antagonism.

Microscopic observation of root colonization by VAM fungi.

SCHEME FOR PRACTICAL EXAMINATION

Time : 4 hors **M.M. : 50**

1.	Characterization and identification of microorganism from given source/ Isolation of plasmid DNA/Genomic DNA	15
2.	Biochemical identification of some biodegraded organic molecules/ Microbial assessment of potable water/BOD/COD	10
3.	Spotting (1-5)	10
4.	Viva-Voce	05
5.	Sessional	10
	Total	**150**

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विषय-भू-विज्ञान

सैद्धांतिक प्रश्न पत्र- प्रथम

पूर्णांक-50

(पेपर कोड-0905)

इकाई-1
1. खनिज उपलब्धता के नियामक तथ्य । वैश्विक खनिज नियम एवं संसाधन ।
2. दिक्काल में खनिज निक्षेपों का वितरण, पारम्परिक एवं गैर पारम्परिक ऊर्जा संसाधन : सूर्य-आतप, जल, वायु, उष्ण झरने, समुद्र तरंगे ।
3. अयस्क निर्माणकारी खनिज : धात्विक एवं अधात्विक । अयस्क निर्माण की मैग्मीय सांद्रगण विधि ।
4. उष्ण जलीय-प्रक्रियायें, स्कार्न ।
5. उपक्षय उत्पाद एवं अवशिष्ट निक्षेप । आक्सीकरण एवं सल्फाइड समृद्धि प्रक्रम ।

इकाई-2
1. अयस्क निर्माण की अवसादी प्रक्रिया ।
2. प्रतिस्थापन एवं जीवाश्विक अवक्षेपण, कोलायडल निक्षेपण । लवणीजल का वाष्पोत्सर्जन ।
3. अयस्क निर्माण की कायान्तरणी प्रक्रिया ।
4. भू-वैज्ञानिक कालों में वैश्विक विर्तनिकी एवं धानुनिर्मिती ।
5. भू-वैज्ञानिक वितरण, खनिजकीय विशेषता तथा भारत में निम्न धातु निक्षेपों का वितरण लौह-मैगनींज-क्रोमियम

इकाई-3
1. भू-वैज्ञानिक वितरण-खनिजकीय विशेषता एवं भारत में निम्न धातु निक्षेपों का वितरण : ताम्र-सीसा-जस्ता।
2. भू-वैज्ञानिक वितरण- खनिजकीय विशेषता एवं भारत में निम्न धातु निक्षेपों का वितरण: सोना-अल्युमिनियम।
3. भू-वैज्ञानिक वितरण- खनिजकीय विशेषता एवं भारत में निम्न अधातु निक्षेपों का वितरण : तापसह एवं उर्वरक खनिज ।
4. भू-वैज्ञानिक वितरण- खनिजकीय विशेषता एवं भारत में निम्न अधातु निक्षेपों का वितरण : सीमेंट एवं केमिकल उद्योग में प्रयुक्त खनिज एवं वास्तुप्रास्तर ।
5. भू-वैज्ञानिक वितरण- खनिजकीय विशेषता एवं भारत में निम्न अधातु निक्षेपों का वितरण : रत्न ।

इकाई-4
1. धातु सांद्रण की प्रमुख विधियाँ : ताम्र एवं मैग्नींज ।
2. खनिज दोहन के पर्यावरणीय प्रभाव ।
3. कोयला निक्षेपों की उत्पत्ति, परिभाषा एवं संस्तर विज्ञान ।
4. कोल-शैलिकी के मूलभूत तथ्य ।पीट, लिग्नाइट, विटूमिनस, एंथ्रासाइट ।
5. भारतीय कोयला निक्षेप : विशेष संदर्भ में छत्तीसगढ़ ।

इकाई-5
1. प्राकृतिक हाइड्रोकार्बन की उत्पत्ति, स्थानांतरण एवं स्थानबद्धता, स्त्रोत एवं संचयकारी
2. आयलट्रेप के प्रकार-संरचनात्मक, स्तरविज्ञानी एवं मिश्रित ।
3. भारत के तटीय एवं अपतटीय पेट्रोलियम निक्षेप ।
4. रेडियोधर्मी खनिज : खनिजकीय, भू-रसायन, पूर्वेक्षण तकनीक ।
5. भारत वर्ष में रेडियोधर्मी खनिज का वितरण ।

विषय-भू-विज्ञान

सैद्धांतिक प्रश्न पत्र-द्वितीय

(पेपर कोड-0906)

(प्राकृतिक पर्यावरण, दूर-संवेदन, भू-जल एवं खनिज-अन्वेषण) **पूर्णांक-50**

इकाई-1
1. पर्यावरण भू-विज्ञान की अवधारणायें एवं परिभाषा ।

2. मृदानिर्माण–मृदा प्रकार ।
3. पृथ्वी की प्राकृतिक–पारिस्थितिकी तंत्र की अवधारणायें : उनकी अंतर्क्रियाएं एवं अर्न्तसम्बन्ध ।
4. प्राकृतिक पर्यावरण पर मानव का पर्यावरण ।
5. नदी मार्ग का अंतरण : मार्ग अंतरण का मृदा अपरदन पर प्रभाव : भूस्खलन एवं बाढ़ ।

इकाई–2

1. वृहत्त बांध, जलाशय, सुरंगें आदि के निर्माण में स्थल चयन एवं पर्यावरणीय प्रभावों का अध्ययन ।
2. हवाई–छायाचित्रों एवं उपग्रह इमेजियरी का प्रारंभिक अध्ययन ।
3. शहरी विकास एवं वृहद्अभियांत्रिकी संरचनाओं की आयोजना में दूर–संवेदन तकनीकों का अनुप्रयोग ।
4. फोटो जियोलॉजिकल मानचित्रों का निर्माण ।
5. जल चक्र ।

इकाई–3 भूजलसंचयी शैल

1. शैल एवं उनका वर्गीकरण
2. जलमृतशैलों का वर्गीकरण : डार्सि का नियम एवं उसकी उपयुक्ता ।
3. भारत का भूजल–प्रदेश ।
4. जलग्रहण प्रबंधन की अवधारणायें
5. सतही एवं अधो सतही निष्कर्षण विधियाँ ।

इकाई–4

1. आर्थिक खनिजों के लिये पूर्वेक्षण विधियाँ : ड्रीलिंग, प्रतिनयन एवं आमापन
2. खनिज पूर्वेक्षण की गुरूत्वी, विद्युतीय एवं चुम्बकीय विधियाँ ।
3. पूर्वेक्षण की हवाई एवं भूकम्पीय विधियाँ ।
4. पूर्वेक्षण की भू–पादपीय विधियाँ ।
5. पूर्वेक्षण की भू–रासायनिक विधियाँ ।

इकाई–5

1. बोरहोललागिंग एवं विचलन सांख्यिकी ।
2. खनिज खपत का परिवर्तनशील स्वरूप ।
3. राष्ट्रीय खनिज नीति ।
4. खनिज–कन्शेसन–नियम ।
5. समुद्री खनिज संसाधन एवं तत्संबंधित नियम ।

प्रायोगिक प्रश्न पत्र

अधिकतम अंक–50

प्रयोगशाला कार्य–35 अंक **क्षेत्रीय अध्ययन–15 अंक**

1. अयस्क निर्माणकारी खनिजों के भौतिक एवं प्रकाशीय गुणों का अध्ययन ।
2. भारत के मानचित्र में अयस्क निक्षेप एवं आर्थिक महत्व को खनिजों का वितरण ।
3. कोयला एवं उसके विभिन्न प्रकारों के नमूनों का स्थूलदर्शी अध्ययन ।
4. रेडियोधर्मी खनिज एवं उनके आतिथेय शैलों का स्थूलदर्शी अध्ययन ।
5. खनिज निष्कर्षण से संबंधित प्रयोगशाला अभ्यास कार्य, निक्षेप आंकलन, टनेज फेक्टर आंकलन, ड्रिलिंग आदि से संबंधित ।
6. स्टिरियोस्कोप के द्वारा ऐरियल छाया चित्रों का अध्ययन एवं विवेचना ।
7. उपग्रह इमेजियरी का अध्ययन एवं विवेचना ।

भू-वैज्ञानिक-क्षेत्रीय अध्ययन :

15 दिवसीय भू-वैज्ञानिक क्षेत्रीय अध्ययन कार्य, जिसमें संरचनात्मक दृष्टि से जटिल क्षेत्रों में भू-वैज्ञानिक मानचित्र एवं शैल नमूनों का संग्रहण तथा प्रयोगशाला कार्य एवं फील्ड रिपोर्ट का अनुलेखन ।

BOOK RECOMMENDED FOR PAPER-I

Evans, A.M. 1993. - Ore Geology and Indusrial Minerals

Sawkins, F.J. 1984 - Metal Deposits in relation in plate Tecto. Springer.

Stanton, R.L. 1972 - Ore Petrology. Mcgraw Hill

Mookherjee A. 2000 - Ore Geniois - a helistic Approach Allied Publisher

Chandra 2000 - Text book of coal (Indian context) Tara book Agency, Varanashi

Selley, R.C.1998 - Elements of Petroleum Geology. Academic Press

Torling D.H. 1981 - Economic Geology and Geofectericks Blackwell

Melustry, H.E. 1962 - Mining Geology 2nd Ed., Asia Pub. House

Arogya Swamy, RPN 1996 - Gourses in rining Geology IV Ed. Oxford IBH

Dahl Kamp F.J. 1993 - Uranium Ore Deposits Springer

BOOK RECOMMENDED FOR PAPER-II

Valdiya K.S. 1987 Environmental Geology-Tata MacgrawHill

Keller, E.A. 1978 - Environmental Geology-Bell & Hewell

Subramanium V. 2001 - Textbook in Environmental Science, Narosa International

Bell, F.G. 1999 - Geological Hazards, Routledge, London

Drury, S.A. 1987 - Image Interpretation in Geology

Siegal, B.S. and Gillespie A.R.1980- Remote Sensing in Geology, John Wiley

Pandey, S.N. - Principles and Application of Photology. Wiley Eastern, New Delhi

Todd. D.K. 1980 - Groundwater Hydrology, John Wiley

Raghunath, N.M. 1982 - Ground Water, Wiley Eastern

Karanth, K.R. 1987 - Groundwater Assessment Development and Management,

- Tata Macgraw Hill

Subramanium, V.2000 - Water, KingstonPubl. London

Sharma P.V. 1986 - Geophysical Methods in Geology Mcgraw Hill

Krynine, D.H. & Juddwr 1998 - Principles of Engineering G. CBS Edition

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STATISTICS

PAPER-I

(Paper Code-0907)

APPLIED STATISTICS

UNIT-I Indian Applied Statistical System : Present official statistical system in India, Methods of collection of official statistics, their reliability and limitations, and the principal publications containing such statistics on the topics- population agriculture, industry, trade, price, labour and employment, transport and communications, banking and finance. (15L)

UNIT-II Demographic Methods : Sources of demographic data - census, register, adhoc survey, hospital records, demographic profiles of Indian census. Measurement of mortality and life tables- crude, death rates, infant mortality rates, death date by cause, standardized death rate, complete life table - its main features, mortality rate and probability of dying, use of survival tables. Measurement of fertility - crude birth rate, general fertility rate, total fertility rate, gross reproduction rate, net reproduction rate. (25L)

UNIT-III Economic Statistics : Index number - its definition, applications of index numbers. price relatives and quantity or volume relatives, link and chain relatives, problems involved in computation of index numbers, use of averages, simple aggregative and weighted average methods, Laspeyre's, Paasche's and Fisher's index numbers, time and factor reversal tests of index numbers. Consumer Price Index. (20L)

UNIT-IV Static laws of demand and supply, price elasticity of demand, analysis of income and allied size distribution - Pareto distribution, graphical test, fitting of Pareto's law, log normal distribution and its properties, Lorenz curve and estimation of elasticity from time series data. Gini's coefficient.

UNIT-V Time Series Analysis : Economic time series, its different components, Illustrations, additive and multiplicative models, determination of trend, growth curves, analysis of seasonal fluctuations construction of seasonal indices. (15L)

REFERENCES :

1. Croxton F.E. and Cowden D.J. (1969) : Applied General Statistics, Prentice Hall of India.
2. Goon, A.M., Gupta, M.K., Das gupta, B (1986) : Fundamentals of statistics, vol.-II, World Press, Calcutta.
3. Guide to Current Indian Offical Statistics : Central Statistical Organization, Govt. of India, New Delhi.
4. Saluja M.P. ( ) Indian Official statistical Systems, Statistical Publishing Society, Calcutta.
5. Srivastava, O.S. (1983) : A textbook of Demography, Vikas Publishing.

ADDITIONAL REFERENCES :

1. Gupta and Mukhopadhyay P.P. ( ) Aplied Statistics, Central Book Agency.
2. Pressat R. (1978) : Statistical Demography, Methuen and Co. Ltd.

PAPER-II

(Paper Code-0908)

STATISTICAL QUALITY CONTROL AND COMPUTATIONAL TECHNIQUES

UNIT-I Importance of statistical methods in industrial research and practice, specification of items and lot qualities corresponding to visual gauging, count and measurements, types of inspection, determination of tolerance limits. General theory of control charts, causes of variation in quality, control limits, sub-grouping, summary of out-ot control criteria, charts for attributes, np chart, p - chatr, c- chart, u- chart, Charts for variables- X- and R charts, design of X and R charts versus p-charts, process capability studies. (30L)

UNIT-II Principle of acceptance sampling- problem of lot acceptance, stipulation of good and bad lots, producer's and consumers risks, single and double sampling plans, their OC functions, concepts of AQL, LTPD, AOQL, average amount of inspection and ASN function, rectifying inspection plans, Sampling inspection plans, Indian Standards Tables Part-I (including applications), IS 2500 Part I. (15L)

UNIT-III Computational techniques : Difference tables and methods of inferpolation, Newton's and Lagrange's methods of interpolation, Divided differences, numerical differentiation and integration, Trapezoidal rule, Simpson's one-third formula, iterative solution of non-linear equations. (15L)

UNIT-IV Linear Programming : Elementary theory of convex sets, definition of general linear programming problems (LPP), formulation problems of LPP, examples of LPP, Problems occurring in various fields, graphical and Simplex method of solving an LPP, artificial variables, duality of LPP. Transportation Problem (non-degenerate and balanced cases only), Assignment Problem. (30L)

UNIT-V Four short notes, one from each unit. Student have to answer any two.

REFERENCES :

1. Brownless K.A. (1960) : Statistical theory and Methodology in Science and Engineering. John Wiley and Sons.
2. Grant E.L. (1964) : Statistical Quality Control, McGraw Hill.
3. Duncan A.J. (1974) : Quality Control and Industrial Statistics, Traporewala and Sons.
4. Gass S.I. (1975) : Linear Programming Methods and Applications, McGraw Hill.
5. Rajaraman, V. (1981) : Computer Oriented Numerical Methods, Prentice Hall.
6. Sastry S.S. (1987) : Introductory Methods of Numerical Analysis, Prentice Hall.
7. Taha H.A. (1989) : Operations Research : An Introduction, Macmillan Publishing Company.

ADDITIONAL REFERENCES :

1. Bowker H.A. and Liberman G.T. (1962) : Engineering Statistics, Prentice Hall.
2. Cowden D.J. (1960) : Statistical Methods in Quality Control, Asia Publishing Society.
3. Garvin W.W. (1960) : Introduction to Linear Programming, McGraw Hill.
4. Mahajan M. (2001) : Statistical Quality Control, Dhanpat Rai & Co. (P) Ltd.
5. Rao S.S. (1984) : Optimization Theory and Applications, Wiley Eastern.

6. Krishnamurthy E.V. and Sen S.K. (1976) : Computer Based Numerical Algorithms, Affiliated East-West Press.

PRACTICAL

1. Computing measures of mortality & fertility, Construction of life tables and examples involving use of life tables, Graduation of mortality rates by Gompertz curve, fitting of a logistic curve.
2. Construction of Index Numbers by Laspeyre's, Paasche's, Fisher's method.
3. Determination of trend in a time series, construction of seasonal indices.
4. Fitting of Pareto curve to income data, Lorenz curve of concentration, Estimation of price elasticity of demand form time series data.
5. Drawing of X-R, np, p and c- charts. Drawing of OC curve for single and double sampling plans for attributes, AOQ and ATI curves.
6. Construction of difference tables, use of Newton's Lagrange's methods of interpolation and divided difference formulae, numerical evaluation of integrals using Trapezoidal and Simpson's one-third formulae, solution of non-linear equation by Newton-Raphson iterative method.
7. Formulation of LPP's and their duals. Solving LPPs by graphical and simplex methods, transportation and assignment problems.

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DEFENCE STUDIES

PAPER-I

PROBLEMS OF WAR AND PEACE (Paper Code-0921)

Aim : The objective of this paper is to acquaint the students about the multidimensional problems of war and peace and humanitarian laws.

Note : Question will be set from each unit, there will be only internal choice.

Unit-I U.N.O. AND WORLD PEACE

1. Organs and its role.
2. Main specialized agencies of U.N.O.
3. Role of U.N.O. in world peace.
4. Peace keeping forces of the U.N.O.
5. Veto power and Security Council.

Unit-II WAR AND PEACE

1. Sattlement of International Disputes.
2. Diplomatic agents and Consuls.
3. War Crimes.
4. Neutrality.
5. Intervention.

Unit-III HUMANITARIAN LAW

1. Basic concepts and development of Humanitarian law.
2. UN General Assembly declaration of human rights on Dec. 10, 1948.
3. Protection of Victims and defenceless in armed conflict, POWs, wounded and civilians in Armed Forces.
4. Central Human Right Commission : Organisation and Function.
5. State Human Right Commission : Organisation and Function.

Unit-IV REFUGEE LAW

1. Meaning, Concept and causes of Refugee.
2. Refugee and IDPs.
3. Refugee law in India.
4. Refugee Problem in South Asia.
5. Role of International Committee of Red Cross and UNO in Refugee Problems.

Unit-V LAWS OF WAR

1. Law of Land war.
2. Law of Sea war.
3. Law of Air war.
4. Space law.
5. The International Court of Justice.

SELECTED READINGS :

1. Maunce clark, J : Readings in the Economics of War.
2. International Security : Modern political Science series.
3. Rajani Kothari : Word order.
4. Openhem, I : Use of Forces by states and International law.

PAPER - II

MODERN WARFARE

(Paper Code-922)

Aim : To enable students to appreciate the impact of Political, economic and technological developments on the patterns of conflicts between nations.

Note : Question will be set from each unit, there will be only internal choice.

UNIT-I
1. Development of Nuclear weapons.
2. Effects of Nuclear Explosion.
3. Spread of Nuclear Weapons.
4. Missile and their characteristics.
5. Type of Missiles.

UNIT-II
1. Trends in Science and Technology and their impact on war.
2. Role of Research and Development.
3. Development of Weapons and their impat on tactics
4. Command, Control, Communication and Intelligence (C^3I) in Modern Warfare.
5. Elements of National Power.

UNIT-III
1. Military Satellites.
2. Explosive Bombs.
3. War Gases.
4. Micro Organs : as a weapons.
5. Smart Weapons.

UNIT-IV
1. Rocket Technology and India.
2. Missile Technology and India.
3. Nuclear Technology and India.
4. Atomic Minerals and India.
5. Space Technology and India.

UNIT-V
1. New word order - Political, Social and Economical.
2. Alliance and Regional co-operation.
3. Mobilisation of resources for war.
4. War time economics.
5. New trends.

SELECTED READINGS :

1.	Halailan Morton	:	Coutemporary Military strategy
2.	Brodue, Y.	:	Strategy in the Missile Age.
3.	Markabi, Y.	:	Nuclear war and Nuclear peace
4.	Osanka. F.M.	:	Modern Guerilla warfare
5.	Gerald. J.	:	Defence Psychology
6.	Know Kalus	:	Science and Defence
7.	Pandey Girishkant	:	Yudh mein vigyan aven Tachniki.

PRACTICALS

50 marks

There shall be practical examination of 3.5 hours duration carrying.

The division of marks shall be as follows :

(1)	Plain Table Survey	:	15 Marks.
(2)	Experimental Military Psychology	:	15 Marks.
(3)	Group Descussion & Lectring :		05 Marks.
(4)	Viva-Voce :		05 Marks
(5)	Sessional work & Record	:	10 Marks.

Section - A

Plain table Survey by inter section methods. (Atleast ten exercises in a session).

Section - B

Military - Psychology Experiment :

(1) Muller-Layer-IIlusion test.

(2) Koh's Block Design Test.

(3) Allexander Pass Along Test.

Section - C

Group Discussion and Lectures based on current topic on any international & national Problems.

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INDUSTRIAL CHEMISTRY

PAPER - I

(Paper Code-0925)

CHEMICAL PROCESS ECONOMICS — M.M. 34

UNIT-I
1. Factors involved in project cost estimation, methods employed for the estimation of capital investment. 06L
2. Capital formation, elements of cost accounting. 05L

UNIT-II
1. Interest & investment cost, time value of money equivalence. 03L
2. Depreciation, method of determining depreciation, taxes. 04L
3. Some aspects of marketing, pricing policy. 04L

UNIT-III
1. Profitability criteria, economics of selecting alternatives. 03L
2. Variation of costs with capacity, Break-even point, optimum batch sizes, Production, schedulling etc. 05L
3. Sampling of Bulk materials, techniques of sampling of solids, liquids and gasses. 03L
4. Collection & Processing data. 02L
5. Particle size determination. 02L
6. Rheological properties of liquids, plastics and their analysis. 03L

INDUSTRIAL ORGANIZATION

UNIT-IV
1. Concept of scientific management in industry. 04L
2. Functions of management, decision making, planning, organising. directing & control. 09L
3. Location of industry. 03L

UNIT-V
1. Materials management. 05L
2. Inventory control. 04L
3. Management of human resources-selection, incentives, welfare & safety. 05L

BOOKS :

1. Economics of Chemical industry, Hempel, E.H.
2. Plant Design & Economics for Chemical Engineers, Peter Time Rhaus, McGraw Hill.
3. I.C.M.A. Booklets-9 & 10.
4. Industrial Organization & Management, Bethel, L.L.
5. Industrial Organization & Management, Tarachand, Vol. I & II.
6. Book on Management, O.P. Khandelwal.
7. Rheology theory & application, Vol. 5, Elrich, R.F.

PAPER - II

(Paper Code-0926)

PHARMACEUTICALS — M.M. 33

UNIT-I
1. Historical Background & development of pharmaceutical industry in India in brief. 02L
2. Pharmacopoeias - Development of Indian pharmacopoeia & introduction ot B.P., U.S.P., E.P., N.F. & other Important Pharmacopoeias. 02L

3. Introduction to various types of formulations & roots of administration. 02L
4. Aseptic conditions, need for sterilisation, various methods of sterilisation. 02L

UNIT-II 1. Various types of pharmaceutical excipients their chemistry, process of manufacture & quality, specifications Glidants, lubricants, diluants, preservatives, antioxidants, emulsifying agents, coating agents, binders, coloring agents, flavouring agents geletin & other additives, sorbotol, mannitol, viscosity builders etc. 12L
2. Surgical dressing, sutures, ligatures with respect to the process, equipments used for manufacture, method of sterlilization and quality control. 05L

UNIT-III 1. Pharmaceutical packaging introduction, package selection, packaging materials, ancillary materials, packaging machinery, quality control of packaging materials. 05L
2. F.D.A., Important schedules & some legal aspects of drugs. 03L
3. Pharmceutical quality control (other than the analytical methods covered under core-subject) - sterility testing, pyrogenic testing, glass testing, bulk density of powders, etc. 06L

UNIT-IV 1. Evaluation of crude drugs-Moisture content, extractive value, volatile oil content, foreign organic matter, quantitative microscopic exercises, including starch, leaf content, (palisade ratio, stomatal number & index vein, islet number & vein termination number), crude fiber content, introduction to chromatographic method of dentification of crude drugs. 06L
2. Chromatography, Paper chromatography, TLC, HPLC, GLC. 04L
3. Ion chromatography. 01L

INSTRUMENTATION

UNIT-V 1. UV-Visible spectroscopy. 03L
2. IR-Spectroscopy non-dispersive IR. 03L
3. NMR Spectroscopy. 03L
4. Atomic Absorption & Flame photometry. 03L
5. Neutron diffraction. 01L
6. X-Ray Fluorescence. 01L
7. Ion Selective Electrodes. 01L

BOOKS :

1. Instumental methods of analysis, Willard, Merit, Dean.
2. Introduction to instrumental methods of analysis, Braun, R.D., McGraw Hill.
3. Analytical chemistry, J.B. Dick, McGraw Hill.
4. Quantitative Inorganic analysis, A. Vogel.
5. Instrumental methods of Analysis, Skoog & West.
6. Instrumental Methods of Analysis, B.K. Sharma.

PAPER -III

(Paper Code-0927)

DRUGS **M.M. 33**

UNIT-I 1. Phyto-chemicals-Introduction to plant classification & crude drugs, cultivation, collection, preparations for the market & storage of medicinal plants.

2. Classification of various types of drugs with examples.
3. Raw meterials, process of manufacture, effluent handling, etc. of the following bulk drugs :-
   - Sulpha drugs-sulphaguandine, sulphamethoxazole.

UNIT-II 1. Chemical constitution of plants including carbohydrates, amino acids, proteins, fats, waxes, volatile oils, terpenoids, steroids, saponins flavonoids, tanins, glycosides, alkaloids.
2. Various isolation procedures for active ingredients with examples for alkaloids, reserpine one for steroids sapogenin, diosgenin, diogron.

UNIT-III 1. Antimicrobial :- Chloramphenicol, Furazolidne, Mercurochrome, Isoniazid, Na-PAS.
2. Analgesic-AntiInflammatory :- Salicylic acid and its derivatives, Ibuprofen, Mefenamic acid.
3. Steroidal Harmones :- Progesterone, Testosterone, Methyl testosterne.

UNIT-IV 1. Vitamins :- Vit.-A, Vit.-B6, Vit.-C.
2. Barbiturates :- Pentobarbital.
3. Blockers :- Propranolol, Atenolol.
4. Cardiovascular Agent :- Methyl dopa.
5. Antihistamins :- Chloropheneramine Maleate.

UNIT-V 1. Products based of fermentation processes :- Brief idea of micro-organisma, their structure, growth & usefulness. Enzyme systems useful for transformation, microbial products.
2. General principles of fermentation processes & product processing.
3. Manufacture of antibiotics - Pencillin-G & semi synthetic pencillines, Rifamycin, Vitamin-B12.
4. Bio-transformation process for prednisolone, 11-hydroxylation in steroids.
5. Enzyme catalysed transformation, manufacture of ephidrine.

BOOKS :-

1. Practical Pharmacognosy, T.B. Wllis.
2. Practical Pharmacognosy, T.N. Vasudevan.
3. Modern Pharmacognosy, Remstad, McGraw Hill.
4. Indian Pharmacopoea, 1985.
5. British Pharmacopoea, 1990.
6. Hand Book of Drugs & Cosmetic Act, Mehrotra.
7. Pharmaceutical excipients.
8. Pharmaceutical Dosage forms.
9. Principles of Medicinal Chemistry, W.O. Foye, Lea & Febigen, Publication Phidelphia.
10. Text Book of Organic Medicinal & Pharmaceutical Chemistry, Willson, Gisvold, Derge; Lippinett-Toppan.
11. Essentials of Medicinal Chemistry, Korolkovas & Burkhatter, Wiely Interscience.

PRACTICAL

Marks : 50

The Practical examination will be of 08 Hrs. Duration spread over two days carrying 50 Marks.

Two experiments have to be performed.

1. Synthesis of common industrial compounds involving two step reactions. 4-Bromoaniline, 3-Nitroaniline, Sulphanilamide, 4-Aminoben zoic acid, 4-Nitroben zoic acid, dihalobenzenes, Nitrohal obenzenes.
2. Industial analysis of common raw meterials as per industrial specification :- Phenol, Aniline, Formaldehyde, Hydrogen per Oxide, Acetone, Epoxide, Olefins, Oils etc.
3. Demonstration of various pharmaceutical packaging materials, quality control tests of some materials,-Al Strips, Cartons, Glass bottles.
4. Limit tests for chlorine, heavy metals, arsenic, etc. of two representative bulk drugs.
5. Demonstration of various pharmaceutical products.
6. Active Ingradient analysis of few types of formulations representing different methodsof analysis-acidimetry, alkalimetry, non-aqueous.
7. Determination of sulphate ash, loss of drying & other tests of bulk drugs, complete I.P. monograph of three drugs representing variety of testing methods.
8. Evaluation of crude drugs-macroscopic examination-determination & identification of starch grannules, calcium oxalate.
9. Palisate ratio, stomatal index-determination & Identification of few drugs. Tlc method for identification.
10. Microbiological testing-determination of mic of some aNtibacterial drugs by zone/cup plate method.

DISTRIBUTION OF MARKS :

1.	Experiment No. 1.	20
2.	Experiment No. 2.	10
3.	Viva	05
4.	Sessional 05	
5.	Project Work	10
	Total	**50**

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COMPUTTER SCIENCE

PAPER - I

(Paper Code-0909)

COMPUTER HARDWARE PART-C

AIM : The emphasis is on the design concepts & organisational details of the common PC, leaving the complicated Electronics of the system to the computer engineers.

Objective of the Course :

1. To introduce the overall organisation of the microcomputers and operating systems.
2. To introduce the interaction of common devices used with computers with operating softwares, excluding the Assembly languages, with special reference to DOS/WINDOWS.
3. To introduce the working of hardware components, Micro-Processor and various chips used in micro-computers by operating system, without the use of electronic circuitry.
4. To introduce the use of operating systems architecture with IBM-PC & clones, excluding Assembly language, with forms an important part of hardwares.

N.B. : Since the computer organisation study is very vast & complicated, so the study is restricted only to the description and understanding part, hence the paper-setter is requested to keep this important factor in mind.

UNIT-1 : ORGANISATION OF Micro-Processor & MIRCO-COMPUTER :-

1. Introduction & organisation of Micro-Computer :

(a) Basic Components of Micro-computer : Basic Block; Prom ram memory; Data memory; I/O Ports; Clock generator; Integration of functional blocks.

(b) Interconnecting Components in a Micro-computer : Necessary functional block; Bussed architecture for microcomputer; memory addressing; Addressing I/O ports; comparision of I/O mapped and memory mapped I/O.

(c) Input Output Techniques : Non-CPU devices, Program & interrupt controlled I/O; Hardware controlled I/O or DMA.

2. An Introduction to the various as :

(a) General understanding of different μP or CPU :
Intel 8088, 286, 386, 486, 586 Pentium, P54C, MMX P55C; Motorola 6800 & 88100 series; CYRIX & AMD CPUs.

(b) The Registers of CPU : (Give Example of P-8088) Register organisation of 8088, Scrach pad segment, pointer, Index and Flag, Registers.

(c) Memory addressing modes of P-8088 : Segment offset; Data addressing modes; Addressing for branch instructions.

(d) I/O Addressing with P-8088 : Memory mapped I/O & I/O mapped I/O.

UNIT-2 : SYSTEM HARDWARE ORGANISATION OF COMPUTERS :

1. Hardware Organisation of the Personal Computer :

(a) Block diagram with various parts of PC.

(b) The Mother Board of General P.C. : 8088 CPU; ROM & RAM; Keyboard

& its interface; System timer/counters; Hardware interrupt vectoring; DMA controller & channels; Interfacing to audio speaker; Bus slots & facture cards.

(c) The Serial I/O ports, COM-1 & COM-2.

(d) The parallel Port for Printer.

(e) Expansion Slots for RAM.

(f) Disk Controllers : For floppy, Hard disk, CD-ROM & Cassets drives.

2. The Video Display of PCs :

(a) Video Monitors; Monochrome and colour.

(b) Video Display Adapters & Their Video Modes; Monochrome & colour graphics adapters.

(c) Video Control Through ANSI-SYS.

(d) Video Control Through ROM-BOIS : INT 10H.

(e) Direct Video Control; Monochrom & colour graphics adapters.

(f) Installing Customized Character Sets.

UNIT-3 : ORGANISATION OF OPERTING SYSTEM WITH SYSTEM HARDWARE :

1. The ROM-BIOS Services :

(a) Introduction to UNIX, ENIX, SUN, solaris, DOS & MAC with special reference to DOS & Windows, its ver., as DOS becomes more popular than others in PCs.

(b) The ROM-BIOS Diskette Services, INT 13H.

(c) The ROM-BIOS Serial Port Services, INT 14H.

(d) The ROM-BIOS Keyboard Services, INT 16H.

(e) The ROM-BIOS Printer Services, INT 17H.

(f) Miscellaneous Service Provided by the ROM-BIOS : INT 05H, INT 11H, INT 12H, INT 18H, INT 19H, INT 1AH.

2. The fundamental of Operating System viz. DOS/WINDOWS :

(a) The loading of DOS & Its Basic Structure ; ROM bootstrap, IO.SYS, DOS.SYS & Command..COM.

(b) The Execution of the programs under DOS ; EXEC functions, program segment prefix; Features of COM & EXE program files.

(c) Device Handling by Dos ; FDD, HDD, CON, Keyboard, PRN, AUX, CLOCK and NUL devices; Block devices; Character devices; Driver installation sequence.

(d) File Structures of DOS ;

(e) The DOS Interrupts : INT 20H-2FH

(f) The DOS functions through INT 21H; Discuss only the understanding part of various other DOS function to handle hard & softwares.

(g) Installation of windows : Important system files in windows.

UNIT-4 : ORGANIZATION & HANDLING BY OPERATING SYSTEMS :

1. Disk and Files under DOS :

(a) Logical Structure of a Disk : Organisation of disk for use; Boot record ; FAT

files; disk or root directory.

(b) File Organisation on a DOS disk : Logical volumes ; Sub directories; Volume lables.

(c) Manipulating Files under DOS : File attributes ; date and time, file Access; FCB functions.

2. Memory Allocation, Program Loading and Execution :

(a) Memory Management under DOS : EXEC loader; Memory Management & its functions; Modifying a Program's memory allocation.

(b) Loading and Executing Programs under DOS : The EXEC function ; Memory considerations; parameter blocks; calling & returning from EXEC.

(c) Loading the program overlays through EXEC.

UNIT-5 : ORGANISATION OF HARDWARE BY OPERATING SYSTEM :

1. Interrupt Handling through DOS :

(a) Types of interrupts.

(b) Interrupt Vector Table in PC.

(c) Interrupt Service Routines.

(d) Special Interrupts in PC : Clock Interrupt; The -C or Break Interrupt ; DOS reserved interupt INT 28H ; Patching memory resident routines.

2. Filters for DOS :

(a) Filters in operating systems.

(b) Redirection of I/O under DOS.

(c) The Filters Supplied with DOS.

(d) Writing Filters to run under DOS.

3. Handling of Various Versions of Windows O.S. :

(a) Setup Installation

(b) Trouble shooting

(c) Networking features

Text Book :

1. Hardware and Software of Personal Computers.
   By Sanjay K. Bose. (Wiley Eastern Ltd. New Delhi).

Supporting Text Books :

1. Digital System from Gates to Mircoprocessor.
   By Sanjay K. Bose. (Wiley Eastern Ltd. New Delhi).
2. Computer Fundamentals : Architecture & Organisation.
   By B. Ram.. (Wiley Eastern Ltd. New Delhi).

Reference Books :

1. IBM PC-XT and Clones : By Govinda Rajalu.
2. Microprocessor and interfacing : By Douglas Hall.
3. Insight the IBM-PC : Peter Norton.
4. Micriprocessor System : 8086/8088 family architecture, programming & design : By Liu and Gibson.

PAPER - II

(Paper Code-0910)

Atm : To introduce DBMS and RDBMS using Back-end tool and Front-end tool.

Object of the Course :

1. To introduce Data BAse Management System concepts.
2. To introduce the Relational Database Management System and Relational Database Design.
3. To introduce the RDBMS software and utility of query language.
4. To introduce basic concept of GUI Programming and database connectivity using Visual Basic.

UNIT-1 : CONCEPT OF D.B.M.S. AND DATA MODELS

(a) Introduction to DBMS :- Purpose of Data base systems, views of data, Data Modeling Database Languages, Transaction management, Storage Management, Database Administrator and User, Database System Structure.

(b) E-R Model : Basic concepts, Constraints, Keys, Mapping Constaint, E-R Diagram, Weak and Strong Entity sets, E-R Database Schema, Reduction of an E-R Schema to Table.

UNIT-2. : RELATIONAL DATABASE MANAGEMENT SYSTEM

(a) Relational Model : Structure of Relational Database, Relational Algebra, Domain Relational Calculus, Extended Relational- Algebra Operation, Modification of database, Views.

(b) Relational Database Design : Pitfalls in Relational Database Desing, Decomposition Functional Dependencies, Normalization : 1NF, 2NF, BCNF, 3NF, 4NF, 5NF.

UNIT-3 : INTRODUCTION TO RDBMS SOFTWARE - ORACLE

(a) Introduction : Introduction to personal and Enterprises Oracle, Data Types, Commercial Query Language, SQL, SQL*PLUS.

(b) DDL and DML : Creating Table, Specifying Integrity Constraint, Modifying Existing Table, Dropping Table, Inserting Deleting and Updating Rows in as Table, Where Clause, Operators, ORDER BY, GROUP Function, SQL Function, JOIN, Set Operation, SQL Sub Queries. Views : What is Views, Create, Drop and Retrieving data from views.

(c) Security : Management of Roles, Changing Password, Granting Roles & Privilege, with drawing privileges.

(d) PL/SQL : Block Structure in PL/SQL, Variable and constants, Running PL/SQL in the SQL*PLUS, Data base Access with PL/SQL, Exception Handling, Record Data type in PL/SQL, Triggers in PL/SQL.

UNIT-4 : G.U.I. PROGRAMMING

(a) Introduction to Visual Basic : Event Driven Programming, IDE, Introduction to Object, Controlling Objects, Models and Events, Working with Forms, MDI Form Working with standard Controls.

(b) Overview of Variables, Declaring, Scope, Arrays, User defined data types, Constants, Working with procedures : Function, Subroutine, and Property.

Working with Data, Time, Format, String, and Math's Function. Controlling Program Execution: Comparison and Logical Operators, If...Then statements, Select Case Statement, Looping Structures, Exiting a loop. Error Trapping and Debugging.

(c) File Organization : Saving data to file, Sequential and Random access file, the desing and coding.

UNIT-5 : V DATA BASE PROGRAMMING IN VB

(a) Introduction :- Concept of DAO, RDO, ADO, input validation : field & form level validation, ADO object model : the ADO object Hierarchy, the connection object, the command object, record set object, parameter object, field object, record object, stream object, Error object, parameter object.

(b) Using Bound control to Present ADO data : Using the ADO data control, ADO data control properties, binding simple controls : Data list, data combo, Data Grid, Data Form Wizard : single form wizard, Grid form, master/Detail form. Programming the ADO data control : Refresh method, Event, Hierarchical flex Grid control.

(c) Data Environment & Data Report : Creating connection, Using command object in the data Environment, Data Environment option and operation, Binding Form to the data Environment, ADO Events in the Data report, Print Preview, Print, Export, Data report in code : Data reports Events, Binding data reports Directly.

REFERENCE BOOKS :

1. Data Base System Concept : By Hery F. Korth, Tata McGraw Hill
2. Fundamental of Data Base System Concept : Nawathe & Elmasri (Pearson educations)
3. Oracle Complete Reference : By Oracle Press
4. Introduction to OOPS & VB : By V.K. Jain, Vikas Publishing House
5. Database Programming VB 6 : By B.P.B. Publication

PRACTICALS :

1. Practicals on Oracle :

At least 20 practicals covering the SQL, PL/SQL, Triggers, Views.

2. Practicals on Visual Basic :

At least 20 pracricals on VB that covering basic and data controls components.

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INFORMATION TECHNOLOGIES

PAPER - I

(Paper Code-0928)

AMPLIFIERS AND OSCILLATORS

UNIT-I **POWER AMPLIFIER :** Classification of power amplifiers, requirement of power amplifiers, single ended class A power amplifier, and its efficiency, transformer coupled power amplifier, power dissipation curve, harmonic dissipation curve, harmonic distortion in pushpull power amplifier, power and efficiency calculation for pushpull for pushpull power amplifier, Distortion in pushpull power amplifier, Advantages of pushpull power amplifier.

UNIT-II **FEEDBACK AMPLIFIERS AND OSCILLATORS :** Feedback in amplifiers, types of feedback positive, and negative feedback. Derivation of input and output impedance in voltage and current series feedback. Advantages of negative feedback. Positive feedback. Berkhauson criteria for sustained oscillator. RF oscillators-Hartley oscillatot, Colpetts oscillators (Qualitative study) relaxation osillators, Multivibrators-Astable, Monostable.

UNIT-III **OPERATIONAL AMPLIFIER AND POWER CONTROL DEVICES :** Differential amplifier, operational amplifier, Characteristics of an ideal OPAMP, definition of input bias current input offset current, current driff, impout offset, common mode rejection ratio, slew rate, universal biasing technique, Application of OP-Amp, as inverting, non-inverting amplifiers, differentiation, Integratior, scal charger and voltage follower, Silicon controlled rectifier (SCR), Diac, Traic and UJT (Only qualitative study).

UNIT-IV **THE INTEL 8080/8085 MICROPROCESSOR :** Introcution, the 8085 pin diagram and functions, The 8085 architecture, addressing modes, the 8080/8085 instruction set, the 8080/8085 data transfer instructions, the 8080/8085 arithmetic instructions, the 8080/8085 logical instructions the 8080/8085 stack, I/O and machine controlled instructions.

UNIT-V **PROGRAMMING THE MICROPROCESSOR :** Machine and assembling languages simplified instruction set, Instruction set, arithmetic poeration, Instructions set logical operations, instruction set data transfer operations, instruction set branch operations, instructuion set-subroutine all and return operations, instruction set miscellaneous operations, writing a program, addressing modes, program branching, program looping using subroutines.

Programming the 8080/8085 microprocessor : Introduction straight-line programs looping programs, mathematical programs.

PAPER - II

(Paper Code-0929)

FUNDAMENTAL DATA STRUCTURE

UNIT-I **Introduction to Data STructure :** The concept of data structure, Abstract data structure, Analysis of Algorithm, The concept of list.

Stacks and Queues : Introduction to stack & primitive operation on stack, Stack as an abstract data type, Multiple Stack, Stacks application : infix, post fix, and Recursion, Introduction to queues, Primitive Operations on the Queues, Queue as an abstract data type, Circular Queue, Dequeue, Priority Queue.

UNIT-II **Linked List :** Introduction to the linked list of stacks, The linked list of queues, Header nodes, Doubly linked list, Circular linked list, Stacks & Queues as a Circular linked list, Application of linked list.

UNIT-III Trees: Basic Terminology, Binary Trees, Tree Representations as Array & Linked list, Binary tree representation, Traversal of binary trees : In order, Preorder & post order.

Application of Binary tree, Threaded binary tree, B-Tree & Height balanced tree, representation of B^+ & B* trees, Binary tree representation of trees, Counting binary trees, 2-3 Trees algorithm or manipulating 2-3 Trees.

UNIT-IV Searching & Sorting : Sequential Searching, Binary search, Insertion sort, Selection sort, Quick sort, Bubble sort, Heap sort, Comparison of sorting methods.

UNIT-V Tables & Graphs : Hash Table, Collision resolution Techniques, Introduction to graphs, Definition, Terminology, Directed, Undirected & Weighted graph, Representation of graphs. Graph Traversal Depth first & Breadth first search, Spanning Trees, minimum spanning Tree, The basic, Greedy Strategy for computing Algorithm of Kruskal and prims.

TEXT & REFERENCE BOOK :

Fundamentals of Data structure : By S. Sawhney & Horowith

Data Structure : By Trembley & Sorrenson.

Data Structure Using Pascal : By Tannenbaum & Alugenstein

Data Structure : By lipschuists (Schaume's Outline Series Mcgraw Hill Publication)

Fundamentals of Computer Algorithm : By Ellis Horowitz and Sartaj Sawhney.

PRACTICAL WORK

1. The sufficient practical work should be done for understanding the date structure with C++.
2. The sufficient practical work must be performed on stacks queues linked list, trees etc.
3. All practical works should prepared in form of print outs and voluated while practical examination.

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INDUSTRIAL MICROBIOLOGY

Paper	Title	Time	Marks
First	Agriculture and Food Microbiology	3 hrs.	50
Second	Fermentation Technology & Government Regulations	3 hrs.	50
	PRACTICAL Examination (including sessionals)	4 hrs.	(20+5) 25
	Viva-Voce Exam. based on "Summer Job-Training Report"		25

PAPER-I

(Paper Code-0930)

AGRICULTURE AND FOOD MICROBIOLOGY M.M. : 50

UNIT-I Soil fertility and management of agricultural soils. Influence of available nitrogen on soil-fertility. Importance of crop-rotation. Soil management. Management practices : Pesticides and their impact and effect on soil fertility.

UNIT-II Microbial diseases of crop plants with special reference to Wheat, Rice, Maize, Groundnut, Mustard, Grapes, Potato and Papaya.

UNIT-III Control of plant diseases. Chemical control of plant diseases. Biological Control- its mechanism and importance. Biopesticides. Concept of integrated pest management (IPM). Bacterial insecticides.

UNIT-IV Food spoilage mechanism, Spoilage of stored products, fruits and vegetables. Microbial spoilage of milk and meat. Food borne diseases.

UNIT-V Food preservation methods - Asepsis, Pasteurisation canning, dessication, low temperature, Anaerobiosis, filteration.

Chemical preservation of food - salt and sugar, organic acids. Use of SO_2, ethylene and propylene oxides, wood smoke.

PRACTICALS

1. Study of microbial diseases of crop plants.
2. Study of effect of fungicides and insecticides on microorganisms.
3. Study of antagonistic activities amongst microorganisms.
4. Study of fungal contaminants from stored agricultural products.
5. Study of food spoilage microorganisms from sweets and bakery products.
6. Study of effect of the preservatives on the growth of microorganisms.
7. Study of UV radiations on microorganisms.
8. Study of the effect of agrochemicals on soil inhabiting microorganisms.

RECOMMENDED BOOKS :

1. Modern Plant Pathology by Bilgramy and Dubey.
2. Food Microbiology by Frazier.
3. Microbiology by S.S. Purohit.
4. Microbiology by P.D. Sharma.
5. Agricultural Microbiology by Rangaswami.
6. Plant Pathology by R.S. Mehrotra.

PAPER-II

(Paper Code-0931)

FERMENTATION TECHNOLOGY AND GOVERNMENT REGULATIONS

M.M. : 50

UNIT-I Fermentation equipments and production process. Principal types of fermenters - The batch fermenters, continuous stirred tank fermenters, Tubular fermenter, The fluidised bed fermenter, Solid State fermenters. Computer control of fermentation process. Strain improvement process.

UNIT-II Industrial production of organic acids - Lactic and citric acid.

Enzymes - amylase, protease and amino acids - L-lysine and glutamic acid.

UNIT-III Production of alcohol, wine, beer and acetic acid.

Production of antibiotics - Penicillin and Streptomycine.

Industrial production of vitamins - Vitamin B12 and Riboflavin.

UNIT-IV Importance of microorganisms in dairy industries. Production of cheese, Butter milk; and in bakery industries - leavening of bread, Indian fermented foods.

Fungi and bacteria as a source of single cell proteins (SCP) and proteins.

UNIT-V Role of international organisation in biotechnology. Government programmes for biotechnology development. Government regulations of recombinant DNA research. Hazardous industrial wastes, Mycotoxin hazards in the production of fungal products. Regulations for disposal of biohazardous materials. Patenting of the products in Industries.

PRACTICALS

1. Measurement of production of citric acid by Aspergillus niger.
2. Measurement and production of alcohol by yeast.
3. Demonstration of Transformation of steroids.
4. Demonstration of IAA production by microbes.
5. Demonstration of enzyme production by microorganisms.
   (a) Amylase (b) Cellulase
6. Demonstration of mushroom cultivation.

RECOMMENDED BOOKS :

1. Industrial Microbiology by L.E. Casida.
2. Fermentation Technology by Whittakar.
3. General Microbiology, Vol. II, by Powar and Daginawala.
4. Molecular Biology and Biotechnology by H.D. Kumar.
5. Elements of Biotechnology by P.K. Gupta.

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ELECTRONICS

		Max.M.	Min.M
Paper-I	Power Electronics, Microprocessors and IT Fundamental's	50	33
Paper-II	Communication Systems	50	
Paper-III	Practicals and Project	50	17

PAPER - I

(Paper Code-0911)

POWER ELECTRONICS, MICROPROCESSORS AND IT FUNDAMENTAL'S

UNIT-I Comparative study of semiconductor power Devices : Power Diodes, Power Transistors, Unijunction Transistor, Silicon controlled Rectifier, Diac and Triac.

Structural Description and working of Unijunction Transistor (UJT), Characteristic curve, Use of a UJT as a Relaxation oscillator.

Description and working of a DIAC, Characteristic curve.

Description and working of a Triac, Characteristic curve, Triac as a switch.

Silicon controlled Rectifier : Description of the structure and idea of doping profiles of different layers, Two Transistor model analysis of SCR, Voltage current Characteristics, Forward and Reverse Blocking states; Triggering mechanisms and methods of turn on, turn off mechanism.

UNIT-II 8085 up Instruction Sets and Programing of 8085 microprocessor : Logic 8 bit Instructions of 8085 Data Transfer (copy) Instructions, MOV,

Arithmatic Instructions (ADD, ADI, SUB, SUI, INR, DCR), Logic operations : ANA, ANI, ORA, ORI, XRA, XRI, Branch Operations : Unconditional and Conditional Jump Instruction, Rotate Operations : RLC, RAL, RRC, RAR, 16 Bit Arithmatic and Logical operations.

Use of Instruction set to make following programs.

(i) Data Block Transfer.

(ii) To Arrange a Series in Assending and Decending Order.

(iii) Largest Number Finding.

(iv) To Carry out simple arithmatic operations : Addition, Division Multiplication, Subtraction.

UNIT-III Programmable Interface Devices : Internal Architecture and pin out diagram of the 8155/8156 and 8355/8755 Multipurpose Programmable Devices, The 8279 Programable kayboard/display interface.

Interfacing Data Converters : Digital to Analog (D/A) converter, Analog to Digital (A/D) converter.

UNIT-IV Information Technology :

Information theory - Introduction information in communication system, measurement of information, the binary digit (bit).

Data sets and their connection requirements, Modem : Classification, modes of modem operation, modem interconnection, modem data transmission speed.

Internet basics : Basic information about Http, WWW, HTML, shell and TCP/IP account, Browsers - Netscape and Internet explorer, e-mail.

UNIT-V Communication Technology :

LAN, WAN and MAN, wireless network, Internetwork, network topology, OSI and TCP/IP reference models, comparision between them and their criticism. Details about Physical layer : magnetic media, twisted pair (UTP and STP), coaxial cable, fiber-optic cable Basic idea about ISDN.

REFERENCES :

1. Power Electronics : M.H. Rashid Prentice Hall of India, New Delhi.
2. Microprocessor Architecture Program and Applications : R.S. Gaonkar Penram Publication, Mumbai.
3. Computer Network : A.S. Tanebaum, Second Edition Prentice Hall of India Pvt. Ltd.
4. Introduction to Microprocessors : A.P. Godse, VTU Publishers, Pune.
5. Power Electronics : Alok Jain Penram Publishers, Mumbai.
6. Microprocessors & Interfacing : Douglas V. Hall Tata Mcgraw Hill.

PAPER - II

(Paper Code-0912)

COMMUNICATION SYSTEMS

UNIT-I Analysis of passive filters (low pass, band pass and high pass), elementary idea of active filters-Butterworth and Cbevyshev response) Noise : Thermal noise, shot noise, Partition noise, low fequency and transit time noise, Generation and recombination noise, equivalent noise resistance, signal to noise ratio, noise factor, noise temperature.

UNIT-II Modulation : Principle of modulation, wave spectra and effect of filtering an complex wave : Amplitude modulation; frequency spectrum of AM, average power average voltage, modulation index for multiple sine waves, linear and square modulators, collector modulator, balance modulator, single side band (SSB) generation/method, diode detector, advantages and disadvantages of SSB over DSB AM : SSB detection, Transmitters and Receivers : Superheterodyne receiver, AM Transmitters.

UNIT-III Angle Modulation : Elements of frequency and phase modulation frequency spectrum of FM waves, inter system comparisions (FM and AM); Generation of FM, direct and indirect methods; Angle - Modulator circuits, varactor diode and FET modulators; Foster Seelay discriminator and ratio detector.

UNIT-IV Pulse Modulation : Pulse Modulation, pulse transmission, pulse amplitude modulation, time division multiplexing, pulse time modulation, pulse width and pulse position modulation, digital filtering, pulse code modulation; Block diagrams of PCM transmission and receiving circuits.

UNIT-V Television engineering : Scanning process, characteristics of human eye, aspect ratio, persistence of vision and flicker, resolution and video bandwidth, interlaced scanning, blanking, synchronizing and equalizing pulses, Vestigial side band signal, standard channel characterstics, TV camera tubes Image orthicon and vidicon; Block diagram of TV transmitter and receiver.

Three colour system, luminance and chrominance signal, colour TV camera, Shadow mask, Trinitron and in line colour picure tubes.

REFERENCES :

1. Electronic Communication Systems : George Kennedy, Tata Mcgraw Hill.
2. Principles of Communication Systems : Taub & Schilling TMH
3. Communication Systmems : Simon Haykin, Mcgraw Hill.
4. Monochrome & Color Television : R.L. Gulati, New Age International, New Delhi.

PAPER - III

PRACTICALS AND PROJECT

A student is required to do atleast 12 experiments and a project work in the academic year.

The scheme of practical examination will be as follows :

1. One experiment and Working and Demonstration of Project works - 5 :

	Marks	
Experiment	-	20
Viva	-	05
Project work & Viva	-	15 (10+5)
Sessional	-	10
Total	**-**	**50**

1. Study of SCR characterstics.
2. Study of Diac and Triac characteristics.
3. Study of UJT Characterstics.
4. Study of UJT as a relaxation oscillator.
5. Study of AM generation and detection.
6. Radio Receiver measurments.
7. Study of low pass, band pass and high pass filters.
8. Study of FM using voltage controlled oscillators.
9. Study of DC choppers.
10. Study of Pulse code modulation.
11. Study of electronic ragulation of D.C. & A.C. Motors.
12. Any four experiments on microprocessors.

NOTE : Other experiments of equal standard may also be set.

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ANTHROPOLOGY

PAPER-I

(Paper Code-0919)

"FUNDAMENTALS OF HUMAN GENETICS & HUMAN GROWTH"

AIM- The aim of this paper is to introduce the students the basics of Human Genetics and Human Growth.

UNIT-I Human Genetics : History, aims and scope. and its application to human society Cell division : Mitosis and Meiosis. Mendelism, Chromosomes ; Normal and Abnormal chromosomes. Genes, concept of DNA & RNA. Types of Inheritance : autosomal, (Dominant and Recessive). Sex linked Inheritance.

UNIT-II Concept of Race. Formation of Racial groups. Criteria for racial classification. Racial elements in India. Major stocks of the world and their broad sub divisions.

UNIT-III Types of twins and their importance in genetic investigation. Inheritance of ABO Blood groups, P.T.C., Colour blindness and dermatoglyphics. Genetic councelling, Eugenics. Population Genetics.

UNIT-IV Definition and scope of Human growth. Methods of studying human growth and Development. Ageing, Nutritional requirement for normal growth. Common nutritional disorder (Protein, Fat, Carbohydrates, Mineral, Vitamin).

UNIT-V Ecology : definition and scope. Varieties of human ecosytems. Environmental Population. Definition, nature and scope of biological demography. Demographic Profiles : Fertility, Mortality, Morbidity.

RECOMMENDED READINGS :

1. Agrawal S.N. : India Population Problems
2. Bogue : Principles of Demography
3. Bresler : Human Ecology
4. Gran and Shamir : Methods of Research in Human Growth
5. Harri.II. : Biochemical Genetics Man
6. Harrison. A.E. (editor) : Human Biology
7. Phyllis and Home, P.S. : Basic nutrition in health & disease
8. Race, R.R. & Sanger R. : Blood Group in Man
9. Stern C. : Principles of Human Genetics
10. Tanner, J.M. : Human Growth
11. Theodarson : Studies in Human Ecology
12. Walson and Lowry : Growth and Development of Children
13. Winchester A.W. : Principal of Genetics
14. रघुवंशी अरूण एवं चन्द्रलेखा : पर्यावरण प्रदूषण
15. Sinnot, Dunn & Dozansky : Principles of Genetics

PAPER-II

(Paper Code-0920)

THEORIES IN SOCIAL CULTURAL ANTHROPOLOGY

AIM : The main aim of this course is to introduce the student about the basic pricinciples and Theories of Social cultural Anthropology to-provide preliminary understatnding of various theoretical models evolved by Social and Cultural Anthropology.

UNIT-I The contributions made by the following Anthropologists to Social-Cultural Anthropology. (I) E.Durkheim, (II) F. Boas, (III) R. Redcfield, (IV) A. L. Kroeber, (V) S.C. Dube, (VI) M.N. Shrinivas, (VII) L.P. Vidyarthi.

UNIT-II Evolution: Biological and cultural Evolutionism; classical Evolutionism; E.B. Tylor, L.H. Morgan.

Neo - Evolutionism; jLeslie white, Gordon childe.

Culture traits, Culture Complex, Culture Area, Culture focus.

Diffusion of Culture : British diffusionist : Genrman - Austrian diffusionist (Kuttre kriese American diffusionist (Culture Area).

UNIT-III Function and structure: Functionalism (Malinowski) and Structure Functionalism (Redcliffe Brown) Structuralism (Levi strauss).

UNIT-IV Personality : Basic personality and Model personality.

Culture pattern : Configurationalism (Ruth Benedict). Anthropological study of National character.

UNIT-V Feild work tradition in Anthropology Major tools of Research: Schedule, Questionaire, Participant observation, interview, case study, Geneological Method. The main bases of Anthropological Methods: Historical Method, Comparative Method and Functional Method.

PAPER-III

PRACTICAL

Obejctive : The main of this practical coures is to introduce the student about the tools and Method, analysis & statistical methods used in Human Biology. Laboratory Procedures in blood grouping and dermatoglyphics would give confidence in Dealing with all the applied dimensions they process.

PART-I : Somatometry :

(a) Measurements on body :

(i) Height vertex, (ii) Height tragus, (iii) Suprasternale height, (iv) Biacromial Breadth, (v) Bi-illioncristal breadth, (vi) Tibial Height, (vii) Upper extremity Length, (viii) Sitting height, (ix) height dactylion, (x) Body weight.

(b) Head and Face Measurement :

(i) Morphological upper facial length.

(ii) Physiognomic upper facial length.

(iii) Morphological facial length.

(iv) Bizygomalic breadth.

(v) Max head length

(vi) Max head breadth

(vii) Nasal length

(viii) Nasal breadth

(c) Indices :

(i) Cephalic Index

(ii) Nasal Index

(iii) Facial Index

PART-II Genetic Traits :

ABO blood group ; colour blindness, PTC taste sensitivity, Dermatioglyphics, Methods of taking finger and palm prints and their analysis.

PART-III Statistics

Mean, Median, Standard deviation, X^2 test.

BOOKS RECOMMENDED :

1. Basin M.K. and I.P. Singh : Anthropometry
2. Cummins H. and Midlo C. : An Introduction of Dermatoglyphics
3. Dunsford and Bowley : Blood Group Techniques
4. Fisher R.S. : Statistical methods for Research Workers
5. मित्रा, मिताश्री : प्रायोगिक मानव विज्ञान भाग-2
6. Olivia : Practical Anthropology

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ELECTRONICS EQUIPMENT MAINTENANCE

		Max. Marks	Min. pass Marks
Paper - I	Trouble shooting and maintenance of audio and video Equipments.	50	17
	Practical	50	17
	Project	50	17

PAPER-I

(Paper Code - 0913)

TROUBLE SHOOTING AND MAINTENANCE OF AUDIO AND VIDEO EQUIPEMENTS

UNIT-I **REMOTE CONTROL AND SPECIAL CIRCUITS :**

Remote control, electromechanical control system, electronic touch tuning frequency synthesiser, TV tuner, automatic fone tuning (AFT), booster emplifier, automatic brightness control, instantious circuitry, picture tube boosters.

ALIGNMENT AND SERVICING EQUIPMENTS :

Antistatics and low leakage multimeters, soldering Iron, Vacuum tube voltmeter (VT VM) Cathode Ray Oscillouscope (CRO) single Generation Video pattern Generator Coulor IIur Generation Vector Scope, High voltage probe Cable connectors shielding and Graunding.

UNIT-II **TELEVISION :**

Trouble shooting procedure, troubles shooting monochrome receivers, servicing of various functional blocks, trouble, shooting colour receivers, servicing circuit modeles, saprets precautions in television servicing.

TELEVISION CAMERA TUBES :

Basic principles and maintenance recording.

UNIT-III **BLOCK DIGRAM OF VCR :**

Requirement of VCR, retaining video drums, helical scan, guard band, frequency response, serva systems, tape tension regulatar, real servo, system control.

Different formats, the quacruplex format, type B segmented format, type C formet, the U matic format, the 1/2" V.H.S. format, 3-Max system.

UNIT-IV **SINGAL PROCESSING, CHROME PROCESSING :**

Colour under technique, recovery of down converted chrome signals, luminance processing. frequency modulation, deviation and band width, autometic gain correction, limited, pre-enphasis, replay of luminance signal, Y/C delay, drop out compensator, block diagram of main requirements, zero guard band system, turners and modulators, the modulator.

Servo mechanisms and system control :

Recording, playback, tracking, capstan servo system control, loading and tereading and play mode, record mode, auto stops, counter, audio video muting.

UNIT-V **CARE OF MECHANICAL SYSTEM :**

Cleaning of head and tape path. Lubrication, replacement of parts, replacement of audio CTC head, replacement of video drum, dihedral error, table height, tape tension. drive toungue stop brenks.

ELECTRONIC SYSTEM ALUGNMENTS :

Instruments, fault finding the power supply, free funning speed the servo system, tracking, video system, playback section alignment, amplifier balance and gain, luminance signal adjustment, D.O.C., F.M. demodulator, limited balance, carrier leak, noise canceller, colour processing, up conversion automatic colour correction, autometic face connection recording, luminance, synctip or clamping frequency, deviation set, white clip, chrominance, summary.

NEW TECHNOLOGIES :

Industrial aspects of consumer electronics, jigs and fixture, quality control/ management, production techniques, business cycle new technologies, compact disc, laser disc.

PAPER - II

(Paper Code - 0914)

PRACTICAL

A student is required to do atleast 2 experiments in an acadmic year, and one month summer Training. The scheme of practical examination will be as follows :

(1) On experiment of 3 hours duration and one month summer Training.

(2) The marks for summer training will be awarded by the teachers teaching the students on the basis of the certificate issued by the external supervisor of the summer training.

Marks

Experiment	25 Marks
Sessional	10 Marks
on month summer training	15 Marks
Total	**50 Marsk**

Orientation and connection to TV antenna. Knowledge of booster connection and replacement. Knowledge of bloon Unit - different types (for different TV sets) and replacement of ballon, Replacement of front end.

Power supply and resistance cold tests. Voltage measurement at different points. To build SMPS for voltage between 6-15 volts (using IC's).

Horizantal and vertical oscilator checking and testing using CRO.

To see and read circuit diagram and to identity (Locate) various block on p/s, H and V deflection, video amplifier, audio, section, chroma section, IF section, tuner, tube and direction yokes (connecting and adjustment).

Audio section wave form testing step by step-sound separator, sound take off from IF section and tenonwards to detector amplifier, IF alignment and loud speaker. (intercarrier sound take off).

If stage testing : IF alignment, tunner and band select.

Chroma processor : testing singals at various IC's.

Remote control studies-range, direction various, controls, IR transmitter and receiver, coding of signal.

Fault finding : cold testing and voltage testing of various parts. (Revision of parts 1 to 9).

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BIOTECHNOLOGY

PAPER - I

GENERAL BIOTECHNOLOGY

Plant, Environment and Industrial Biotechnology

Time : 3 Hrs **MM-50**

UNIT-I Plant cell and tissue culture : General introduction history, scope.
Application of tissue culture
Concept of cellular differentiation.
Agro bacterium. Ti and Ri plasmid.
Bt gene. Molecular marker (RFLP, RAPD), edible vaccines.

UNIT-II Organogenesis, Embryogenesis. Protoplast isolation and fusion.
Germplasm storage and Cryopreservation.
Anther and Ovary culture.

UNIT-III General introduction and scope of environmental biotechnology.
Environmental pollution and its type.
Control of pollution through biotechnology,
Wastewater treatment :- Physical, Chemical, and Biological.

UNIT-IV Biofertilizer, Biopesticides, IPR.
Global environmental problem- General introduction, Ozone depletion. Acid rain.
Green house effect.

UNIT-V Bioreactors and its type.
Fermentation (Lactic acid, alcohol).
Maintenance of Industrial microorganisms.
Food technology- introduction, canning. packing and food preservation.

PAPER - II

IMMUNOLOGY

Time : 3 Hrs **MM-50**

UNIT-I Immunology - General Concept, history and Development.
Immune system and immunity, Organization of Immune system.
Antigen - Antibody and its type.

UNIT-II Cell involved in immune system. Type and cells. Basic structure and function. Cytokines.
Cell mediated immunity Interferons. Hypersensitivity.

UNIT-III Antigen - antibody interaction. Principles and types.
Immunohaematology - General concept. Blood group system. Rh factor. medical application of blood groups.

UNIT-IV Origin and diversity in immune system.

Effectors mechanisms.

Immunity of infection diseases monoclonal Antibodies.

UNIT-V Autoimmune diseases. Hemolytic anemia. Rheumatoid arthritis. Insulin dependent diabetes. Myasthenia gravis. Organ transplantation. Immunodeficient diseases. Cancers. AIDS.

PRACTICAL

EXPERIMENTS

Plant :

1. Sterilization of plant materials.
2. Preparation of Tissue culture media.
3. Plant tissue culture by plant parts.

Environment :

1. Determination of total dissolved solids of water.
2. Determination of DO, BOD, COD of water.
3. MPN Test.

Industrial :

1. Food preservation techniques.
2. Application of biopesticieds on microorganisms
3 Production of Citric acid by microorganisms.

Immunology :

1. Blood grouping in relation to Antigen Antibody interaction.
2. Rh factor determination.
3. Widal Test
4. VDRL Test.
5. Double diffusion experiment
6. ELISA Test

BIOTECHNOLOGY

Time : 4 HRS **MM-50**

Scheme	**Marks**
1. Experiment based on Paper - I	
(i) Plant tissue culture	08
(ii) Environment / Industrial	07

2.	Experiment based on Paper - II	15
3.	Spots 05 (based on paper I & II, at least two spots from each paper)	10
4.	Viva-voce	05
5.	Sessional	05
	Total	**50**

BOOKS -

1. A test Book of Biotechnology : Indu Shekher Thakur - I.K. International Pvt. Ltd., New Delhi.
2. Biotechnology (Fundamentals and Applications) : S.S. Purohit - Agrobios (India), Jodhpur.
3. Fundamentals of Microbiology and Immunology : Ajit Kr. Banerjee, Nirmalya Banerjee - New central Book Agency (P) Ltd., Kolkata.
4. Plant Biotechnology : R.S. Chawla - Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
5. Plant Biotechnology : B.D. Singh - Kalyani Publication, New Delhi.
6. Biotechnology : Fundamental & Appliction : S.S. Purohit
7. Immunology : J. Kubey et al.
8. Immunology : Roitt et al.
9. Fundamental of Immunology : W. Paul.
10. Plant Tissue culture : Rojdov
11. Plant Tissue Culture (Practical) : H.S. Chawla.

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BIOCHEMISTRY

PAPER - I

MOLECULAR BIOLOGY

UNIT-I BASIC CONCEPTS OF GENETIC INFORMATION

a. Nucleic acids as genetic information carriers, experimental evidence e.g. bacterial genetic transformation, Hershey - Chase Experiment, TMV reconstitution rexperiment.

b. Central dogma of molecular genetics - current version, reverse transcription and retroviruses.

c. Primary structure of nucleic acids and their properties, silent features of eukaryotic, prokaryotic and viral genome; highly repetitive, moderately repretitive and unique DNA sequences.

d. Basic concepts about the secondary structures of nucleic acids, 5' 3' direction antiparallel strands, base composition, base equivalence, bae pairing and base stacking in DNA molecule. and buoyant density and their.

UNIT-II STRUCTURAL LAVELS OF NUCLEIC ACIDS AND SEQUENCING

a. Scondary and tertiary structure of DNA : Watson and Crick model, A.B. and Z types of DNA major and minor grooves, chirality of DNA, tertiary structure of DNA.

b. Structure and properties of RNA; Classes of RNA secondary and tertiary structures.

c. Nucleic acid hybridization : Cot $T_m^{\rightarrow}$ value and satellite DNA.

d. Sequencing : Restriction and modification system; sequencing of DNA and RNA.

UNIT-III a. DNA REPLICATION

DNA replication in prokaryotes - conservative, semi conservative and dispersive types, experimental evidence for semi conservative replication. DNA polymerases, other enzymes and protein factors involved in replication. Mechanism of replication. Inhibitors of DNA replication.

b. TRANSCRIPTION

Transcription in prokaryotes RNA polymerase, promoters, initiation, elongation and termination of RNA synthesis, inhibitors of transcription. Reverse transcriptase, post transcriptional processing of RNA in eukaryotes.

UNIT-IV TRANSLATION AND REGULATION OF GENE EXPRESSION

a. Genetic code : Basic feature of genetic code, biological significance of degeneracy. Wobble hypothesis, gene within genes and overlapping genes.

b. Mechanism of translation : Ribosome tructure, A and P sites, charged tRNA, f-mat-tRNA initiator codon, Shine Dalgarno consensus sequence (AGGA), formation of 70S initiation complex, role of EF-Tu, EF-Ts, EF G and GTP, nonsense codons and release factors RF 1 and RF 2.

c. Regulation of gene Expression in prokaryotes : Enzyme induction and repression,

operon concepts, Lac operon, Trp operon.

UNIT-V MUTATION AND REPAIR

a. Mutation : Molecular basis of mutation, types of mutation, e.g. transition, transversion frame shift, insertion, deletion, suppresser sensitive, germinal and somatic, backward and forward mutations, true reversion and suppresion, dominant and recessive mutation, spontaneous and induced mutations = Ledergerg's replica plating experiment.

b. Mutagenecity testing : Correlation of mutagenecity and carcinogenicity : Ames testing, Random and site directed mutagenesis.

c. DNA Rapair : UV repair system in E.Coli, Significance of thymine in DNA.

RECOMBINATION AND TECHNOLOGY

Restriction endonucleases, brief discussion of steps in DNA cloning. Application of recombinant DNA technology.

Books :

1. Biochemistry J David Rawn, Neil Patterson Publisher, North Carolina.
2. Molecular biology of the gene JD Watson, NH Hopkins, JW Robert, JP Stretz, AM Weiner, Freeman San Francisco.
3. Fundamental of biochemistry by D Voet and CW Pratt, John Wiley & Sons, NY.
4. Text book of biochemistry Thomas M Devin, John Weley & Sons, NY.

PAPER - II

NUTRITIONAL, CLINICAL & ENVIRONMENTAL BIOCHEMISTRY

M.M.-50

UNIT-I NUTRITIONAL BIOCHEMISTRY

Nutrition and dietary habits

a. Introduction and definition of foods and nutritiori. Factors determining food acceptance, physiological, energy, body building (growth and development).

Regulation of body temperature. Physiology and nutrition of carbohydrates, fats, proteins and water. Vitamins A,D,E,K, Vit B-Complex and Vit C and minerals like Ca, Fe and Iodine and their biological functions. Basic food groups : energy giving foods, body building foods and protective foods.

b. Composition of balanced diet, recommended dietary allowances (RDA) for average indian, locally available foods, inexpensive quality foods and food stuff's rich in mor ethan one nutrients. Balanced vegetarian diet, emphasis on nutritional adequacy.

UNIT-II NUTRITATINE AND CALORIFIC VALUES OF FOODS

a. Basic concepts of energy expenditure, units of energy, measurement of energy expenditure by direct or indirect calorimetry, calculation of non protein RQ with respect to carbohydrates and lipids. Determination of heat production of the diet. The basal metabolism and method of measuring basal metabolic rate (BMR),

energy requirements during growth, pregnancy, lactation and various physiological activities. Calculation of energy expenditure of average man and women.

b. Specific dynamic action (SDA) of foods, naturitive value of various kinds of foods generally used by Indian population. Planning of dietary regimes for infants, during pregnancy and old age. Malnutrition, its implications and relationship with dietary habits and prevention of malnutrition pecially protein-calories malnutrition (Kwashiorkor and Marasmus) by improvements of diets. Human milk and its virtues, breast vs formulated milk feeding. Food preservation standards, food adulterations and precautions, government regulations on poreservation and quality of food.

UNIT-III CLINICAL BIOCHEMISTRY

i. Basic concepts of clinical biochemistry

a. Definition and scope of clinical biochemistry in diagnosis, a brief review of units and abbreviation used in expression concentration and standard solutions. Quality control. Manual vs automation in clinical laboratory.

b. Collection and preservation of biological fluids (blood, serum, plasma, urine and CSF) Chemical analysis of blood, urine and CSF. Normal values for important constitutes (in SI units) in blood (plasma / serum), CSF and urine, clearance tast for urea.

UNIT-IV (i) CLINICAL ENZYMOLOGY

a. Definition of functional and non- functional plasma enzymes. Isozymes and diagnostics Tests. Enzymes pattern in health and diseases with special mention of plasma lipase, amylase, cholinesterase, alkaline and acid phosphatase, SGOT, SGPT, LDH and CPK.

b. Functional tests of kidney, liver and gastric fluids.

(ii) Hypo and hyper-gylcemia, glycogen storage diseases, lipid mal-absorption and steatorrhea, sphingolipidosis, role of lipoproteins. Inborn errors of amino acid metabolism alkaptonuria, phenyl-ketonuria, albinism, gout and hyper-uricemia.

UNIT-V ENVIRONMENTAL BIOCHEMISTRY

(i) **Air pollution :** Particulate matter, compounds of carbon, sulphur, nitrogen and their interactions, methods of their estimation, their effect on atmosphere.

(ii) **Water pollution :** Types of water boides and their general characteristic, major pollutants in domestic, agricultural and industrial wastes, methods of their estimation, effects of pollutants on plants and animals, treatment of domestic and industrial wastes, solid-wastes and their treatment.

Books :

1. Modern nutrition in health and diseaser by Whol and Goodhart.
2. Human nutrition and Dietetics-S. Davidson and passmore-ELBS Zurich.
3. Tietz fundamental of clinical Chemistry by Cart A Burits & ER Ashwood Saunders WB Co.
4. Leacture Notes on Clinical Biochemistry-LG Whitby, AF Smith, GJ Beckett.

PRACTICAL FOR IIIrd YEAR

LABORATORY - III (BCH 305)

1. Estimation of DNA by diphenylamine method.
2. Effect of temperature on the viscosity of DNA using Ostwald's Viscometer.
3. Extraction of RNA and its estimation by Orcinol method.
4. Estimation of hemoglobin by measuring total iron in blood.
5. Estimation of calcium and phosphorus in serum & urine.
6. Estimation of creatine and creatinine in urine.
7. Estimation of immunoglobulins by precipitation with saturated ammonium sulphate.
8. Denaturation fo enzyme, studies on DNA.
9. a. Separation of proteins by column chromatography.
   b. Determination of proteins by dye binding assay.
10. Separation of proteins by SDS-polyacrylamide gel electrophoresis.

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COURSE OF STUDIES FOR M.A. EXAMINATION IN SOCIOLOGY (UNDER SEMESTER SYSTEM IN UNIVERSITY TEACHING DEPARTMENT AND AFFILETED COLLEGES OF PT. RAVISHANKAR SHUKLA UNIVERSITY, RAIPUR (C.G.) EFFECTIVE FROM THE ACADEMIC SESSION (2016- 17)

M.A. Examination in Sociology shall be conducted in four semesters, each having 500 hundred marks, totaling to 2000 marks.

The detailed Course Structure Semester wise is mentioned below.

Sl. No.	**Paper No.**	**Title**	**Marks**		
A. FIRST SEMESTER:					
Sr. No.	Paper	Subject	I	T	Total
1	Paper-I/CC1	Classical Sociological Tradition	20	80	100
2	Paper-II/CC2	Philosophical and Conceptual Foundation of Research Methodology	20	80	100
3	Paper-III/CC3	Social Change in India	20	80	100
4	Paper-IV/CC4	Rural Sociology	20	80	100
5	Paper-V/P 1	Practical-I			100
B. SECOND SEMESTER					
6.	Paper-VI/CC5	Classical Sociological Thinkers	20	80	100
7.	Paper-VII/CC6	Quantitative Research Techniques in Sociology	20	80	100
8.	Paper-VIII/CC7	Sociology of Development	20	80	100
9.	Paper-IX/CC8	Indian Rural Society	20	80	100
10.	Paper-X/P2	Practical-II			100
C. THIRD SEMESTER					
11.	Paper-XI/CC9	Classical Sociological Theories	20	80	100
12.	Paper-XII/CC10	Social Movements in India	20	80	100
13.	Paper-XIII/CC11	Perspectives of Study to Indian Society	20	80	100
14.	Paper-XIV/CC12	Industry and Society in India	20	80	100
15	Paper-XV/CC13	Criminology	20	80	100

D. FOURTH SEMESTER					
16	Paper-XVI/CC14	Modern Sociological Theories	20	80	100
17	Paper-XVII/CC15	Comparative Sociology	20	80	100
18	Paper-XVIII/CC16	Contemporary Issues in Industry	20	80	100
19	Paper-XIX/CC17	Criminology: Correctional administration	20	80	100
20	Paper-XX/P3	Project Report	-	-	100

FIRST SEMESTER

Paper No. I/CC1 **Marks-80**

CLASSICAL SOCIOLOGICAL TRADITION

Unit-I: Historical Background of The Emergence of Sociology

a. Traditional Feudal Economy and Social Structure
b. Impact of Industrial Revolution and New Mode of Production on Society and Economy.
c. Emergence of Capitalist Mode of Production- Nature and Feature of Capitalism
d. Enlightenment and It's Impact on Thinking and Reasoning

Unit-II: Auguste Comte

a. Social Statics and Dynamics
b. Law of Three Stages
c. Hierarchy of Sciences
d. Positivism

Unit-III: Emile Durkheim

a. Social Facts
b. Mechanical and Organic Solidarity
c. Division of Labour
d. Theory of Suicide

Unit-IV: Vilfredo Pareto

a. Logical and Non- Logical Action
b. Residues and Derivations
c. Theory of Social Change
d. Contributions to Methodology

Unit-V:Herbert Spencer

a. Social Darwinism
b. Evolution
c. Synthetic Philosophy

References:

1. Abraham, F and Morgan, J.H. 1985 — Sociological Thought from Comte to Sorokin Macmillan, New Delhi.
2. Adams, B.N. and Sydie, R.A. 2002 — Sociological Theory Vistaar Publications, New Delhi

3. Aron, R. 1965 — Main Currents in Sociological Thought Vol. I and Vol.II Penguin, New Delhi.

4. Coser, L.A. 2001 — Masters of Sociological Thought Rawat Publishers, Jaipur
5. Rex, John 1973 — Discovering Sociology Routledge and Kegan Paul, London
6. Turner, J.H. 2001 — The Structure of Sociological Theory Rawat Publishers, Jaipur.
7. Zeitlin, I.M. 1981 — Ideology and the Development of Sociological Theory, Prentice Hall, London.
8. _____ 1998 — Rethinking Sociology: A Critique of Contemporary Theory. Rawat Publishers, Jaipur.

Paper-II /CC2 **Marks-80**

PHILOSOPHICAL AND CONCEPTUAL FOUNDATION OF RESEARCH METHODOLOGY

Unit-I: Philosophical Roots of Social Research

a. Issues in the Theory of Epistemology: Forms and Types of knowledge, Validation of knowledge
b. Positivism and It's Critique: Contributions of Comte, Durkheim and Popper.
c. Methodological perspectives in Sociology.

Unit-II:Values and Theories in Sociology

a. Debates on values: Value Neutrality V/S Value Loadedness.
b. Theories in Sociology Classical V/S Modern
c. Problems of concept and theory- Transfer to developing countries.

Unit-III: Nature of Social Reality and Approaches to It

a. Research Design: Steps and Processes of It's Formulation
b. Type of Research Design: Exploratory, Descriptive, Explanatory, Diagnostic and Experimental
c. Role of concepts and Hypotheses
d. Problems of Objectivity

Unit-IV: Qualitative Methods in Social Research

a. Techniques and methods of Qualitative Research: Observation and Interview Guide
b. Case study, Content Analysis
c. Participatory Rural Appraisal (PRA)
d. Encounters and Experiences in Field work

Unit-V: Issues in Social Research

a. Inter disciplinary Research
b. Issues in Qualitative Research
c. Theoretical Vs. Applied Research
d. Processing of Data: Classification, Tabulation and Interpretation.

References:

1. Bailey, K.D. 1979 — Methodology of Social Research, Macmillan, Free Press- London
2. Barnes, J.A. 1979 — Who should known what? Social Science, Privacy and Ethics, Penguin, London.
3. Beteille, A Madan, T.N. 1975 — Encounter and Experience: Personal Accounts of field work, Vikas, new Delhi
4. Bose, P.K. 1995 — Research methodology, ICSSR, New Delhi.
5. Bryman, A 1988 — Quality and Quantity in Social Research Unwin Hyman, London.
6. Madge, J 1970 — The Origins of Scientific sociology Tavistock, London
7. Mukherjee, P.N. 2000 — Methodology in Social Research: Dilemmas and perspectives Essays in Honour of Ramakrishna Mukherjee Sage, New Delhi.
8. Mukherjee, R.K. 1979 — What will it be? Explorations in Inductive Sociology Allied, Bombay.
9. _____ 1993 — Systemic Sociology Sage, New Delhi.
10. Popper, K 1999 — The Logic of Scientific Discovery Routledge and Kegan Paul London
11. Punch, K 1986 — Introduction to Social Research Sage, New Delhi
12. Sjoberg, G and Roger, N., 1997 — Methodology of Social research Rawat, Jaipur
13. Srinivas, M.N. and Shah, A.M., 1979 — Field worker and the Field Oxford, New Delhi.
14. Weber, M 1974 — The Methodology of Social Sciences Free Press, Chicago
15. Young, P.V. 1977 — Scientific Social Surveys and Research Prentice Hall, New Delhi.
16.

Paper No. III/CC3 **Marks-80**

SOCIAL CHANGE IN INDIA

Unit-I: Conceptual and Theoretical Frame work

a. Concept
b. Forms
c. Linear Theory
d. Cyclic Theory

Unit-II: Factors of Social change

a. Techno- Economic
b. Socio- Psychological
c. Cultural and Religious
d. Media

Unit-III: Trends and Processes of Change in Modern India

a. Sanskritization
b. Secularization
c. Gandhian
d. Globalization

Unit- IV: Changes in Tribal and Rural India

a. Changes in Tribal and Rural Economy
b. Changes in Socio-cultural spheres
c. Land Alienation
d. Welfare Measures and Consequent Changes

Unit-V:-Changes in Urban and Industrial India

a.In Migration and Growth of informal sector.
b. development of Slums.
c. Development of Criminal Activities.
d. Welfare measures and Consequent Changes.

References:

1. Beteille, A. 2003 — The Idea of natural inequality and other essays. Oxford, New Delhi.
2. Desai, AR 2001 — Rural Sociology in India. Popular, Bombay
3. Jhingan, M.L. 2003 — The economics of Development and Planning. Vrinda Publications, New Delhi
4. Kanungo, S. 2002 — Making Information Technology Work, Sage, new Delhi
5. Mathur, H.M. (ed) 1994 — Development, Displacement and Resettlement: focus on Asian experiences Vikas, New Delhi.
6. Preston, P. 2001 — Reshaping communications, Technology Information and Social Change. Sage, New Delhi.
7. Ramachandran, P.S. et al (ed) 2002 — Traditional Ecological Knowledge for managing Bio-sphere reserves in south and central Asia. Oxford, New Delhi.
8 Reid, Suctitus 1976 — Crime and Criminology, Illiois: Deyen Press
9. Schuurman, F.J. 1999 — Globalization and Development, Vistaar, new Delhi.
10. Parekh, B 1999 — Colonialism, Tradition and Reform: An analysis of Gandhi's Political Discourse Sage, New Delhi.
11. Sharma, K.L. 1997 — Social Stratification in India: Issues and Themes. Sage, New Delhi.
12. Shiva, V. and Bedi, — Sustainable Agriculture and food scarcity Sage,

G. 2002 New Delhi.
13. Singh, Y. 1999 Modernization of Indian tradition Rawat, jaipur.
14. _____ 2003 Culture Change in India Rawat, Jaipur
15. Singharoy, D.K. et al (ed) 2000 Social Development and Empowerment of Marginalised groups, Sage, New Delhi.
16. Srinivas, M.N. 1998 Social Change in Modern India. Orient and Longman, New Delhi.
17. Vidyarthi, L.P. and Rai, B.K., 1977 Tribal culture in India Concept Publication Company New Delhi.

Paper No. IV/CC 4 **Marks-80**

RURAL SOCIOLOGY

Unit-I: Characteristics and Approaches

a. Concept andCharacteristics of Peasant Society
b. Concept andCharacteristics of Agrarian Society
c. Caste and Jamani Approach
d. Sub- Altern Approach

Unit-II: Agrarian Institutions

a. Land Ownership and Its Types:After Independence
b. Agrarian Relations and Modes of Production
c. Agrarian Social Structure

Unit- III: Planned Change

a. Rural leadership
b. Factionalism
c. Panchayati Raj before and after 73rd Amendment
d. Five Year's Plans in India

Unit-IV: Rural Development and Change

a. Green Revolution
b. Land Reform
c. Globalization and its Impact on Agriculture

Unit-V:Welfare measures and consequent Changes

a. Self-help Group(SHG)
b. MNREGA
c. SSA

References:

1. Basu, K. (ed) 2000 Agrarian Questions Oxford, New Delhi.
2. Berberglu, B. (ed) 1992 Class, State and Development in India sage, New Delhi.
3. Beteille, A. Six essays in comparative sociology oxford, New

	1974	Delhi.
4.	_____ 1974	Studies in Agrarian social structure oxford, New Delhi.
5.	Breman, J. 1974	Patronage and Exploitation oxford, New Delhi.
6.	Desai, A.R. (ed) 1977	Rural sociology in India popular, Mumbai.
7.	_____, (ed) 1977	Rural society in transition Popular, Mumbai.
8.	Gough, K and Sharma, H.P.(Ed) 1973	Imperialism and Revolution in South Asia, Monthly Reviewed Press, New York.
9.	Guha, r (ed) 1999	Subaltern Studies Oxford, New Delhi.
10.	Joshi, P.C. (ed) 1976	Land Reforms in India Allied, New Delhi.
11.	Long, N. 1982	An Introduction to the sociology of Rural development, Tavistock, London.
12.	Mencher, J.P. (ed) 1983	Social Anthropology of peasantry Somaiya Publications New Delhi
13.	Patnaik, U. 1990	Agrarian Relations and Accumulation: the Mode of production debate in India.
14.	Shanin, T. (ed) 1971	Peasants and Peasant Societies, Penguin, London.
15.	Thorner, D. 1956	The Agrarian prospects in India University press, New Delhi.
16.	_____ 1962	Land and labour in India, Asia publications, Mumbai.

Paper No. V/P1 **Marks-100**

PRACTICAL-I

Practical based on Field Work & Preparation of tools
Interview Guide and case study

Scheme of Evaluation- 50% by Internal Examiner and rest 50% by Viva-Voce Examination evaluated both by the Internal and External Examiner.

SECOND SEMESTER

Paper No. –VI/CC 5 **Marks-80**

CLASSICAL SOCIOLOGICAL THINKERS

Unit-I: Karl Marx

a. Materialistic Interpretation of History
b. Class and Class Struggle
c. Alienation

Unit-II:Thurstein Veblen

a. Theory of Leisure class
b. Concepts of Social Change
c. Comparison of Marx and Veblen's theories

Unit-III: Max Weber

a. Theory of Social Action
b. Concepts of Status, Class and power
c. Sociology of Religion and Economic Development

Unit-IV Talcott Parsons

a. Social Action
b. Pattern variables
c. Social System

Unit-V: Robert K. Merton

a. Reference Group
b. Social Conformity and Anomie
c. Functional Paradigm

References:

1. Abraham, F and Morgan, J.H. 1985 — Sociological Thought from Comte to Sorokin Macmillan, New Delhi.
2. Aron, R. 1965 — Main Currents in Sociological Thought Vol. I and II Penguin, London.
3. Adams, B.N. and Sydie, R.A. 2001 — Sociological theory Vistaar, New Delhi.
4. Collins, R. 1997 — Theoretical Sociology Rawat, Jaipur
5. Coser, L.A. 2001 — Masters of Sociological Thought Rawat, Jaipur
6. Giddens, A. 1977 — Capitalism and Modern Social Theory: An Analysis of Writings of Marx., Durkeheim and Weber Cambridge University press. London.
7. Rex, J. 1973 — Discovering Sociology Routledge and Kegan Paul London.
8. Simmel George and Kurt H.Wdff,1950 — The Sociology of George Simmel, Glancoe, IIIFree Press
9. Simmel George and — Conflict and the web of Group Glancoe,

	Kurt H.Wdff,1922	IL,Freepress.
10	----------1972	On Individuality and Social Forms, Chicago, University of Chicago Press.
11.	Turner, J.H. 2001	The Structure of Sociological Theory Rawat, jaipur
12.	Zeitlin, I.M. 1981	Ideology and the Development of Sociology Prentice Hall, London.
13.	_____ 1996	Rethinking Sociology Rawat, Jaipur.

Paper No.-VII/CC6 **Marks-80**

QUANTITATIVE RESEARCH TECHNIQUES IN SOCIOLOGY

Unit-I: Sampling

a. Rational
b. Types
c. Sampling error
d. Survey Vs. Sampling based study in sociology

Unit-II: Quantitative method and survey Research

a. Techniques of Survey Research: Interview
b. Tools of Research; Preparation of Questionnaire and Interview Schedule
c. Processing of Data: Classification, Tabulation and Interpretation
d. Use of Computer in Data Processing

Unit-III: Measurement and Scaling Techniques

a. Levels of Measurements: Types of Scales- Nominal and Ordinal
b. Reliability and Validity of Scaling
c. Measures of Social Distance: Thurston, Lickert and Bogardus Scale
d. Sociometry

Unit-IV: Statistics in Social Research

a. Measures of Central Tendency: Mean, Median and Mode
b. Measures of Dispersion- Standard Deviation
c. Correlation Analysis- Chi Square
d. Quantitative Vs. Qualitative research in sociology

Unit-V:Qualitative and Quantitative research method

a. Triangulation;mixing Qualitative and Quantitative methodologies
b. Social Research, Action research and Participatory research
c. Application of computers in Social research; MS office.
d. Ethical issues in social research.

References:

1.	Bailey, K.D. 1979	Methodology of social Research Macmillan, Free Press.
2.	Bryman, Allan 1988	Quality and Quantity in Social Research Unwin, Hyman, London.
3.	Ethance, D.M.	Fundamental of Statistics

4. Irvine, J. M et al (ed) , 1979 Demystifying social statistic, Pluto Press, London.
5. Lutz, G, M 1983 Understanding Social Statistics, Macmillan Publishing co., Inc., New York.
6. Mukharjee, R, 1979 What will it be? Explorations in inductive sociology, Allied Publishers, Bombay.
7. Mukherjee, P.N, 2000 Methodology in Social Research Dilemamas and Perspectives, Essays in honour of Ramakrishna Mukharjee, Sage Publication, New Delhi.
8. Wilkinson, T.S. and Bhandarkar, P.L. Methodology and Techniques of Social Research: Himalaya Publication House, Bombay,
9. Young, P.V. 1977 Scientific Social Surveys and Research. Prentice Hall of India, New Delhi.

Paper No. –VIII/CC7 **Marks-80**

SOCIOLOGY OF DEVELOPMENT

Unit-I: Perspectives on Development

a. Modernization
b. Marxist
c. Dependency
d. Alternative

Unit-II: Changing Conception of Human Development

a. Mainstream vs. Indigenous Model of Development
b. Human Indicator Index
c. Sustainable Development: Socio- Cultural
d. Impact of Bio-Technology and Information Technology on Development.

Unit-III: Indian Experience on Development

a. Sociological Appraisal of Five Year Plans
b. Social Consequences of Economic Reforms
c. Socio Cultural Impact of Globalization
d. Social Implication of InfoTech and Bio-Tech Revolution

Unit-IV: Consequences of Development

a. Development and Displacement
b. Development and Socio- Economic Disparities
c. Ecological Degradation
d. Development and Migration.

Unit-V:Issues and development in Contemporary India.

a. Social Exclution
b.Gender Discrimination
c. Privatization and unfavorable Service condition.
d. Sustainability.

References:

1. Alavi, H. and Shanin, T., 1982 — Introduction to the study of Developing societies Macmillan, London
2. Amin, Samir-1979 — Unequal Development, New Delhi
3. Apter, D.C. 1987 — Rethinking development Sage, New Delhi
4. Appadurai, A. 1997 — Modernity at Large: Cultural Dimensions of Globalisation, Oxford, New Delhi
5. Berberglu, B. (ed) 1992 — Class, State and Development in India, Sage, New Delhi
6. Bhatnagar, S., 2000 — Information and Communication: Technology in Development, Sage, New Delhi.
7. Carmen, R 1996 — Autonomous Development Vistaar, New Delhi
8. Desai, A.R 1985 — India's path of development: A Marxist Approach, Bombay, popular Prakashan.
9. Dreze, J and Sen, A. 1996 — India: Economic Development and social Opportunity Oxford, New Delhi
10. Encyclopaedia of Social Sciences (Relevant Portions), Macmillan
11. Frank, A 2002 — Reorient Vistaar, New Delhi
12. Haq, M.V. 1991 — Reflections on Human Development Oxford, New Delhi
13. Melkote, S.R. 1991 — Communications for Development in Third WorldSage, New Delhi
15. Naidu, R. 1971 — Values in Models of Modernisation Vikas, New Delhi
16. Pieterse, N.J. 2001 — Development Theory: Deconstruction/ Reconstruction , Sage, New Delhi
17. Preston,P.W,1996 — Development Theory- An Introduction Oxford Blackwell.
18. Rege, S. (ed) 2003 — Sociology of Gender Sage, New Delhi
19. Sachs, I 2000 — Understanding Development Oxford, New Delhi
20. Saha, G et al (ed) 2002 — Development and Deprivation in Gujarat Sage, New Delhi
21. Schuurman, F.J. 2003 — Globalisation and Development Vistaar, New Delhi
22. Singharoy, D (ed) 2001 — Social Development and Empowerment of Marginalised Groups Sage, New Delhi.
23. Sings, C.C. And Denemark, R.A. — The Underdevelopment of Development Sage, New Delhi.

24. Sharma ,S.L1986 Development: socio-Cultural Dimensions, Jaipur,Rawat Publications.
25 ----------1994 Perspective on Sustainable Development in South Asia, KualaLumpur, ADIPA

Paper No. IX/CC8 **Marks-80**

INDIAN RURAL SOCIETY

Unit-I: Tribal Society as Agrarian Society

a. Tribe Concept and Characteristic
b. Tribe class
c. Changing problems of Tribal Land

Unit-II: Social Issues

a. Migration
b. Land Alienation
c. Loss of Livelihood

Unit-III: Contemporary Issues

a. Health
b. Education
c. Changing status of Rural Women
d. Inequality

Unit-IV: Peasant Movement

a. Causes
b. Types
c. Tebhaga
d. Telengana

Unit-V: Naxlite movement in Contemporary India.

a. Origin and affected area
b. Causes
c. Present status; Governments measures and peoples response.

References:

1. Beteille, A. 1986 Inequality and Social Change Oxford, New Delhi.
2. Bardhan, p. Poverty, Agrarian Structure and Political Economy in India.
3. Desai, A.R. 1979 Rural Society in Transition Popular, Mumbai
4. _____ 1979 Peasant Struggle in India Oxford, New Delhi
5. _____ (ed) 2003 Rural Sociology in India Popular, Mumbai
6. Dreze, J and Sen A. 2002 India : Development and Participation, Oxford New Delhi.
7. Gough, K and Imperialism and Revolution in South Asia.

	Sharma, H.P. (ed) 1973	Monthly Reviewed Press, New York.
8.	Gulati, A and Narayanan, S. 2003	The Subsidy Syndrome in Indian Agriculture Oxford, New Delhi.
9.	Joshi, P.C. 2003	Land Reforms in India Allied, New Delhi.
10.	Leiten, G.K. 2002	Power, Politics and Rural Development Manohar, New Delhi
11.	Patel, M.L. 1974	Changing land Problems of Tribal India, Progress Publisher, Bhopal.
12	Prakash Singh 2007	The Naxalite Movement in India, Rupa Publication
13.	Rao, M.S.A. (ed) 1978	Social Movements In India, Manohar, New Delhi.
14.	Schuurman, F.J. 2003	Globalization and Development Vistaar, New Delhi.
15.	Singhroy, D et al 2001	Social development and the empowerment of mariginalised groups, Sage New Delhi.
16.	Thorner, A. 2002	Daniel Thorner, Memorial Lecturers, Manohar, New Delhi.
17.	Vidyarthi, L.P. and Rai, B.K. 1977	Tribal Culture in India, Concept Publishing Company, New Delhi.

Paper No. X/P2 **Marks-100**

PRACTICAL-II

Practical based on Field Work & Preparation of tools

Questionnaire, Interview Schedule Preparation and Tabulation.

Scheme of Evaluation- 50% by Internal Examiner and rest 50% by Viva-Voce Examination evaluated both by the Internal and External Examiner.

THIRD SEMESTER

Paper No. XI/CC9 **Marks-100**

CLASSICAL SOCIOLOGICAL THEORIES

Unit-I: Positivism

a. Origin and Basic Postulates
b. Contributions of Comte

c. Contributions of Durkheim
d. Criticism

Unit-II: Functionalism

a. Origin and Basic Postulates
b. Contributions of Parsons
c. Contribution of Merton
d. Criticism

Unit-III: Conflict theory

a. Contribution of L.A Coser
B Contributions of Karl Marx
c Contribution of Dahrendorf
d Criticism

Unit-IV: Structuralism

a. Origin and Basic Postulates
b Contribution of Red Cliff Brown
c Contribution of Levistrauss
d Criticism

Unit-V:Exchange Theory

a. Origin and Basic postulates
b. Contribution of peter Blau
c. Contribution of George Homans.
d. Criticism

References:

1. Abraham, M.F. 2001 — Modern Sociological Theory: An Introduction Oxford, New Delhi.
2. Alexander, J.C. 1987 — Twenty Lectures; Sociological theories since World War- II Columbia University press- New York.
3. Coser, L.A. 2001 — Masters of Sociological thoughts Rawat, Jaipur
4. Collins, R. 1997 — Sociological theory Rawat, jaipur
5. Craib, I 1992 — Modern Social Theory: From parsons to Habermas, Harvester, London.
6. Giddens, A. 1983 — Central Problems in Social theory, Action, Structure and contradiction in social analysis. Mac Millan, London.
7. _____, 1996 — Capitalisation and modern social theory Cambridge University Press. London.
8. Godelier, M. — Structural Anthropology Tavistock, London.
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11. Turner, J.H. 2001 The structure of sociological theory Rawat, Jaipur
12. Zeitlin, I.M. 1998 Rethinking sociology: A critique of contemporary Theory Rawat, Jaipur.

Paper No.XII/CC10 **Marks-100**

SOCIAL MOVEMENTS IN INDIA

Unit-I: Nature and Types

a. Characteristics
b. Types
c. Reasons
d. Power Structure and Social Movements

Unit –II:Basis of Social Movement

a.Class, Caste, Ethnicity and Gender
b.Types of leadership and relationship between leaders and masses
c. Political institution and social movement.
d. Role of media in social movement.

Unit-III: Theoretical Perspectives

a. Marxian and Post-Marxian
b. Weberian Perspectives
c,. Structural-Functional
d. Postmodernist

Unit-IV: Traditional Social Movements

a. Labour and Trade Union
b. Tribal
c. Peasant
d. Nationalist

Unit-V: New Social Movements

a. Dalit
b. Women
c. Ethnic
d. Environmental

References:

1. Banks, J.A., 1972; The Sociology of Social Movements (London : Macmillan)
2. Desai, A.R., Ed., 1979; Peasant Struggles in India (Bombay : Oxford University Press)
3. Danagare, D.N., 1983; Peasant Movements in Indian 1920-1950 (Delhi : Oxford University Press.

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Paper No.XIII/CC11 **Marks-100**

PERSPECTIVES OF STUDY TO INDIAN SOCIETY

Unit-I: Indological / Textual

a. Approach of Study
b. G.S. Ghurye
c. Louis Dumont
d. Criticism

Unit-II: Structural Functionlism

a. Approach of Study
b. M.N.Srinivas
c. S.C.Dube
d. Criticism

Unit-III: Marxism

a. Approach of Study
b. D.P.Mukharjee
c. A.R. Desai
d. Criticism

Unit-IV: Subaltern Perspective

a. Approach of Study
b. B.R. Ambedkar
c. David Hardiman
d. Criticism

Unit-V: Civilization

a. Approach of study
b. N.K.Bose
c. Surjeet Sinha
d. Criticism

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1. Das, V. 1982 Structure and Cognition aspects of Hindu caste and rituals Oxford, New Delhi.
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8. _____ 1996 — Feeding the Bania: Peasants and usurers in western India. Oxford, New Delhi.
9. Momin, A.R. 196 — The legacy of G.S. Ghurye Popular, Mumbai
10. Mukharjee, D.P. 1958 — Diversities PPH, New Delhi
11. Oommen, T.K. and Mukharjee, P.N. 1986 — Indian Sociology: Reflection and Introspection popular, Mumbai.
12. Singh, y. 1986 — Indian Sociology: Social conditioning and Emerging concerns, Vistaar, New Delhi.
13. Srinivas, M.N. 1960 — India's Villages Asia publishing House, Bombay.

Paper No.XIV/CC12 **Marks-100**

INDUSTRY AND SOCIETY IN INDIA

Unit-I: Industrial Sociology and Classical Sociological Tradition

a. Classical Scientific Management
b. Division of Labour
c. Bureaucracy and Rationality
d. Production Relations and Alienation

Unit-II: Industrial Organizations

a. Formal and Informal Organizations, Structure and Function
b. Line and Staff Organization
c. Contemporary Organization Realities

Unit-III: Problems through Industrialization process

a. Family
b. Stratification
c. Habitat and Settlement
d. Environmental

Unit-IV: Subjective Experience of Work

a. Work Ethics, Work Value, Work Attitude and Work Process
b. Motivation to Work,
c. Work Satisfaction, Incentives and Its Effects

Unit-V: Technological Change and Automation

a. Technology and Social Structure in Industry
b. Organizational Choice and Technological Change
c. Resistance to Automation and Change

References:

1.	Agrawal R.D. 1972	Dynamics of Indian labour relations in India (A Book regarding Mc-Graw Hill, Bombay)
2.	Aziz Abdul 1984	Labour problems of developing economy Ashis Publishing house, New Delhi
3.	Gilbert S.J. 1985	Fundamentals of Industrial Sociology Tata Mc-Graw hill Bombay
4.	Karnik V.B. 1990	Indian trade Union A survey, Popular Prakashan-Bombay
5.	Laxmana, C et al 1990	Workers Participation and industrial democracy: Global perspectives: Ajanta publication, New Delhi.
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7.	Miller, D.c. and Farm W.M. 1964	The Sociology of Industry George Allen and Onwin, London
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9.	Ramaswamy E.A. 1977	The worker and His union, Allied New Delhi
10.	_____, 1978	Industrial Relations in India OUP, new Delhi
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12.	Watson K. Tony 1995	Sociology, work and industry Routlodge and Kagan Paul, London.

Paper No.XV/CC13 **Marks-100**

CRIMINOLOGY

Unit-I: Conceptual and Theoretical Approaches

a. Legal, and Sociological;,
b. Concept of Crime , Crime Causes prevention and Control
c. Theories on Crime Causation; Sociological and Geographical

Unit-II:Type of Criminals and Crime

a. Juvenile delinquency
b. Women and Crime
c. White collar crime

Unit-III: Changing Profile of Crime and Criminals;

a. Corruption: Types, Causes, and Consequences.
b Cyber Crime: Causes, Prevention and Control
c Crime Against Women: Causes, Prevention and Control

Unit-IV: Theories of Punishment

a. Retributive, Deterrent: Theories and Criticism

b. Reformative Theory: Probation and Parole
c. Open Prison- Its Success and Failure

Unit-V: Terrorism

a. Concept of Terrorism and Its Characteristics
b. Terrorism in India
c. Social and Legal Measures for Its Prevention and Control

References:

1. Ahuja, R. 1969 — Female offenders in India Meenakshi Prakashan, Meerut
2. Madan, G.R. 1985 — Indian social problems-I Allied Publishers, New Delhi
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4. Mishra, R and Mohanty, S. 1992 — Police and Social change in India Ashish publishing House, New Delhi.
5. National Crime records Bureau 2000 — Crime in India, New Delhi.
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7. Reid, Suctitus 1976 — Crime and Criminology, Illiois: Deyen Press
8. Singh, S. and Srivastava, S.P. (ed) 2001 — Gender equity through women's empowerment. Bharat book center, Lucknow.
9. Sirohi, J.P.S. 1992 — Criminology and Criminal Administration Allahabad Law agency. Allahabad.
10. Vadackumchery, J. 1996 — The police and Delinquency in India. APH Publishing corporation, New Delhi.

FOURTH SEMESTER

Paper No. XVI/CC14 **Marks-100**

MODERN SOCIOLOGICAL THEORIES

Unit-I: Symbolic Interectionism

a. Origin and Basic Postulates
b. Contributions of G.H. Mead
c. Contribution of H.Blumer
d. Criticism

Unit-II: Phenomenology

aOrigin, Basic Postulates of Phenomenology

bContributions of Schutz
cContributions of Berger
dCriticism

Unit- III:Ethnomethodology

aOrigin Basic postulates of Ethnomethodology

b.Contribution of Garfinkel
c Contribution of Goffman
dCriticism

Unit-IV: Critical Theory

a. Origin and Development
b. Contributions of Adorno
c. Contributions of Habermas
d. Criticism

Unit-V: Post Modernism

a. Origin and Development
b. Contributions of Foucault
c. Contributions of Derrida
d. Criticism

References:

1. Abraham, M.F. 2001 — Modern Sociological Theory: An introduction Oxford, New Delhi
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4. Apadurai, A. 1996 — Modernity at large: Cultural Dimensions of Globalisation University of Minnesota Press, Minneapolis
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11. _____ 1996 — Capitalism and Modern Social Theory, Cambridge University Press, Cambridge.

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Paper No. XVII/CC15 **Marks-100**

COMPARATIVE SOCIOLOGY

Unit-I: Historical and Social Context of Emergence of Sociology in the West

a. Emergence of growth of Sociology in West
b. Eurocentric Moorings western Sociological Tradition
c. Americanization of Sociology

Unit-II: Central Themes in Comparative sociology

a. Modernity and Development
b .Diversity and multy Culturalism
c. Enviornment
d. Globalization

Unit-III: Theoretical Concern,s in Comparative sociology

a. Problems of theoring in sociology
b. Theoretical and Methodological approaches in sociology
c. Policy issues: Formulation and Evalution

Unit IV: Current Debates

a. Contextitualization
b. Indianization
c. Use of Native Categories
d. Criticism.

Unit-V: Debate on "For Sociology of India"

a. Sociology of India
b .Sociology in India
c. Sociology For India
d. Criticism

References:

1 Anderski, S 1961: Elements of Comparative Sociology(London ,

		Widenfeld and Nicolson)
2	Beteille, Andre 1987:	Essays in Comparative Sociology(New Delhi: Oxford University Press)
3	Beteille, Andre 1992:	Society and Policies in India: Essays in Comparative Sociology(New Delhi: Oxford University Press)
4	Berremen, G.D 1981:	The Politocs of Truth : essays in Critical Anthopology, New Delhi: South Asian Publishers)
5	Dube, S. C. 1973:	Modernization and Development: The search for alternative paradigm (New Delhi: Vistar)
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8.	Genov, Nikolai, 1989:	National Traditions in Sociology (Delhi: Sage)
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15	Saraswati B.N.1994:	Interface of Cultural Identity and Development (New Delhi: Indira Gandhi National Centre of the Arts)
16	World Commission on environment and Development, 1987:	(New Delhi: Oxford University Press)
17	Wallerstein, Immanuel 1974:	Modern World System (New York: Oxford University Press)

Paper No.XVIII/CC16 **Marks-100**

CONTEMPORARY ISSUES IN INDUSTRY

Unit-I: Industrial Relation

a. Importance of Human Relations at work
b. Conflict: Causes and Types, Resolution of Conflict

c. Conciliation and Collective Bargaining
d. Workers Participation in Management

Unit-II: Trade Union and Industrialization

a. History of Trade Unionism in India
b. Objectives and Functions
c. ILO and Trade Unions in India
d. Trade Unionism in Globalization

Unit-III: Industry and Society

a. Impact of Industry on Family
b. Impact of Industry on Stratification
c. Industrialization and Migration
d. Industrialization and Religion

Unit-IV: **Industrilization in Third world Countries in the Era of Globlization**

a. FDI and Third World
b. International Agencies: World Bank and Third world countries
c. Status of Industries in Third World Countries

Unit-V: Contemporary Issues

a. Industrialization and Women Labour
b. Industrialization and Child Labour
c. Industrialization and Environment
d. Problem of Industrialization in Developing Countries

References:

1. Agrawal R.D. 1972 — Dynamics of Indian labour relations in India (A Book regarding Mc-Graw Hill, Bombay)
2. Aziz Abdul 1984 — Labour problems of developing economy Ashis Publishing house, Hew Delhi
3. Gilbert S.J. 1985 — Fundamentals of Industrial Sociology Tata Mc-Graw hill Bombay
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Paper No.-XIX/CC17 **Marks-100**

CRIMINOLOGY: CORRECTIONAL AND ADMINISTRATION

Unit-I:Roots of Correction to prevent Crime

a. **Socialization**
b. Family values
c. Role of education

Unit-II: Correction and It's Forms

a. Meaning and Significance of Correction; Prison Based and Community Based
b. Correctional Programmes in Prison; History of Prison Reforms in India
c. After Care and Rehabilitation Programme.

Unit-III: Problem of Correctional Administration

a. Overcrowding; Lack of Inter Agency Co-Ordination among Police Prosecution, Judiciary and Prison
b. Prison Offences
c. Problem of Criminal Justice Administration

Unit-IV: Victimological Perspective

a. Victrim's Responsibility in Crime
b. Violation of Prisoner's Human Rights
c. Problems of Women Offenders.

Unit-V: Community Policing

a. Concept andObjectives
b. Types
c. Significance

References:

1. Ahuja, R. 1981 The Prison System Sahitya Bhawan, Agra
2. _____, 1997 Contemporary Social problems in India Rawat, Jaipur.
3. Advani, NH, 1978 Perspectives on Adult Crime and correction. Abhinav Publication, New Delhi.
4. Bedi, K. 1998 It is always possible sterling, New Delhi.
5. Devasia, L and Devasia, V.V. (ed) 1989 Female criminals and Female Victims: An Indian Perspective Dattsons, Nagpur.

6. Gosmami, B.K. 1983 — Criminology and Penology Allahabad
7. Mohanty, S 1990 — Crime and Criminals in India Ashish Pub. House New Delhi.
8. Reid, S. 1976 — Crime and Criminology Deydan press, Illinayse
9. Shankardas, R.D. 2000 — Punishment and the Prison: India and International perspective, Sage, New Delhi.
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Paper No.-XX/P3 **Marks-100**

PROJECT REPORT

On Rural and Urban Problems

Scheme of Evaluation- 50% by Internal Examiner and rest 50% by Viva-Voce Examination evaluated both by the Internal and External Examiner.

M.A. SOCIOLOGY

ANNUAL SYSTEM

2016-17

SYLLABUS

2016-2017

PT. RAVISHANKAR SHUKLA UNIVERSITY RAIPUR
CHHATTISGARH

COURSE OF STUDIES FOR M.A. EXAMINATION IN SOCIOLOGY (UNDER SEMESTER SYSTEM IN UNIVERSITY TEACHING DEPARTMENT AND AFFILETED COLLEGES OF PT. RAVISHANKAR SHUKLA UNIVERSITY, RAIPUR (C.G.) EFFECTIVE FROM THE ACADEMIC SESSION (2015- 16)

M.A. Examination in Sociology shall be conducted in four semesters, each having 500 hundred marks, totaling to 2000 marks.

The detailed Course Structure Semester wise is mentioned below.

Sl. No.	**Paper No.**	**Title**	**Marks**		
A. FIRST SEMESTER:					
Sr. No.	Paper	Subject	I	T	Total
1	Paper-I/CC1	Classical Sociological Tradition	20	80	100
2	Paper-II/CC2	Philosophical and Conceptual Foundation of Research Methodology	20	80	100
3	Paper-III/CC3	Social Change in India	20	80	100
4	Paper-IV/CC4	Rural Sociology	20	80	100
5	Paper-V/P 1	Practical-I			100
B. SECOND SEMESTER					
6.	Paper-VI/CC5	Classical Sociological Thinkers	20	80	100
7.	Paper-VII/CC6	Quantitative Research Techniques in Sociology	20	80	100
8.	Paper-VIII/CC7	Sociology of Development	20	80	100
9.	Paper-IX/CC8	Indian Rural Society	20	80	100
10.	Paper-X/P2	Practical-II			100
C. THIRD SEMESTER					
11.	Paper-XI/CC9	Classical Sociological Theories	20	80	100
12.	Paper-XII/CC10	Social Movements in India	20	80	100
13.	Paper-XIII/CC11	Perspectives of Study to Indian Society	20	80	100
14.	Paper-XIV/CC12	Industry and Society in India	20	80	100

15	Paper-XV/CC13	Criminology	20	80	100
D. FOURTH SEMESTER					
16	Paper-XVI/CC14	Modern Sociological Theories	20	80	100
17	Paper-XVII/CC15	Comparative Sociology	20	80	100
18	Paper-XVIII/CC16	Contemporary Issues in Industry	20	80	100
19	Paper-XIX/CC17	Criminology: Correctional administration	20	80	100
20	Paper-XX/P3	Project Report	-	-	100

FIRST SEMESTER

Paper No. I/CC1 **Marks-80**

CLASSICAL SOCIOLOGICAL TRADITION

Unit-I: Historical Background of The Emergence of Sociology

a. Traditional Feudal Economy and Social Structure
b. Impact of Industrial Revolution and New Mode of Production on Society and Economy.
c. Emergence of Capitalist Mode of Production- Nature and Feature of Capitalism
d. Enlightenment and It's Impact on Thinking and Reasoning

Unit-II: Auguste Comte

a. Social Statics and Dynamics
b. Law of Three Stages
c. Hierarchy of Sciences
d. Positivism

Unit-III: Emile Durkheim

a. Social Facts
b. Mechanical and Organic Solidarity
c. Division of Labour
d. Theory of Suicide

Unit-IV: Vilfredo Pareto

a. Logical and Non- Logical Action
b. Residues and Derivations
c. Theory of Social Change
d. Contributions to Methodology

Unit-V:Herbert Spencer

a. Social Darwinism
b. Evolution
c. Synthetic Philosophy

References:

1. Abraham, F and Morgan, J.H. 1985 Sociological Thought from Comte to Sorokin Macmillan, New Delhi.

2. Adams, B.N. and Sydie, R.A. 2002 — Sociological Theory. Vistaar Publications, New Delhi
3. Aron, R. 1965 — Main Currents in Sociological Thought. Vol. I and Vol.II Penguin, New Delhi.
4. Coser, L.A. 2001 — Masters of Sociological Thought. Rawat Publishers, Jaipur
5. Rex, John 1973 — Discovering Sociology Routledge and Kegan Paul, London
6. Turner, J.H. 2001 — The Structure of Sociological Theory. Rawat Publishers, Jaipur.
7. Zeitlin, I.M. 1981 — Ideology and the Development of Sociological Theory, Prentice Hall, London.
8. _____ 1998 — Rethinking Sociology: A Critique of Contemporary Theory. Rawat Publishers, Jaipur.

Paper-II /CC2 **Marks-80**

PHILOSOPHICAL AND CONCEPTUAL FOUNDATION OF RESEARCH METHODOLOGY

Unit-I: Philosophical Roots of Social Research

a. Issues in the Theory of Epistemology: Forms and Types of knowledge, Validation of knowledge
b. Positivism and It's Critique: Contributions of Comte, Durkheim and Popper.
c. Methodological perspectives in Sociology.

Unit-II:Values and Theories in Sociology

a. Debates on values: Value Neutrality V/S Value Loadedness.
b. Theories in Sociology Classical V/S Modern
c. Problems of concept and theory- Transfer to developing countries.

Unit-III: Nature of Social Reality and Approaches to It

a. Research Design: Steps and Processes of It's Formulation
b. Type of Research Design: Exploratory, Descriptive, Explanatory, Diagnostic and Experimental
c. Role of concepts and Hypotheses
d. Problems of Objectivity

Unit-IV: Qualitative Methods in Social Research

a. Techniques and methods of Qualitative Research: Observation and Interview Guide
b. Case study, Content Analysis
c. Participatory Rural Appraisal (PRA)
d. Encounters and Experiences in Field work

Unit-V: Issues in Social Research

a. Inter disciplinary Research
b. Issues in Qualitative Research

c. Theoretical Vs. Applied Research
d. Processing of Data: Classification, Tabulation and Interpretation.

References:

1. Bailey, K.D. 1979 — Methodology of Social Research, Macmillan, Free Press- London
2. Barnes, J.A. 1979 — Who should known what? Social Science, Privacy and Ethics, Penguin, London.
3. Beteille, A Madan, T.N. 1975 — Encounter and Experience: Personal Accounts of field work, Vikas, new Delhi
4. Bose, P.K. 1995 — Research methodology, ICSSR, New Delhi.
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6. Madge, J 1970 — The Origins of Scientific sociology Tavistock, London
7. Mukherjee, P.N. 2000 — Methodology in Social Research: Dilemmas and perspectives Essays in Honour of Ramakrishna Mukherjee Sage, New Delhi.
8. Mukherjee, R.K. 1979 — What will it be? Explorations in Inductive Sociology Allied, Bombay.
9. _____ 1993 — Systemic Sociology Sage, New Delhi.
10. Popper, K 1999 — The Logic of Scientific Discovery Routledge and Kegan Paul London
11. Punch, K 1986 — Introduction to Social Research Sage, New Delhi
12. Sjoberg, G and Roger, N., 1997 — Methodology of Social research Rawat, Jaipur
13. Srinivas, M.N. and Shah, A.M., 1979 — Field worker and the Field Oxford, New Delhi.
14. Weber, M 1974 — The Methodology of Social Sciences Free Press, Chicago
15. Young, P.V. 1977 — Scientific Social Surveys and Research Prentice Hall, New Delhi.
16.

Paper No. III/CC3 **Marks-80**

SOCIAL CHANGE IN INDIA

Unit-I: Conceptual and Theoretical Frame work

a. Concept
b. Forms
c. Linear Theory
d. Cyclic Theory

Unit-II: Factors of Social change

a. Techno- Economic
b. Socio- Psychological
c. Cultural and Religious
d. Media

Unit-III: Trends and Processes of Change in Modern India

a. Sanskritization
b. Secularization
c. Gandhian
d. Globalization

Unit- IV: Changes in Tribal and Rural India

a. Changes in Tribal and Rural Economy
b. Changes in Socio-cultural spheres
c. Land Alienation
d. Welfare Measures and Consequent Changes

Unit-V:-Changes in Urban and Industrial India

a.In Migration and Growth of informal sector.
b. development of Slums.
c. Development of Criminal Activities.
d. Welfare measures and Consequent Changes.

References:

1. Beteille, A. 2003 — The Idea of natural inequality and other essays. Oxford, New Delhi.
2. Desai, AR 2001 — Rural Sociology in India. Popular, Bombay
3. Jhingan, M.L. 2003 — The economics of Development and Planning. Vrinda Publications, New Delhi
4. Kanungo, S. 2002 — Making Information Technology Work, Sage, new Delhi
5. Mathur, H.M. (ed) 1994 — Development, Displacement and Resettlement: focus on Asian experiences Vikas, New Delhi.
6. Preston, P. 2001 — Reshaping communications, Technology Information and Social Change. Sage, New Delhi.
7. Ramachandran, P.S. et al (ed) 2002 — Traditional Ecological Knowledge for managing Bio-sphere reserves in south and central Asia. Oxford, New Delhi.
8 Reid, Suctitus 1976 — Crime and Criminology, Illiois: Deyen Press
9. Schuurman, F.J. 1999 — Globalization and Development, Vistaar, new Delhi.
10. Parekh, B 1999 — Colonialism, Tradition and Reform: An analysis of Gandhi's Political Discourse Sage, New Delhi.
11. Sharma, K.L. 1997 — Social Stratification in India: Issues and Themes. Sage, New Delhi.

12. Shiva, V. and Bedi, G. 2002 — Sustainable Agriculture and food scarcity Sage, New Delhi.
13. Singh, Y. 1999 — Modernization of Indian tradition Rawat, jaipur.
14. _____ 2003 — Culture Change in India Rawat, Jaipur
15. Singharoy, D.K. et al (ed) 2000 — Social Development and Empowerment of Marginalised groups, Sage, New Delhi.
16. Srinivas, M.N. 1998 — Social Change in Modern India. Orient and Longman, New Delhi.
17. Vidyarthi, L.P. and Rai, B.K., 1977 — Tribal culture in India Concept Publication Company New Delhi.

Paper No. IV/CC 4 **Marks-80**

RURAL SOCIOLOGY

Unit-I: Characteristics and Approaches

a. Concept andCharacteristics of Peasant Society
b. Concept andCharacteristics of Agrarian Society
c. Caste and Jamani Approach
d. Sub- Altern Approach

Unit-II: Agrarian Institutions

a. Land Ownership and Its Types:After Independence
b. Agrarian Relations and Modes of Production
c. Agrarian Social Structure

Unit- III: Planned Change

a. Rural leadership
b. Factionalism
c. Panchayati Raj before and after 73rd Amendment
d. Five Year's Plans in India

Unit-IV: Rural Development and Change

a. Green Revolution
b. Land Reform
c. Globalization and its Impact on Agriculture

Unit-V:Welfare measures and consequent Changes

a. Self-help Group(SHG)
b. MNREGA
c. SSA

References:

1. Basu, K. (ed) 2000 — Agrarian Questions Oxford, New Delhi.
2. Berberglu, B. (ed) 1992 — Class, State and Development in India sage, New Delhi.

3.	Beteille, A. 1974	Six essays in comparative sociology oxford, New Delhi.
4.	_____ 1974	Studies in Agrarian social structure oxford, New Delhi.
5.	Breman, J. 1974	Patronage and Exploitation oxford, New Delhi.
6.	Desai, A.R. (ed) 1977	Rural sociology in India popular, Mumbai.
7.	_____, (ed) 1977	Rural society in transition Popular, Mumbai.
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Paper No. V/P1 **Marks-100**

PRACTICAL-I

Practical based on Field Work & Preparation of tools
Interview Guide and case study

Scheme of Evaluation- 50% by Internal Examiner and rest 50% by Viva-Voce Examination evaluated both by the Internal and External Examiner.

SECOND SEMESTER

Paper No. –VI/CC 5 **Marks-80**

CLASSICAL SOCIOLOGICAL THINKERS

Unit-I: Karl Marx

a. Materialistic Interpretation of History
b. Class and Class Struggle
c. Alienation

Unit-II:Thurstein Veblen

a. Theory of Leisure class
b. Concepts of Social Change
c. Comparison of Marx and Veblen's theories

Unit-III: Max Weber

a. Theory of Social Action
b. Concepts of Status, Class and power
c. Sociology of Religion and Economic Development

Unit-IV Talcott Parsons

a. Social Action
b. Pattern variables
c. Social System

Unit-V: Robert K. Merton

a. Reference Group
b. Social Conformity and Anomie
c. Functional Paradigm

References:

1. Abraham, F and Morgan, J.H. 1985 — Sociological Thought from Comte to Sorokin Macmillan, New Delhi.
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3. Adams, B.N. and Sydie, R.A. 2001 — Sociological theory Vistaar, New Delhi.
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	Kurt H.Wdff,1922	IL,Freepress.
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Paper No.-VII/CC6 **Marks-80**

QUANTITATIVE RESEARCH TECHNIQUES IN SOCIOLOGY

Unit-I: Sampling

a. Rational
b. Types
c. Sampling error
d. Survey Vs. Sampling based study in sociology

Unit-II: Quantitative method and survey Research

a. Techniques of Survey Research: Interview
b. Tools of Research; Preparation of Questionnaire and Interview Schedule
c. Processing of Data: Classification, Tabulation and Interpretation
d. Use of Computer in Data Processing

Unit-III: Measurement and Scaling Techniques

a. Levels of Measurements: Types of Scales- Nominal and Ordinal
b. Reliability and Validity of Scaling
c. Measures of Social Distance: Thurston, Lickert and Bogardus Scale
d. Sociometry

Unit-IV: Statistics in Social Research

a. Measures of Central Tendency: Mean, Median and Mode
b. Measures of Dispersion- Standard Deviation
c. Correlation Analysis- Chi Square
d. Quantitative Vs. Qualitative research in sociology

Unit-V:Qualitative and Quantitative research method

a. Triangulation;mixing Qualitative and Quantitative methodologies
b. Social Research, Action research and Participatory research
c. Application of computers in Social research; MS office.
d. Ethical issues in social research.

References:

1.	Bailey, K.D. 1979	Methodology of social Research Macmillan, Free Press.
2.	Bryman, Allan 1988	Quality and Quantity in Social Research Unwin, Hyman, London.
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Paper No. –VIII/CC7 **Marks-80**

SOCIOLOGY OF DEVELOPMENT

Unit-I: Perspectives on Development

a. Modernization
b. Marxist
c. Dependency
d. Alternative

Unit-II: Changing Conception of Human Development

a. Mainstream vs. Indigenous Model of Development
b. Human Indicator Index
c. Sustainable Development: Socio- Cultural
d. Impact of Bio-Technology and Information Technology on Development.

Unit-III: Indian Experience on Development

a. Sociological Appraisal of Five Year Plans
b. Social Consequences of Economic Reforms
c. Socio Cultural Impact of Globalization
d. Social Implication of InfoTech and Bio-Tech Revolution

Unit-IV: Consequences of Development

a. Development and Displacement
b. Development and Socio- Economic Disparities
c. Ecological Degradation
d. Development and Migration.

Unit-V:Issues and development in Contemporary India.

a. Social Exclution
b.Gender Discrimination
c. Privatization and unfavorable Service condition.
d. Sustainability.

References:

1. Alavi, H. and Shanin, T., 1982 — Introduction to the study of Developing societies Macmillan, London
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3. Apter, D.C. 1987 — Rethinking development Sage, New Delhi
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Paper No. IX/CC8 **Marks-80**

INDIAN RURAL SOCIETY

Unit-I: Tribal Society as Agrarian Society

a. Tribe Concept and Characteristic
b. Tribe class
c. Changing problems of Tribal Land

Unit-II: Social Issues

a. Migration
b. Land Alienation
c. Loss of Livelihood

Unit-III: Contemporary Issues

a. Health
b. Education
c. Changing status of Rural Women
d. Inequality

Unit-IV: Peasant Movement

a. Causes
b. Types
c. Tebhaga
d. Telengana

Unit-V: Naxlite movement in Contemporary India.

a. Origin and affected area
b. Causes
c. Present status; Governments measures and peoples response.

References:

1. Beteille, A. 1986 Inequality and Social Change Oxford, New Delhi.
2. Bardhan, p. Poverty, Agrarian Structure and Political Economy in India.
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Paper No. X/P2 **Marks-100**

PRACTICAL-II

Practical based on Field Work & Preparation of tools

Questionnaire, Interview Schedule Preparation and Tabulation.

Scheme of Evaluation- 50% by Internal Examiner and rest 50% by Viva-Voce Examination evaluated both by the Internal and External Examiner.

THIRD SEMESTER

Paper No. XI/CC9 **Marks-100**

CLASSICAL SOCIOLOGICAL THEORIES

Unit-I: Positivism

a. Origin and Basic Postulates
b. Contributions of Comte

c. Contributions of Durkheim
d. Criticism

Unit-II: Functionalism

a. Origin and Basic Postulates
b. Contributions of Parsons
c. Contribution of Merton
d. Criticism

Unit-III: Conflict theory

a. Contribution of L.A Coser
B Contributions of Karl Marx
c Contribution of Dahrendorf
d Criticism

Unit-IV: Structuralism

a. Origin and Basic Postulates
b Contribution of Red Cliff Brown
c Contribution of Levistrauss
d Criticism

Unit-V:Exchange Theory

a. Origin and Basic postulates
b. Contribution of peter Blau
c. Contribution of George Homans.
d. Criticism

References:

1. Abraham, M.F. 2001 — Modern Sociological Theory: An Introduction Oxford, New Delhi.
2. Alexander, J.C. 1987 — Twenty Lectures; Sociological theories since World War- II Columbia University press- New York.
3. Coser, L.A. 2001 — Masters of Sociological thoughts Rawat, Jaipur
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Paper No.XII/CC10 **Marks-100**

SOCIAL MOVEMENTS IN INDIA

Unit-I: Nature and Types

a. Characteristics
b. Types
c. Reasons
d. Power Structure and Social Movements

Unit –II:Basis of Social Movement

a.Class, Caste, Ethnicity and Gender
b.Types of leadership and relationship between leaders and masses
c. Political institution and social movement.
d. Role of media in social movement.

Unit-III: Theoretical Perspectives

a. Marxian and Post-Marxian
b. Weberian Perspectives
c,. Structural-Functional
d. Postmodernist

Unit-IV: Traditional Social Movements

a. Labour and Trade Union
b. Tribal
c. Peasant
d. Nationalist

Unit-V: New Social Movements

a. Dalit
b. Women
c. Ethnic
d. Environmental

References:

1. Banks, J.A., 1972; The Sociology of Social Movements (London : Macmillan)
2. Desai, A.R., Ed., 1979; Peasant Struggles in India (Bombay : Oxford University Press)
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Paper No.XIII/CC11 **Marks-100**

PERSPECTIVES OF STUDY TO INDIAN SOCIETY

Unit-I: Indological / Textual

a. Approach of Study
b. G.S. Ghurye
c. Louis Dumont
d. Criticism

Unit-II: Structural Functionlism

a. Approach of Study
b. M.N.Srinivas
c. S.C.Dube
d. Criticism

Unit-III: Marxism

a. Approach of Study
b. D.P.Mukharjee
c. A.R. Desai
d. Criticism

Unit-IV: Subaltern Perspective

a. Approach of Study
b. B.R. Ambedkar
c. David Hardiman
d. Criticism

Unit-V: Civilization

a. Approach of study
b. N.K.Bose
c. Surjeet Sinha
d. Criticism

References:

1. Das, V. 1982 Structure and Cognition aspects of Hindu caste and rituals Oxford, New Delhi.
2. Desouza, P.R. (ed) 2000 Contemporary India Transitions. Sage, New Delhi.
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Paper No.XIV/CC12 **Marks-100**

INDUSTRY AND SOCIETY IN INDIA

Unit-I: Industrial Sociology and Classical Sociological Tradition

a. Classical Scientific Management
b. Division of Labour
c. Bureaucracy and Rationality
d. Production Relations and Alienation

Unit-II: Industrial Organizations

a. Formal and Informal Organizations, Structure and Function
b. Line and Staff Organization
c. Contemporary Organization Realities

Unit-III: Problems through Industrialization process

a. Family
b. Stratification
c. Habitat and Settlement
d. Environmental

Unit-IV: Subjective Experience of Work

a. Work Ethics, Work Value, Work Attitude and Work Process
b. Motivation to Work,
c. Work Satisfaction, Incentives and Its Effects

Unit-V: Technological Change and Automation

a. Technology and Social Structure in Industry
b. Organizational Choice and Technological Change
c. Resistance to Automation and Change

References:

1.	Agrawal R.D. 1972	Dynamics of Indian labour relations in India (A Book regarding Mc-Graw Hill, Bombay)
2.	Aziz Abdul 1984	Labour problems of developing economy Ashis Publishing house, New Delhi
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12.	Watson K. Tony 1995	Sociology, work and industry Routlodge and Kagan Paul, London.

Paper No.XV/CC13 **Marks-100**

CRIMINOLOGY

Unit-I: Conceptual and Theoretical Approaches

a. Legal, and Sociological;,
b. Concept of Crime , Crime Causes prevention and Control
c. Theories on Crime Causation; Sociological and Geographical

Unit-II:Type of Criminals and Crime

a. Juvenile delinquency
b. Women and Crime
c. White collar crime

Unit-III: Changing Profile of Crime and Criminals;

a. Corruption: Types, Causes, and Consequences.
b Cyber Crime: Causes, Prevention and Control
c Crime Against Women: Causes, Prevention and Control

Unit-IV: Theories of Punishment

a. Retributive, Deterrent: Theories and Criticism

b. Reformative Theory: Probation and Parole
c. Open Prison- Its Success and Failure

Unit-V: Terrorism

a. Concept of Terrorism and Its Characteristics
b. Terrorism in India
c. Social and Legal Measures for Its Prevention and Control

References:

1. Ahuja, R. 1969 — Female offenders in India Meenakshi Prakashan, Meerut
2. Madan, G.R. 1985 — Indian social problems-I Allied Publishers, New Delhi
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8. Singh, S. and Srivastava, S.P. (ed) 2001 — Gender equity through women's empowerment. Bharat book center, Lucknow.
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FOURTH SEMESTER

Paper No. XVI/CC14 **Marks-100**

MODERN SOCIOLOGICAL THEORIES

Unit-I: Symbolic Interectionism

a. Origin and Basic Postulates
b. Contributions of G.H. Mead
c. Contribution of H.Blumer
d. Criticism

Unit-II: Phenomenology

aOrigin, Basic Postulates of Phenomenology

bContributions of Schutz
cContributions of Berger
dCriticism

Unit- III:Ethnomethodology

aOrigin Basic postulates of Ethnomethodology

b.Contribution of Garfinkel
c Contribution of Goffman
dCriticism

Unit-IV: Critical Theory

a. Origin and Development
b. Contributions of Adorno
c. Contributions of Habermas
d. Criticism

Unit-V: Post Modernism

a. Origin and Development
b. Contributions of Foucault
c. Contributions of Derrida
d. Criticism

References:

1. Abraham, M.F. 2001 — Modern Sociological Theory: An introduction Oxford, New Delhi
2. Adams, B.N. and Sydie, R.A. 2001 — Sociological Theory, Vistaar, New Delhi
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11. _____ 1996 — Capitalism and Modern Social Theory, Cambridge University Press, Cambridge.

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17. Turner, J.H. 2001 — The structure of sociological theory Rawat, Jaipur
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Paper No. XVII/CC15 **Marks-100**

COMPARATIVE SOCIOLOGY

Unit-I: Historical and Social Context of Emergence of Sociology in the West

a. Emergence of growth of Sociology in West
b. Eurocentric Moorings western Sociological Tradition
c. Americanization of Sociology

Unit-II: Central Themes in Comparative sociology

a. Modernity and Development
b .Diversity and multy Culturalism
c. Enviornment
d. Globalization

Unit-III: Theoretical Concern,s in Comparative sociology

a. Problems of theoring in sociology
b. Theoretical and Methodological approaches in sociology
c. Policy issues: Formulation and Evalution

Unit IV: Current Debates

a. Contextitualization
b. Indianization
c. Use of Native Categories
d. Criticism.

Unit-V: Debate on "For Sociology of India"

a. Sociology of India
b .Sociology in India
c. Sociology For India
d. Criticism

References:

1 Anderski, S 1961: Elements of Comparative Sociology(London ,

		Widenfeld and Nicolson)
2	Beteille, Andre 1987:	Essays in Comparative Sociology(New Delhi: Oxford University Press)
3	Beteille, Andre 1992:	Society and Policies in India: Essays in Comparative Sociology(New Delhi: Oxford University Press)
4	Berremen, G.D 1981:	The Politocs of Truth : essays in Critical Anthopology, New Delhi: South Asian Publishers)
5	Dube, S. C. 1973:	Modernization and Development: The search for alternative paradigm (New Delhi: Vistar)
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7	Ferreira, J.V. and A.R.Momineds: 1983:	Nemesis–CulturalPerspectives on modernization (Bombay, Ramkrishna Publication)
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9	Kiely R and Phil Marfleet, eds. 1998:	Globalization and the third world (London: Routledge)
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16	World Commission on environment and Development, 1987:	(New Delhi: Oxford University Press)
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Paper No.XVIII/CC16 **Marks-100**

CONTEMPORARY ISSUES IN INDUSTRY

Unit-I: Industrial Relation

a. Importance of Human Relations at work
b. Conflict: Causes and Types, Resolution of Conflict

c. Conciliation and Collective Bargaining
d. Workers Participation in Management

Unit-II: Trade Union and Industrialization

a. History of Trade Unionism in India
b. Objectives and Functions
c. ILO and Trade Unions in India
d. Trade Unionism in Globalization

Unit-III: Industry and Society

a. Impact of Industry on Family
b. Impact of Industry on Stratification
c. Industrialization and Migration
d. Industrialization and Religion

Unit-IV: **Industrilization in Third world Countries in the Era of Globlization**

a. FDI and Third World
b. International Agencies: World Bank and Third world countries
c. Status of Industries in Third World Countries

Unit-V: Contemporary Issues

a. Industrialization and Women Labour
b. Industrialization and Child Labour
c. Industrialization and Environment
d. Problem of Industrialization in Developing Countries

References:

1. Agrawal R.D. 1972 — Dynamics of Indian labour relations in India (A Book regarding Mc-Graw Hill, Bombay)
2. Aziz Abdul 1984 — Labour problems of developing economy Ashis Publishing house, Hew Delhi
3. Gilbert S.J. 1985 — Fundamentals of Industrial Sociology Tata Mc-Graw hill Bombay
4. Karnik V.B. 1990 — Indian trade Union A survey, Popular Prakashan-Bombay
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Paper No.-XIX/CC17 **Marks-100**

CRIMINOLOGY: CORRECTIONAL AND ADMINISTRATION

Unit-I:Roots of Correction to prevent Crime

a. **Socialization**
b. Family values
c. Role of education

Unit-II: Correction and It's Forms

a. Meaning and Significance of Correction; Prison Based and Community Based
b. Correctional Programmes in Prison; History of Prison Reforms in India
c. After Care and Rehabilitation Programme.

Unit-III: Problem of Correctional Administration

a. Overcrowding; Lack of Inter Agency Co-Ordination among Police Prosecution, Judiciary and Prison
b. Prison Offences
c. Problem of Criminal Justice Administration

Unit-IV: Victimological Perspective

a. Victrim's Responsibility in Crime
b. Violation of Prisoner's Human Rights
c. Problems of Women Offenders.

Unit-V: Community Policing

a. Concept andObjectives
b. Types
c. Significance

References:

1. Ahuja, R. 1981 The Prison System Sahitya Bhawan, Agra
2. _____, 1997 Contemporary Social problems in India Rawat, Jaipur.
3. Advani, NH, 1978 Perspectives on Adult Crime and correction. Abhinav Publication, New Delhi.
4. Bedi, K. 1998 It is always possible sterling, New Delhi.
5. Devasia, L and Devasia, V.V. (ed) 1989 Female criminals and Female Victims: An Indian Perspective Dattsons, Nagpur.

6. Gosmami, B.K. 1983 — Criminology and Penology Allahabad
7. Mohanty, S 1990 — Crime and Criminals in India Ashish Pub. House New Delhi.
8. Reid, S. 1976 — Crime and Criminology Deydan press, Illinayse
9. Shankardas, R.D. 2000 — Punishment and the Prison: India and International perspective, Sage, New Delhi.
10. Sutherland, E.H. and Donald, R.C., 1968 — Principles of Criminology The Times of India Press, Bombay.
11. William, H.E. 1990 — The correction Profession Sage, New Delhi.

Paper No.-XX/P3 **Marks-100**

PROJECT REPORT

On Rural and Urban Problems

Scheme of Evaluation- 50% by Internal Examiner and rest 50% by Viva-Voce Examination evaluated both by the Internal and External Examiner.

M.A. SOCIOLOGY

ANNUAL SYSTEM

2016-17

SYLLABUS OF ANNUAL EXAM
ORDINANCE NO. 13
Master of Arts Examination

1. The Examination for the degree of master of Arts shall consists of two parts
   (a) The Previous Examination, and
   (b) The Final Examination.
2. A candidate who after taking his Bachelor's degree of the University or an examination of any statutory University in India which has been recognised by the University and has completed a regular course of study in the teaching department of the University or in a College in the subject in which he offers himself for examination for one academic year shall be admitted to the Previous Examination for the degree of Master of Arts.

   A candidate after passing a graduate examination under 11 +3 scheme or any other examination recognised by the University as equivalent there to shall be eligible for admission to a post-graduate course of studies where graduation is minimum qualification only after passing. one year Bridge Course prescribed for the purpose. This shall apply to students graduation in 1991 main examination.
3. A candidate who after passing the M. A. Previous Examination of the University,has Completed a regular course of study for one academic year in a teaching department of the University or in a collegies shall be admitted to the Final Examination for the degree of master of Arts in the subject in which he/she passed the Previous Examination.

   A candidate who has passed the Previous. Examination for the degree of Master of Arts of another University may also be admitted to the Final Examination for the degree of Master of Arts after obtaining necessary permission from the Kulpati, provided that he offered for his Previous Examination a course of study of an equivalent standard with almost identical syllabus as required for one Previous Examination of the University and has attended a regular course of study for one academic year in a College affiliated to the Unitersity or a teaching department of the. University.
4. Besides regular students and subject to other compliance with this Ordinance,

   exe=students and non-collegiate candidates shall be eligible for admission to the Examination as per provisions of Ordinance No.6 relating to Examination (General).Provided that in the subject where field work or practical work is prescribed only such candidates will be permitted to appear as non-collegiate candidates as have obtained permission of the Head of the University Teaching Department or Principal of the College teaching such subject.

   Provided that non-collegiate candidates-shall be permitted to offer only such subjects/ papers as are thought to' the regular students at any of the University Teaching Department or College. .
5. The subject of the examination shall be one of the following:
   (i) English
   (ii) Hindi.
   (iii) Economics
   (iv) Political Science

(v) History
(vi) Philosophy
(vii) Sanskrit
(viii) Mathematics
(ix) Linguistics
(x) Geography
(xi) Sociology
(xii) Anthropology
(xiii) Classics
(xiv) Ancient Indian Hostory, Culture and Archeology
(xv) Public Administration
(xvi) Defence Studies
(xvii) Statistics

A candidate securing 60% or more marks in the M.A./M.Com. Previous Examination will be eligible to offer dissertation in lieu of one of the, optional papers for the Final. A regular candidate can offer dissertation with the permission of the Professor and the Head of Department of his Institution, while a private candidate will have to secure the prior permission in writing of anyone of the Professors of the subject working in an institution within the jurisdiction of the University and will work under supervision of that Professor after obtaining prior permission of the University to that effect.

6. A candidate who has passed the M. A. Examination of the University inany subject shall be allowed to present himself for the M.A. Examination in qny,one or more of the optional papers in tha1 subject not taken by him at the said examination and is successful will be given a certificate to that effect.

   No Candidate shall be allowed to offer more than two additional papers in any one year.

7. For both the Previous and Final Examination a candidate will be declared successful If he/she obtains atlesast 36% of the aggregate marks in the, subject. In subject, in which both Theory and Practical Examinations are held the examinee must pass separately- in the Practical Examination obtaining not less than 36% marks.

8. No division wil'l be assigned on the result of the Previous E'xamination, The division in which a candidate is placed shall be determined on the basis of aggregate of marks obtained in both the M. A. Previous and. the M.A. Final Examination.

9. Successful candidate who obtain 60% or more of the aggregate marks shall be placed in the First Division, those obtaining less than 60% but not less than 48% in the Second. Division and all other successful candidates obtaining less than 48% in the Third Division.

10. Candidates who have passed .the M.A. Examination of the University in any, subject in Third or Second Division and desire to appear at the.M.A. Examination in the sa.me subject for improving division without attending a regular course of study in a college affiliated to the University or in a teaching Department of the University be allowed to appear at the aforesaid examination as non-collegiate student on the following Conditions:-

    (i) There shall be only two Divisions for such candidates the First Division and Second Divsion. The marks required for obtaining these divisions shall be sameas

prescribed in the Ordinance i. e. examinees who .are successful in Final of fhe Examination and ha.ve obtained 60% or more aggregate of the marks in Previous and Final Examination taken together shall be placed in the First Division and examinees who are successful in Final Examination and have obtained less than 60% but not lessthan 48% of aggregate marks Previous and Final Examinations taken together shall be placed in the Second Division.

(ii) The result of the candidates obtaining less than 48% of the aggregate marks in Previous and Final of the examination taken together shall not be declared.

(iii) Candidates shall be option to appear at both the Previous and Final Examinations in one and the same year and for being successful at the examination, the candidates shall obtain 48% of the aggregate marks.Provided that such candidates who up to appear in Previous and Final Examinations separately shall have to obtain minimum aggregate required for the Previous Examination but he will have to obtain atleast 48% in the aggregate of Previous and Final Examinations taken together or else his result will be cancelled.

(iv) The syllabus for the examination shall be the same as prescribed for the year in which the examination is held.

(v) Not more than two attempts shall be allowed to such a candidate. Failure or non-appearance at the examination after permission has been accorded by the University, shall be counted as an attempt.Provided however such candidates who up to appear at the Previous and Final examination separately will be allowed only one attempt at the previous examination and two attempts at the Final Examination.

(vi) Candidates who wish to avail the opportunity given in foregoing paras will have to apply for permission as required in theOrdinance relating to admission of Non-collegiate students to the. University examinations, alongwith requisite registration fee.

(vii) In case, a student improves his division under provision of this para, the fresh Degree will be issued after canceling his first Degree.

11. Transitory Provisioll; The reblaced Ordinance relating to Master of Arts Examination shall remain effecting till the examination of 1991, and this new Ordinance shall be Applicable from the examination 1992.

USE OF CALCULATORS

The students of Degree/P.G. classes will be permitted to use Calculator in the examination-hall on the. Following conditions as per decision of the standingCommittee of the Academic Council at its meeting held on 31-1-1986.

1. Student will bring their own Calculators.
2. Calcultors will not be provided either by the University or examination centres.
3. Calculators with memory and following variables be permitted; +, sqare, reciprocal, expotential log, square root, trignometric functions viz. sine, cosine tangent etc. factorial summation, xy, yx and in the light of objectivge approval of merits and demerits of the viva only Will be allowed.

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M.A. PREVIOUS (Code-021)
SOCIOLOGY

एम.ए.पूर्व समाजशास्त्र में निम्नलिखित पांच प्रश्न–पत्र होगे

क्रमां	प्रश्न–पत्र	प्रश्न–पत्र का नाम	कोड	पूर्णांक
1.	Paper - I	Classical Sociological Tradition	(0323)	100
2.	Paper - II	Methodology of Social Research	(0324)	100
3.	Paper - III	Sociology of Change and Development	(0325)	100
4.	Paper - IV	Rural Society in India	(0326)	100
5.	Paper - V	Urban Society in India	(0327)	100

PAPER - I
CLASSICAL SOCIOLOGICAL TRADITION
(Paper Code - 0323)

UNIT-1 Historical Socio- Economical background of the emergence of Sociology.

Traditional feudal economy and social structure.

Impact of Industrial revolution and of new mode of production on society and economy.

The emergence of capitalistic mode of production nature and features of capitalism.

August Comte positivism, Law of three stages, Hierarchy of Science.

UNIT-2 Karl Marx;

. Marxian Dialectical materialism as a philosophical perspective of change and its laws Materialistic interpretation of history; As a perspective of explaning transformation of human society through different stages.

Mode of Production and social structure.

Basic structure and super structure.

Concept of surplus value and exploitation.

Emergence of classes and class conflict.

Proletariat revolution and future of capitalism classless society.

Alienation in the capitalist society- Factors responsible for alienation and its social implications.

Views on political power. The state in relation to social classes.

Future of the state after proletariat revolution.

Marx and sociology of Knowledge.

UNIT-3 Emile Durkheim ;

Intellectual background. His preoccupation with the order and disintegration of society. Social disintegration as a legacy of industrial revolution. Increasing division of labour in the capitalist.

Mechanical and organic solidarities. Explanantion of increasing divisioin of labour. Pathological forms of division of labour.

Theory of suicide; Review of earlier theories of suicide, Suicide rate.

Types of suicide, Problem of integration of the individual with society.

Theory of religion; Earlier theories of the emergence and role of religiion, structure of religiion, sacred and profane, source of sacredness of the sacred things as symbols of ultimate values. Society as a supreme God. Religious rituals-their types. Social role of religious beliefs and rituals.

Contribution to the methodology of sociology- Sociology as a science. Concept of social facts.

UNIT-4 Max Weber;- Intellectual background. Theory of social action. Types of social action.

Views on the role of ideas and values in social change with reference to the relationship

between protestant ethic and emergence of capitalism.

Theory of Authority. Authority and power. Types of authority Theory of Bureaucracy. Capitalism and growing rationalism and emergence of modern bureaucracy.

Relationship between political leaders and bureaucracy.

Contribution to the methodology of social science.Concepts of Verstehen and ideal type.

UNIT-5 Vilfredo Pareto

Intellectual background

Contribution to the methodology - his logico-experimental method.

Classification of logical and non-logical actions.

Explanation of non-logical actions in terms of his theory of Residues and Derivatives. Classificatiion of Residues and Derivations.

Theory of social change, Elites and masses. Types of elites, their classification, Circulation of Elites.

BOOKS RECOMMENDED :

1. Parsons, Talcott : The structure of social action Vol. I & II, Mcgraw Hill, New Yark, 1937-1949.
2. Nisbet : The Sociological Tradition. Heinemann Educational Book Ltd. London, 1966.
3. Zeitlin, Irvin : Ideology and the Development Sociological theory, Prentice Hall, 1981.
4. Dahrendorf, Ralph : Class and class conflict in an Industrial Society, Stanford University Press 1959.
5. Bendix, Rinehard : Max Weber : An Intellectual portrait, Double Day, 1960.
6. Popper, Karl : Open Society and its Enemis, Routledge, London, 1945.
7. Aron, Reymond : Main Currents in Sociological Thought, Vol. I & II, Penguin, 1965-1967.
8. Coser, L.A. : Masters of Sociological thought, Harcourt Brace, New York 1977.
9. Giddens, Anthony : Capitalism and Modern Social theory - An Analysis of writings of marx, Durkheim and Weber, Cambridge University Press, 1997.
10. Hughes John A. : Martin Peter, J. and Sharrock, W.W. : Understanding Classical Sociology- Marx Weber and Durkheim, Sage Publication, London, 1995.

PAPER -II

METHODOLOGY OF SOCIAL RESEARCH

(Paper Code - 0324)

UNIT-1 Philosophy of social science; Enlightenment, reason and science, Cartesian philosophy, structure of scientific revolution (Kulin). Positivism and its critique; contributiion of Comte, Durkheim and popper positivism, Critique of positivism;

Fayerband and Giddens

UNIT-2 Logic of Inquiry in social science research
Inductive and Deductive
Theory building Scientific method in social research
Objectivity/value neutrality. Hypothesis

UNIT-3 Quantitative methods and survey research;
Survey techniques. Limitations of survey. Operationalization and research design.
Sampling design. Questionnaire Construction, Interview schedule.
Measurement and scaling. Reliability and Validity.

UNIT-4 Qualitative Research Techniques.
Techniques and methods of qualitative research.
Participant observation ethnography, interview Guide.
Case study method. Content analysis. Oral history, narratives.
Life history, genealogy.
Encounters and experiences in field work.
Data processing.
Reliability and validity in qualitative research.

UNIT-5 Statistics in Social Research;
Measures of central tendency; Mean, Median, Mode.
Measures of Dispersion; Standard Deviation.
Correlational Analysis; Tests of Significance and covariance.
Social Research, Action Research, Participatory Research.
Ethical issues in Social Research.

BOOKS RECOMMANDED :

1. Barnes, John A. ; Who Should know what ? Social Science, Privacy and Ethics, Harmondsworth : Penguin, 1979.
2. Bose, Pradip Kumar, ; Research Methodology. ICSSR, New Delhi, 1995.
3. Bryman, Alan ; Quality and Quantity in Social Research, Unwin Hyman, London, 1988.
4. D.A. De vaus : Surveys in Social Research, George Relen and Unwin, London, 1986.
5. Irvine, J., I. Miles and J. Erveans (Eds.); Demystifying Social Statistics, Pluto Press, London, 1979.
6. Madge, John ; The Origins of Scientific Sociology, Tavistock, London, 1970.
7. Marsh, Catherine ; Exploring Data, Polity Press, Cambridge, 1988.
8. Punch, Keith : Introduction to Sociol Research, Sage Publication, Londan, 1986.
9. Srinivas, M.N. and A.M. Shah : Field Worker and the Field, Oxford University Press, New Delhi, 1979.
10. Beteille A. and T.N. Madan : Encounter and Experience : Personal Accounts of Field work, Vikas Publishing House Pvt. Ltd., New Delhi, 1975.
11. Kuhn, T.S., The Structure of Scientific Revolutions, The University of Chicago Press, London, 1970.
12. Mukhergee, P.N. (ed.) : Methodology in Social Research ; Dilemmas and Perspectives, Sage, New Delhi, 2000.
13. Popper, K. : The Logic of Scientific Discovery , Routledge, London, 1999.
14. Shipman, Martin : The Limitations of Social Research, Longman, London, 1988.
15. Sjoberg, Gideon and Roger Nett : Methodology for social research, Rawat, Jaipur, 1997.
16. Smelser, Neil J. : Comparative Methods in Social Science.

PAPER-III

SOCIOLOGY OF CHANGE AND DEVELOPMENT

(Paper Code - 0325)

UNIT-1 Meaning and forms of social change; Evolution, Progress, transformations
Theories of social change; Linear, Cyclical
Factors of social change ; Demographic economic, religious, infotech and media.

UNIT-2 Social Change in contemporary India; Trends of change, processes of change Sanskritization, Westernization, Modernization, Secularization.
Changing Conceptions of Development; Economic growth, human development, social development; Sustainable development, the question of sustainability.

UNIT-3 Theories of Development and underdevelopment; modernization theories, centre-peripheri, world systems, unequal exchange.
Paths and Agencies of Development; Capitalist, socialist, mixed economy, Gandhian; state, market, non- governmental organizations.

UNIT-4 Social Structure and Development; structure as a facilitator/ inhibitor, development and socio-economic disparities, gender and development.
Culture and development; Culture as an aid, development and displacement of tradition.

UNIT-5 Indian Experience of development; sociological apprairal of Five-Year plans, social consequences of economic reforms, socio- cultural repercussions of globalization, social implications of info-tech revolution.
Formulating social policies and programmers; policy & project planning, implementations.

BOOKS RECOMMENDED :

1. Abraham, M.F. : Modern Sociological Theory : An Introduction, OUP, New Delhi, 1990.
2. Agarwal B. : A Field of One's Own : Gender and Land Rights in South Asia, Cambridge University Press, Cambridge, 1994.
3. Appadurai, Arjun : Modernity at Large : Cultural Dismensions of Globalization. OUP, New Delhi, 1997.
4. Dereze, Jean and Amartya Sen : India : Economic Development and Social Opportunity, OUP, New Delhi, 1996.
5. Desai, A.R. : India's Path of Development : A Marxist Approach, Popular Prakashan Bombay, 1985.
6. Giddens, Anthony : Introduction to Sociology IInd Ed., W.W. Norton & Co. New york, 1996.
7. Harrison D. : The Sociology of Modernization and Development, Sage, New Delhi,1989.
8. Haq, Mahbub ul : Reflections on Human Development, OUP, New Delhi, 1991.
9. Moore, Wilbert and Robert Cook : Social Change, Prentice Hall, New Delhi, 1967.
10. Sharma S.L. : Development Socio-Cultural Dimensions, Rawat, Jaipur, 1986.
11. Srinivas, M.N. : Social Change in Modern India, University of Berkley, 1966.
12. Amin, Samir : Unequal Development OUP, New Delhi, 1979.
13. Giddens, Anthony : The Consequences of modernity, Polity Press, Combridge, 1990.
14. Kiely, Ray and Phil Marfleet (eds) : Globalization and the third World, Routledge, London, 1998.
15. UNDP : Human Development Report, Oxford University Press, New York, 1997.
16. UNDP : Sustainable Development, OUP, New York.

17. Wallerstein Imnanual : The Modern World System, OUP, New York, 1974.
18. World Bank : World Development Report, New York, 1995.

PAPER- IV
RURAL SOCIETY IN INDIA
(Paper Code - 0326)

UNIT-1 Rural society in India as agrarian and peasant social structure.
Basic characteristics of peasant and agrarian society.

UNIT-2 Family, caste, religions, habitat and settlement, in rural society in India.
Debates of mode of productiion and agrarian relation-tenacy lands and labour.

UNIT-3 Agrarian legislation and rural social structure.
Rural poverty, emigration, landless labour.

UNIT-4 Planned change for rural society.
Panchayati Raj Role of women in panchayati Raj. Rural development strategies (I R D P). Integrated Rural Development Programme.

UNIT-5 Major agrarian movements in India-a critical analysis.
Globalisation and its impact on agriculture.
Water and agriculture; Irrigation management practices.

BOOKS RECOMMENDED :

1. Berch, Berberogue Ed : Class State and Development in India, sage, New Delhi, 1992.
2. Desai A.R. : Rural Sociology in India, Popular Prakashan, Bombay, 1977.
3. Mencher J.P. : Social Anthropology of Peasanty Part - III, OUP, 1983.
4. P. Radhakrishnan, : Peasant Struggles : Land Reforms and Social Change in malabar 1836-1982, Sage Publications, New Delhi, 1989.
5. Thorner, Daniel and Thorner Alice : Land and Labour in India, Asia Publications Bombay, 1962.
6. Andre Betille : Six Essays in Comparitive Sociology, OUP New Delhi, 1974.
7. Dharagare D.N. : Peasant Movements in India, OUP New Delhi, 1988.
8. Ashish Nandy : Ambiguous Journey to the Ciry, New Delhi, OUP, 1999.

PAPER - V
URBAN SOCIETY IN INDIA
(Paper Code - 0327)

UNIT-I Classical sociological traditions as urban and city dimensions, Emile Durkahiem, Karl Marx, Max Weber and Tonnies.

Urban community and spatial dimensions. Park, Burgers and Mc Kenzie.
George Simmel : Metropolis, Louis - Wirth Urbanism and Redfield Rural-Urban continum as cultural form.

UNIT-II Urban sociology in India ; Emerging trends in urbanisation, Factors of urbanisation, sociological dimentions of urbanisation, Social consequences of urbanisation.

UNIT-III Classification of urban centres, cities and towns, City industrial urban-base, its growth and special features, Industry centered developments.

UNIT-IV Changing occupational structure, and its impact on social stratification - class, caste Gender, family Indian city and its growth, migration, problems of housing, slum development, urban environmental problems, urban poverty,

UNIT-V Urban planning and problems of urban management of India. Urban institutions, Factors affecting planning, regional planning and the links between social and spatial theory.

BOOKS RECOMMENDED :

1. Quinn J.A., Urban Sociology, S Chand & Co., New Delhi 1955.
2. Pickwance C.G. (ed), Urban Sociology ; Critical Essays, Methuen 1976.
3. Saunders peter, Social Theory and Urban Question, Hutuchionson 1981.
4. Bose Ashish, Studies in India urbanisation 1901-1971, Tata McGraw Hill 1978.
5. Abrahimson M., Urban Sociology, Englewood, Prentice Hall 1976.
6. Ronnan, Paddison, Handbook of Urban Studies, Sage : India 2001.
7. Bharadwaj, R.K. : Urban Development in India. National Publishing House 1974.
8. Gold, Harry, : Sociology of Urban life. Prentice Hall, Englewood Cliff 1982.
9. Colling Worth, J.b. : Problems of Urban Society VOL. 2 George and Unwin Ltd 1972.
10. Alfred de Souza. The Indian City ; Poverty, ecology and urban development Manohar, Delhi 1979.
11. Desai A.R. and Pillai S.D. (ed) Slums and Urbanisation, Popular Prakashan, Bombay 1970.
12. Castells M, : The Urban Question, Edward Arnold, London 1977.
13. Ramachandran R. ; Urbanisation and Urban Systems in India, OUP, Delhi 1991.
14. Ellin Nan Post Modern Urbanisim, Oxford UK 1996.
15. Edward W. Soja, Post Metropolis ; Critical Studies of cites and regions. Oxford Blakcwell 2000.
16. Fawa F. Sylvia, : New Urbanism in World Perspectives - a Reader. T.Y. Cowell, New York 1968.

एम.ए. अंतिम समाजशास्त्र

एम.ए. अंतिम समाजशास्त्र में निम्नलिखित पांच प्रश्न–पत्र होगे

कमाकं	प्रश्न–पत्र	प्रश्न–पत्र का नाम	कोड	पूर्णांक
1.	Papar I	Theoritical Perspectives in sociology	(0329)	100
2.	Papar II	Perspectives on Indian Society	(0330)	100
3	Papar III	Industry and Society in India.	(0332)	100
4.	Papar IV	Criminology	(0333)	100
5.	Papar V	Political Sociology.	(0334)	100

PAPER - I
THEORETICAL PERSPECTIVES IN SOCIOLOGY
(Paper Code - Code-0329)

UNIT-I Introduction

Nature of sociological theory- Levels of theorisation in sociology- Relationship between theory and research.

Structural-Funtionalism

The idea of social structure : A.R. Radcliffe-Brown- The problems of role analysis S.F. Nadel- Functional dimensions of social system : T. Parsons - Codification, critique and reformulation of functional analysis : R.K. Merton - Neofunctionalism : J. Alexander.

UNIT-II Conflict Theory

Marx critique and dialectics of conflict : R. Dahrendorf - Functional analysis of conflict L. Coser- Conflict and social change : R. Collins

UNIT-III Neo Marxism :

Structuralism Marxism : L. Althusser : Action Theory. Pareto, Max Weber and Parsons.

UNIT-IV Interactionist perspective

Symbolic Interactionism : G.H. Mead and H. Blumer - Phenomenological Sociology : A. Schutz - Social construction of reality : P. Berger and T.G. Luckmann, Ethnomethodology : H. Garflinkel

UNIT-V Recent trends in sociological theorizing

Structuration : Anthony Giddens - Habitus and field : Bourdieu - Postmodernism- Focault and Botrilard.

BOOKS RECOMMENDED :

1. Alexander, Jaffery C., Twenty lectures : Sociological theory since world war II. New York, Columbia University Press 1987.
2. Bottmore, Tom. : The Frankfurt school, Chester, Sussex : Ellis Horwood and London : Tavistock Publications 1984.
3. Craib, Ian. : Modern social theory : From Parsons to Haberman (2nd edition). London : Harvester Press 1992.
4. Collins, randall, (Indian edition) : Sociological theory, Jaipur and New Delhi. Rawat 1997.

5. Giddens, Anthony, : Central problems in social theory : Action, structure and contradiction in social analysis, London, Macmillan 1983.
6. Kuper, Adam. : Antrhopologists and anthropology : The British school, 1922-72 Harmondsworth, Middlesex : Penguin Books 1975.
7. Kuper, Adam and Jessica Kuper (eds.). (2nd edition) : The social science encyclopaedia, London and New York : Routledge 1996
8. Ritzer, George. (3rd edition) : Sociological theory, New York : Mc Graw-Hill 1992.
9. Sturrock, John (ed.) : Structuralism and sinc : From Levi Strauss to Derida. Oxford : Oxford University Press 1979.
10. Turner, Jonathan H. (4th edition) : The Structure of sociological theory, Jaipur and New Delhi : Rawat 1995.
11. Zeitlin, Irving M. (Indian edition) : Rethinking sociology : A critique of contemporary theory, Jaipur and New Delhi : Rawat 1988.

PAPER - II
PERSPECTIVES ON INDIAN SOCIETY
(Paper Code - 0330)

THEORETICAL PERSPECTIVES

UNIT-I Indological/Textual (G.S. Ghure)
Conceptulizing Indian Society in terms of certain distinguishtive characteristics and configuration Dharma, Varna, Ashrama, Karma, Rhen and Purushartha.

UNIT-II Synthesis of Textual and Field views (Irawati Karve, K.M. Kapadia)
Linkage and Network building reasons group and community family, marriage, kinship system and Indian social organization.

UNIT-III Structural functionalism (M.N. Srinivas, S.C. Dube)
The village as a nucleus of Indian Society, Social Hierarchy, Caste System, Caste and Class in Contemporary India.

UNIT-IV Civilizational View (N.K. Bose)
The scal of magnitude of culture; religions, Institutionals and Linguistic, Diversity in India. Tradition and modernity as a continuty between past and present institutions.

UNIT-V Subaltern perspectives (B.R. Ambedkar)
Elites, Backward classes, Minorities and Tribes, Problems of Scheduled caste and scheduled tribe, Indian society and Legislation, Casteism, Untouchability communalism, Regionalism and National integration.

ESSENTIAL READINGS :

1. DeSourza, P.R. ed. Contemporary India - Transitions (New Delhi : Sage) 2000.
2. Dhanagare, D.N. : Themes and Perspectives in India Sociology (Jaipur Rawat) 1993.
3. Dube, S.C. : Social Sciences in a Changing Society (Lucknow University Press) 1973.
4. Dube, S.C. : The Indian Village (London : Routledge, 1955) 1967.
5. Durnont, Louis : Homo Hierarchicus : The Caste System and its implications (New Delhi:

Vikas) 1970.
6. Karve, Irawati : Hindu Society : An Interpretation (Poona : Deccan College) 1961.
7. Momin, A.R. : The Lagacy of G.S. Ghurye : A Centennial estschrift Popular Prakashan, Bombay) 1996.
8. Mukherjee : D.P. : Divesities People's Publishing House, Delhi 1958.
9. Oommen, T.K. and P.M. Mukherjee, eds. : Indian Sociology : Reflections and Introspections, Popular Prakashan, Bombay 1986.
10. Singh, K.S. : The People of India : An Introduction, Seagull books, Calcutta 1992.
11. Singh, Y. : Indian Sociology : Social Conditioning and Emerging Concers, Delhi Vistaar 1986.

12. Singh, Y. : Modernisation of Indian Tradition, Delhi, Thomson Press 1973.
13. Srinivas, M.N. : India's Villages Asia Publishing House, Bombay 1960.
14. Tylor, Stephen : India : An Anthropological Perspective.
15. Hardiman, David : Feeding the Bania : Peasants and Usurers in Western India Oxford University Press 1996.
16. Hardiman, David : The coming of the Devi : Adivasi Assertion in Western India, Oxford University Press 1987.
17. Lannoy, Richard : The Speaking Tree, A Study of Indian Culture and Society, London, Oxford University Press 1971.
18. Marriott, McKim : Indian through Hindu Categories Sage, Delhi 1990.
19. Mohan, McKim : India through Hindu Categories Sage, Delhi 1990.
20. Mohan, R.P. and A.S. Wilke, eds. : International Handbook of Contemporary Developments in Sociology London, Mansell 1994.
21. SInger, Milton and Bernard Cohn. eds. : Structure and Change in Indian Society, Chicago : Aldine Publishing Company 1968.
22. Singer, Milton : When A Great Tradition Modernizes, Delhi, Vikas 1972.

PAPER-III
INDUSTRY AND SOCIETY IN INDIA
(Paper Code - 0332)

COURSE OUTLINE :

UNIT-I Classical sociological tradition on industrial dimensions of society, Division of labour, Anomie, Bureaucracy, rationality, production relations surplus value and alienation. E, Durkiem KMarx and M Weber

UNIT-II Family, religion, stratification, habitat, settlement and environmental problems through industrialisation process.

UNIT-III Work, work process, technology and labour, work culture work ethics and human relation work.

The concept of organisation (formal and informal organisation) its structure and functions, personel management scope and function.

UNIT-IV Industrial relations, conflicts, causes and types Resolution of conflict, conciliation, collective bargaining.

Trade union, their growth, functions and their role in industrial organistion.

UNIT-V Participatory management - varieties of such management, Industrial community labour migration, Women and child labour, family, Industrial city, social and environmental issues.

BOOK RECOMMONDED :

1. Zetlin Irwing, : Ideology and the development of Sociolical theory VOL 1 & VOL 2. Basic Books, New York 1969.
2. Watson,k Tony, : Sociology work and industry, Routeledge Kegan, paul 1995.
3. Ramaswamy E.A. : Industry and Labour OUP 1988.
4. Ramaswamy E.A. : Industrial relations in India, New Delhi 1978.
5. Karnik V B : Indian trade union, A survey, Popular Prakashan, Mumbai 1970.
6. Mamoria C B and Mamoria : Dynamics of Industrial Relation in India, Himalay Publishing House, Mumbai 1992.
7. Ramaswamy E.A. : The worker and his Union, Allied, New Delhi 1977.
8. Ramaswamy E.A. : The worker and Trade Union Allied, New Delhi 1977.

9. Agarwal R.D : Dynamics of Labour Relations in India,A book readings, Tata Mc Graw Hill 1972.
10. Laxmanna, C et all : Workers Participation and industrial democracy. Global perspective Ajantha Publications 1990.
11. Philip Hancock, Melissa Taylor : Work Post Modernism and Organisation Sage India 2001.
12. Aziz Abdul : Labour problems or developing Economy Ashish publishing house 1984.
13. Miller and Form : Industrial Sociology, Harper and Row, New York 1964.
14. Parker S.R Brown K Chield and Smith, M.A. : The Sociology of Industry, George Allen and Urwin Ltd. London 1964.
15. Gilbert S.J. : Fundamentals of Industrial Socilogy Tata Mc Graw Hill Publishing co. Ltd. New Delhi 1985.

CRIMINOLOGY-IV
(Paper Code - 0333)

UNIT-I Conceptual Approaches to Crime : legal, behavioral and sociological ; deviance, crime and delinquency ; types of crime - economic, violent, white-collar.

UNIT-II Perspectives on Crime Causation : classical, positivist, psychological, sociological, marxian, geographical ; recent theoretical advances - the criminal personality, labelling theory

UNIT-III Changing Profile of Crime and Criminals : organized crimes, crimes against women and children, cyber crimes, corruption, changing socio-economic profile of criminals in contemporary India.

Theories of punishment : retributive, deterrent, reformative, futility and cost of punishment

UNIT-IV Correction and its Forms : meaning and significance of correction : forms of correction-prison-based, community-based

Correctional Programmes in prisons : history of prison reforms in India, national policy on prisons : scientific classification of prisoners ; modernization of prison industry and involvement of private sector ; correctional programmes - educational, vocational, psychiatric, meditation, recreation, etc. New Delhi Model of Correction

UNIT-V Problems of Correctional Administration : antiquated jail manual and prison act. overcrowding, custodial mindset : lack of inter-agency coordination among police, prosecution, judiciary and prison ; human rights and prison management, limitations and prospects of correction . Alternatives to Imprisonment : probation, parole, open prisons, after-care and rehabilitation

BOOKS RECOMMONDED :

1. Bedi, Kiran It Is Always Possible. New Delhi : Sterling Publications Pvt. Ltd. 1998.
2. Gill, S.S. : The Pathology of Corruption. New Delhi : Harper Collins Publishers (India) 1998.
3. Goel, Rakesh M. and Manohar S. Powar, Computer Crime : Concept, Control and Prevention. Bombay : Sysman Computers Pvt. Ltd. 1994.
4. Lilly, J, Robert, Francis T, Wallen and Richard Ball A. Criminological Theory, Context and Consequences. New Delhi : Sage Publications 1995.
5. Makkar, S.P. Singh and Paul C. Friday, Global perspectives in Criminology, Jalandhar : ABC Publications 1993
6. Ministry of Home Affairs, Crime in India. New Delhi : Government of India 1998.
7. Reid, Suetitus. Crime and Criminology, Ikkinayse : Deydan Press 1976.

8. Shankardas, Rani Dhavan, Punishment and the Prison : India and International Perspective. New Delhi : Sage Publications 2000.
9. Sutherland, Edwin H. and Konald R. Cressey. Principles of Criminology. Bombay : The Times of India Press 1968.
10. Walklete, Sandra, Understanding Criminology. Philadelphia : Open University Press 1998.
11. Williamsan, harald E. Criminological Theory. New Jersey : Prentice-Hall 1990.
12. Williamsan, Harald E. The Correction profession, New Delhi : Sage Publications 1990.
13. Bequai, August. Computer Crime. Tononto : Lesington Books 1978.
14. Buckland, John. Combating Computer Crime : Prevention, Detection and Investigation, New Delhi : McGraw Hill 1992.
15. Drapkin, Ismail and Viano, Emilio. Victimology : A New Focus. London, Lesington press 1975.
16. Hallman, Taryl A. The Economics of Crime. New York : St. Martin's Press 1950.
17. Inciarti James A. and Pottieger Anne E. 1978. Violent Crime : Historical and Contemporary Issues. London : Sage Publications.
18. Ministry of Home Affairs. Report of the All India Committee on Jail Reforms. 1980-83, New Delhi : Government of India.
19. Pace, Denay F. Concept of Vice, Narcotics and Organised Crime. London Prentrice - Hall 1991.
20. Revid, Jorathan. Economic Crime. London, Kegan Paul 1995.
21. Ryan, Ptrick J. and George Rush. Understanding Organized Crime in Global Perspective. London : Sage Publications 1997.
22. Weisburd, Dand and Kip Schlegal. White Collar Crime Reconsidered. Boston Northeastern University Press 1990.

PAPER -V
POLITICAL SOCIOLOGY
(Paper Code - 0334)

UNIT-I Definition and subject matter of Political Sociology, distinctive approach of Political Sociology, Interrelationship between political system and society.
Democratic and totalitarian systems : socio-economic conditions conducive for their emergence and stability.

UNIT-II Political Culture : meaning and significance, political socialization-meaning, significance and agencies.
Elite theories of distribution of power in society (with reference to Mosca, Pareto, R. Mitchels and C.W. Mills and Others)
Intellectuals : Political role of intellectuals - significance.

UNIT-III Pressure groups and interests groups - Nature, bases, political significance.Bureaucracy, its characteristics, its types, its significance in political development with special reference to India.

UNIT-IV Political Parties : Characteristics, social composition of parties, recruitment, mass participation, political apathy, its causes and consequences (with special reference to India.)

UNIT-V Political Process in India : Role of caste, Religion, Regionalism and language in Indian Politics.
Public Opinion : Role of mass media, problems of communication in illiterate societies ; its reference on parties and polity, politicization of social life.

ESSENTIAL READINGS :

1. Dowse, R.E. & Hughes : Political Sociology, New York, Basic Book 1971.
2. Horowitz, Irving L. : Foundation of Political Sociology, New York, Harper and Row 1972.
3. Ruciman W.G. : Social Sciences and Political Theory, Cambridge University Press, London 1965.

4. Eisenstadi, S.N. (ed.) : Political Sociology, New York, Basic Book 1971.
5. Krrnhauser, W. : The Politics of Mass Society, Penguin 1971.
6. Kothari R. : Politics in India, Orient Longmans Ltd 1979.
7. Merton, R.K. (ed.) : Reader in Bureaucracy : Gienco The Free Press1952.
8. Key V.O. : Politics, Parties and Pressure Groups, Crowell, New York 1964.
9. Mills C.W. & Hans Gerth : Essays in Sociology, Oxford, New York 1946.
10. Samuel P., Huntington: Political Order in Changing Societies, Yale University Press, New Haven 1969.
11. Almond A. Gabriel et.al. : Crises, choice and change : Historical studies political development, Boston 1973.
12. P. Blau : Bureaucracy in Modern Society : Random House, New York 1956.
13. Lipset S.M.: Political Man, H.E.B 1959.
14. William Riker et.al. : An Introduction to Positive Political Theory, Englewood Cliff 1973.
15. Robert Michels : Political Parties, Glencko Free Press 1949.
16. Benedict Anderson : Imagined Communities : Reflections on the origin spread of Nationalism, Beso, London 1983.
17. Dipti Kumar Biswas : Political Sociology, Firma KLM Private, Calcutta 1989.
18. Rajani Kothari (ed.) : Caste in Indian Politics : Orient Longmans Ltd 1973.
19. Barrington Moore Jr. : Political Power and Social Theory, Cambridge, Hall University Press 1958.
20. Mitra, Subratha K. : Power protest and participation : Local Elides and politics of development in India, Routledge 1992.

M. A. Political Science

Semester-I and Semester-II

PAPER	SEMESTER-I	MARKS		SEMESTER-II	MARKS	
		Theory	Internal		Theory	Internal
I	भारतीय राजनीतिक चिंतन (Indian Political Thought)	80	20	पाश्चात्य राजनीतिक चिंतन (Western Political Thought)	80	20
II	भारतीय शासन एवं राजनीति (Indian Govt. and Politics)	80	20	भारत के राज्यों की राजनीति (Politics of State in India)	80	20
III	तुलनात्मक राजनीति (Comparative Politics)	80	20	विकासशील देशों की तुलनात्मक राजनीति (Comparative Politics in Developing Contries)	80	20
IV	अंतर्राष्ट्रीय संगठन (International Organization)	80	20	भारत की विदेश नीति (Indian Foreign Policy)	80	20
Total = 400				Total = 400		

M. A. Political Science

Semester III and M.A. Semester IV

PAPER	SEMESTER-III	MARKS		SEMESTER-IV	MARKS	
		Theory	Internal		Theory	Internal
I	अंतर्राष्ट्रीय राजनीति के सिद्धांत (Principles of International Politics)	80	20	अंतर्राष्ट्रीय राजनीति के समकालीन मुद्दे (Contemporary issues of International Politics)	80	20
II	लोक प्रशासन भाग–I (Public Administration Part-I)	80	20	लोक प्रशासन भाग–II (Public Administration Part-II)	80	20
III	शोध प्रविधि भाग–I (Research Methodology Part-I)	80	20	शोध प्रविधि भाग–II (Research Methodology Part-II)	80	20
IV	छत्तीसगढ़ का शासन एवं राजनीति (Govt. and Politics of Chhattisgarh)	80	20	छत्तीसगढ़ का राजनीतिक इतिहास (Political History of Chhattisgarh)	80	20
	Total = 400			Project work VIVA-Voc	50 50	
				Total = 500		

नियमावली –

1. उपर्युक्त समस्त प्रश्नपत्र अनिवार्य होंगे।
2. प्रत्येक प्रश्नपत्र में (सभी सेमेस्टर में) सैद्धान्तिक परीक्षा में 80 पूर्णांक होगा और 20 अंकों का आन्तरिक मूल्यांकन होगा। इस प्रकार सभी प्रश्नपत्र में पूर्णांक 100 होगा।
3. प्रत्येक प्रश्नपत्र में आन्तरिक मूल्यांकन की दो परीक्षाएं होंगी जिसके सर्वोच्च अंक विश्वविद्यालय को प्रेषित किए जाएंगे।
4. प्रथम, द्वितीय और तृतीय सेमेस्टर में पूर्णांक 400 होगा। चतुर्थ सेमेस्टर में पूर्णांक 500 होगा।
5. एम. ए. चतुर्थ सेमेस्टर में 100 अंकों की मौखिक परीक्षा होगी जिसमें 50 अंक परियोजना कार्य पर होंगे और 50 अंकों की मौखिक परीक्षा होगी।
6. परियोजना कार्य कौशल विकास, रोजगार मुखी एवं मतदान व्यवहार, ग्रामीण विकास, देश के महापुरुष, प्रमुख राजनीतिज्ञ, राष्ट्रपति, प्रधानमंत्री, छत्तीसगढ़ की राजनीति और शासन व्यवस्था पर आधारित होगा।
7. इस प्रकार एम.ए. राजनीति विज्ञान में कुल पूर्णांक 1700 होगा।
8. प्रत्येक प्रश्नपत्र 4 इकाइयों में विभाजित होगा।
9. सत्र 2016–17 में तृतीय एवं चतुर्थ सेमेस्टर की परीक्षा देने वाले विद्यार्थी इसी नये पाठ्यक्रम का अनुकरण करेंगे।

एम.ए. राजनीति विज्ञान सेमेस्टर–1

M. A. POLITICAL SCIENCE SEMESTER-1

प्रथम प्रश्न पत्र : भारतीय राजनीतिक चिंतन (Indian Political Thought)

इकाई–1	महाभारत के शांतिपर्व में राजनीतिक विचार, कौटिल्य (Political Thought in Shantiparv of Mahabharat and Kautilya.)
इकाई–2	स्वामी विवेकानंद एवं महात्मा गांधी के विचार (Thought of Swami Vivekanand and Mahatma Gandhi.)
इकाई–3	डॉ. भीमराव अम्बेडकर एवं जयप्रकाश नारायण के विचार (Thought of Dr. Bhimrao Ambedkar and Jaiprakash Narayan.)
इकाई–4	एम.एन. राय एवं राममनोहर लोहिया के विचार (Thought of M.N. Roy and Ram Manohar Lohia.)

द्वितीय प्रश्न पत्र : भारतीय शासन एवं राजनीति (Indian Government and Politics)

इकाई–1	भारतीय संविधान की पृष्ठभूमि, संगठन, कार्यप्रणाली वैचारिक आधार स्रोत प्रस्तावना, भारतीय संविधान की विशेषताएँ (Background of Indian Constitution, Organaization Ideological basis Source, Preamble, Features of Indian Constitution)
इकाई–2	मौलिक अधिकार, मौलिक कर्तव्य, नीति निर्देशक तत्व संविधान संशोधन प्रक्रिया (Fundamental Rights, Fundamental Duties, Directive Principles of State Policy, Amendment Process.)
इकाई–3	संघीय कार्यपालिका राष्ट्रपति, संसद, प्रधानमंत्री एवं मंत्रीपरिषद (Union Executive President, Prime Minister and Council of Ministers)
इकाई–4	संघीय न्यायपालिका, सर्वोच्च न्यायालय, न्यायिक सक्रियता, न्यायिक सुधार (Union Judiciary, Supreme Court, Judicial Activism, Judicial Reforms)
	भारतीय राजनीति की चुनौतियाँ : जातिवाद, क्षेत्रवाद, भाषावाद, धर्म, भ्रष्टाचार, सम्प्रदायवाद एवं अपराधीकरण (Challenges before Indian Polity : Casteism, Regionalism, Linguism, Religion, Corruption, Communalism and Criminalisation.)

तृतीय प्रश्न पत्र : तुलनात्मक राजनीति **(Comparative Politics)**

इकाई–1	तुलनात्मक राजनीति अर्थ, प्रकृति क्षेत्र एवं समस्याएँ राजनीतिक व्यवस्था का महत्व (Comparative Politics Meaning, Nature, Scope and Problem, Importence of Political System)
इकाई–2	राजनीतिक व्यवस्था के अध्ययन के उपागम–डेविड ईस्टन व्यवस्था के सिद्धांत, आमण्ड एवं पावेल संरचनात्मक प्रकार्यात्मक (Approaches to the Study of Political System, System Theory-David Easton Amond and Powell Structural Functional)
इकाई–3	परपम्परागत एवं आधुनिक राजनीतिक अध्ययन की विशेषताएँ व्यवहारवाद एवं उत्तर व्यवहारवाद (Characteristics of Traditional and Modern Political Studies Behaviourlism and Post Behaviouralism)
इकाई–4	राजनीतिक संस्कृति, राजनीतिक समाजीकरण, राजनीतिक संचार, (Political Culture, Political Socialisation, Political Communication)

चतुर्थ प्रश्न पत्र : अंतर्राष्ट्रीय संगठन

इकाई–1	अंतर्राष्ट्रीय संगठन की प्रकृति एवं विकास अंतर्राष्ट्रीय संगठन राष्ट्र, राज्य एवं अंतर्राष्ट्रीय व्यवस्था का समन्वय (Nature and Evolution of International Organization Coordination among Nation, State and International System)
इकाई–2	राष्ट्र संघ – निर्माण, संरचना, कार्य, सफलता एवं असफलता एवं मूल्यांकन (League of Nation – Formation, Structure, Function, Achievments, Merits and Demerit and evaluation.
इकाई–3	संयुक्त राष्ट्र संघ निर्माण, संरचना विवादों के समाधान के शान्तिपूर्व एवं बाध्यकारी उपाय, आर्थिक एवं सामाजिक विकास में संयुक्त राष्ट्र संघ की भूमिका (United Nations – Formation, Structure and The Pacific and Coercive Measures to Settle the Disputes in United Nations The Role of UN To Social and Economic Devlopment)
इकाई–4	क्षेत्रीय संगठन – सार्क, आसियान, युरोपियन युनियन, ब्रिक्स (Regional Organization – SAARC, ASEAN EUROPEAN UNION, BRICS)

एम. ए. राजनीति विज्ञान सेमेस्टर–2

प्रथम प्रश्न पत्र – पाश्चात्य राजनीतिक चिंतन (Western Political Thought)

इकाई–1	प्लेटो, अरस्तु (Plato, Aristotle)
इकाई–2	होब्स, लॉक, रूसो, मैकियावेली (Hobbes, Locke, Rousseau, Machiavellie)
इकाई–3	बैंथम, जे. एस. मिल, ग्रीन (Bentham, J. S. Mill, Green)
इकाई–4	मार्क्स, माओ, लेनिन (Marx, Mao, Lenin.)

द्वितीय प्रश्न पत्र – भारत में राज्यों की राजनीति (State Politics in India)

इकाई–1	राज्य की कार्यपालिका : राज्यपाल, मुख्यमंत्री एवं मंत्रीपरिषद (State Executive : GOVERNOR, CHIEF MINISTER and Council of Ministers)
इकाई–2	राज्य की व्यवस्थापिका : विधानसभा एवं विधान परिषद राज्य की न्यायपालिका : उच्च न्यायालय एवं अधिनस्थ न्यायालय State Legislature : Vidhan Sabha and Vidhan Parishad State Judiciary : High Court and Subordinate Courts
इकाई–3	राज्य स्वायत्ता की माँग, नये राज्यों के गठन की माँग अंर्तराज्यीय नदी जल विवाद, भारत में राज्य राजनीति को प्रभावित करने वाले कारक (Demand for State Autonomy, Demand For the Creation of New States, Inter State river water disputes, Factors influencing State Politics in India)
इकाई–4	राज्य योजना आयोग, राज्य वित्त आयोग, राज्य निर्वाचन आयोग, भारत में राज्य राजनीति की प्रमुख प्रवृत्ति (State Planning Commission, State Finance Commission State Election Commission, Major trends in State Politics of India.)

तृतीय प्रश्न पत्र – विकासशील देशों की तुलनात्मक राजनीति **(Comparative Politics of Developing Countries)**

इकाई–1	सरकार का वर्गीकरण – एकात्मक संघात्मक, संसदीय अध्यक्षात्मक सरकार, संघवाद (Classification of Government – Unitary - Federal, Parliamentary – Presidential, Federalism)
इकाई–2	राजनीतिक संस्थाएँ – व्यवस्थापिका, कार्यपालिका एवं न्यायपालिका। शक्ति पृथक्करण सिद्धांत (Political Institutions – Legislature, Executive and Judiciary, Theory of Seperation of Powers)
इकाई–3	राजनीतिक दल एवं दबाव समूह, नौकरशाही संरचना कार्य एवं भूमिका (Political Parties and Pressure Groups Bureaucracy – Structure Function and Role)
इकाई–4	राजनीतिक विकास, राजनीतिक अभिजन, राजनीतिक समाजीकरण राजनीतिक आधुनिकीकरण (Political Development, Political Elites, Political Socialisation, Political Modernization)

चतुर्थ प्रश्न पत्र – भारत की विदेश नीति **(Indian Foreign Policy)**

इकाई–1	विदेश नीति : अर्थ, प्रकृति एवं निर्धारक तत्व भारतीय विदेश नीति के निर्धारक तत्व आन्तरिक एवं बाह्य भारतीय विदेश नीति के सिद्धांत एवं उद्देश्य Foreign Policy : Meaning, Nature and Determinants Determinants of India Foreign Policy : Internal and External Principles and Objectives of Indian Foreign Policy
इकाई–2	भारत और अमेरिका, भारत एवं रूस (India and the USA, India and Russia)
इकाई–3	भारत एवं पाकिस्तान, भारत एवं चीन, भारत एवं श्रीलंका (India and Pakistan, India and China, India and Srilanka)
इकाई–4	भारत एवं संयुक्त राष्ट्र संघ, भारत एवं आण्विक निःशस्त्रीकरण India and the U.N.O. India and Nuclear Disarmament

एम. ए. राजनीति विज्ञान सेमेस्टर III

प्रथम प्रश्न पत्र – अंतर्राष्ट्रीय राजनीति के सिद्धांत (Principles of International Politics)

इकाई–1	अंतर्राष्ट्रीय राजनीति का विषय के रूप में विकास, प्रकृति एवं क्षेत्र। अध्ययन पद्धति – परम्परा एवं वैज्ञानिक। (Evolution of International Politics as a discipline, Nature, Scope, Method of Study – Traditional and Scientific.)
इकाई–2	अंतर्राष्ट्रीय राजनीति के सिद्धान्त – यथार्थवाद, आदर्शवाद, साम्यावस्था, निर्णय–निर्माण, खेल, संचार एवं व्यवस्था सिद्धान्त। (Theories of International Politics. Realism, Idealism, Equilibrium, Decision making, Game, Communication & System theory.)
इकाई–3	शक्ति की अवधारणा। राष्ट्रीय शक्ति के तत्व एवं सीमाएं। शक्ति संतुलन। सामूहिक सुरक्षा – नवसाम्राज्यवाद। राष्ट्रहित और अन्तर्राष्ट्रीय विचारधारा एवं नैतिकता। (Concept of Power. Elements and limitations of National Power. Balance of Power. Collective Security, New colonialism. National Intrest and International Ideology ad Morale.)
इकाई–4	निशस्त्रीकरण। परमाणु अप्रसार – सी टी बी टी, एन पी टी। क्षेत्रीय संगठन – सार्क, एसिआन, ओपेक। (Disarmament. Nuclear Non Prolefiration – CTBT, NPT. Regional Organization – SAARC, ASEAN, OPEC.)

द्वितीय प्रश्न पत्र – लोक प्रशासन भाग–I (Public Administration) Part-I

2. लोक प्रशासन भाग–I :–

इकाई–1	लोकप्रशासन : परिभाषा, प्रकृति, क्षेत्र, निजी प्रशासन से अंतर। अध्ययन के उपागम – व्यावहारिकवादी, तुलनात्मक, निर्णयपरका विकास–प्रशासन एवं नवीन लोक प्रशासन (Public Administration – Definition, Nature, Scope, Difference between Private Administration ; Approaches to study – Behaviouralism, Comparative Decesion Oriented Development Administration & New Public Administration.)

इकाई–2	संगठन के सिद्धांत : नियंत्रण का क्षेत्र, आदेश की एकता, पदसोपान, प्रत्यायोजन, समन्वय। (Theory of Organization :- Hierarchy, Unity of Command, Span of Control, Delegation of Power, Coordination.)
इकाई–3	केन्द्रीयकरण, विकेन्द्रीकरण, मुख्य कार्यपालिका – प्रकार एवं भूमिका, सूत्र एवं स्टाफ अभिकरण, विभागीय संगठन, स्वतंत्र नियामिकीय आयोग। (Centralisation and Decentralisation, Chief Exceutive – Types and Role. Line and Staff Agencies, Departmental Organization, Independent Regulatory Commission.)
इकाई–4	लोक निगम। भर्ती, पदोन्नति, प्रशिक्षण, सेवानिवृत्ति, संघ लोक सेवा आयोग, नौकरशाही। (Public Corporation, Recurtment, Promotion and Training, Retirement, Union Public Service Commission, Bureaucracy.)

तृतीय प्रश्न पत्र – शोध प्रविधि भाग I **(Research Methodology Part I)**

इकाई–1	सामाजिक शोध की प्रकृति, महत्व एवं उपयोग शुद्ध एवं व्यवहारिक शोध, शोध समस्या की पहचान, शोध अभिकल्प, उपकल्पना का निर्माण एवं परीक्षण (Nature of Social Research, Importance and uses, Defference between Pure and Appliea Research, Identification of Research Problem Research Design, Hypotheses Formulation and testing.)
इकाई–2	सामाजिक सर्वेक्षण – उद्देश्य, महत्व, प्रक्रिया, तथ्य संकलन की तकनीकि, तथ्यों के प्राथमिक एवं द्वितीय स्त्रोत (Social Survey – Aims, Importance, process, Data Collection, Primary and Secondary Source of Facts.)
इकाई–3	अवलोकन पद्धति, साक्षात्कार पद्धति, प्रश्नावली एवं अनुसूची (Observational Method, Interview Method, Questionire and Schedules.)
इकाई–4	अध्ययन के विभिन्न प्रकार – पेनल केस एवं क्षेत्रीय अध्ययन – (Types of Study – Panel, Case and Field Study -)

चतुर्थ प्रश्न पत्र – छत्तीसगढ़ का शासन एवं राजनीति (GOVT. AND POLITICS OF CHHATTISGARH)

इकाई–1	राज्यों का पुनर्गठन (2000) तथा छत्तीसगढ़ का निर्माण छत्तीसगढ़ राज्य निर्माण हेतु आन्दोलन, छत्तीसगढ़ की राजनीति के निर्धारक तत्व एवं विशेषता (Reorganization of States (2000) and Formation of Chhattisgarh, Determinants and Characteristics of chhattisgarh Politics)
इकाई–2	छ.ग. में स्थानीय स्वशासन एवं पंचायती राज छ.ग. में जिला प्रशासन एवं जिलाधीश की भूमिका Local Self Goverment and Panchayati Raj District Administration in Chhattisgarh, Role of A Collector
इकाई–3	छत्तीसगढ़ में लोकसभा एवं विधानसभा चुनाव, मतदान व्यवहार (Loksabha and Vidhansabha elections in Chhattisgarh Voting Behaviour.)
इकाई–4	छ.ग. की राजनीति की उभरती प्रवृत्ति : जनजातीय राजनीति, किसान आन्दोलन, नक्सलवाद समस्या एवं समाधान के उपाय छ.ग. में विकास की राजनीति एवं विकास की योजनाएँ Emerging Trends in chhattisgarh Politics : Politics of Tribals, Personal MOVMENT, Problem and Solution of Naxalism. Politics of Development in Chhattisgarh and Scheme of Development.

राजनीति विज्ञान सेमेस्टर IV

प्रथम प्रश्न पत्र – अंतर्राष्ट्रीय राजनीति के समकालीन मुद्दे (CONTEMPORARY OF INTERNATIONAL POLITICS)

1. अंतर्राष्ट्रीय राजनीति के समकालीन मुद्दे :–

इकाई–1	अंतर्राष्ट्रीय राजनीति में असंलग्नता – आधार, भूमिका, महत्व एवं प्रासंगिकता। (Non-Alignment in International Politics Basis, Role, Importance and Relevance.)
इकाई–2	शीतयुद्ध एवं शीतयुद्ध की समाप्ति – कारण एवं परिणाम। नई विश्व व्यवस्था (Cold War and End of Cold War – Cause and results. New World Order.)

इकाई–3	उत्तर शीतयुद्ध कालीन महत्वपूर्ण मुद्दे – वैश्वीकरण, मानवाधिकार, पर्यावरण, आतंकवाद। (Important issues in post cold war era – Glohalisation, Human Rights, Environment, Terrorism.)
इकाई–4	प्रमुख राष्ट्रों की विदेश नीतियाँ – भारत, संयुक्त राज्य अमेरिका, चीन, रूस। (Foreign Policy of Important Contries India ; USA ; China and Russia.)

द्वितीय प्रश्न पत्र – लोक प्रशासन – भाग II **(Public Administration – Part II)**

इकाई–1	कर्मिकों की समस्याओं के निवारण की व्यवस्था (भारतीय प्रशासन के विशेष कार्मिक प्रशासन संदर्भ में)। Personnel Administration – System to Solve the Problem of Personnel (In reference to Indian Administration.)
इकाई–2	वित्तीय प्रशासन : अर्थ, प्रकृति, विशेषताएं। बजट–सिद्धांत एवं महत्व, भारत में बजट निर्माण प्रक्रिया, कार्यपालिका, न्यायपालिका एवं जनसमूह का प्रशासन पर नियंत्रण। (Financial Administration Meomins, Natue, Characteristics. Budzet-Theory and Importance; Budzet making process in India; Control over administration by Executive, Legislature, judiciary and public gathering.)
इकाई–3	प्रशासनिक व्यवहार – नेतृत्व, निर्णय, संचार जवाबदेहिता (Administrative Behaviour – Leadership, Decesion making, Commnication and answerabiliy.)
इकाई–4	लोक प्रशासन में भ्रष्टाचार आम्बुड्समैन, लोकपाल, लोकायुक्त एवं लोक संपर्क। स्थानीय स्वायतशासीय संस्थाओं की भूमिका एवं लोक संपर्क। (Corruption in Public Administration, Ombudsman, Lokpal, Lokayukta, and Public relation. Role of Local Autonomous Institation and Publicalation.)

तृतीय प्रश्न पत्र – शोध प्रविधि – भाग II **(Research Methodology – Part II)**

इकाई–1	निदर्शन, अनुमापन प्रविधियों, प्रक्षेपी प्रविधियों (Sampling, Scalling Techniques, Projection Techniques.)
इकाई–2	अनुसंधान दल, अनुसंधान की समस्या, तथ्यों का वर्गीकरण एवं सारणीयन (Research Team, Problems of Research, Classification of Factsand Tabulation.)
इकाई–3	तथ्यों का विश्लेषण एवं व्याख्या। प्रतिवेदन लेखन तथ्यों का चित्रमय प्रदर्शन (Analysis and Interpretalion of Facts. Report writing Diagramatic Presentation of Data.)
इकाई–4	सामाजिक अनुसंधान में सांख्यिकी का प्रयोग एवं सीमाएँ। मीन, मोड, मीडियम। कम्प्युटर का उपयोग (The use and limitation of Statistics. Mean, Mode, Mediam, Use of Computer.)

चतुर्थ प्रश्न पत्र – छत्तीसगढ़ का राजनैतिक इतिहास **(POLITICAL HISTORY OF CHHATTISGARH)**

इकाई–1	छत्तीसगढ़ की ऐतिहासिक, भौगोलिक एवं सांस्कृतिक पृष्ठभूमि (Historical, Geographical and Cltural Backgraound of Chhattisgarh.)
इकाई–2	छत्तीसगढ़ में ब्रिटिश प्रशासन (1854 से 1947) स्वतंत्र भारत में छत्तीसगढ़ (1947–2000 तक) British Administration in Chhattisgarh (1854 to 1947) Chhattisgarh in Independence India (1947 to 2000)
इकाई–3	राष्ट्रीय आन्दोलन में छत्तीसगढ़ का योगदान : अहिंसक एवं क्रान्तिकारी संघर्ष
इकाई–4	छत्तीसगढ़ के राजनीतिक चिंतक : पं. रविशंकर शुक्ल, ठाकुर प्यारेलाल सिंह, डॉ. खुबचंद बघेल Political Thinker in Chhattisgarh : Pt. Ravishankar Shukla, Thakur Pyarelal Singh, Dr. Khubchand Baghel छत्तीसगढ़ के सामाजिक चिंतक : गुरू घासीदास, पं. सुन्दरलाल शर्मा, स्वामी आत्मानन्द Social Thinker of Chhattisgarh : Guru Ghasidash, Pt. Sundarlal Sharma, Swami Atmanand

अमहाविद्यालयीन परीक्षार्थियों के लिए एम. ए. राजनीति विज्ञान में निम्नानुसार प्रश्नपत्र होंगे –

एम. ए. पूर्वार्द्ध – निम्नांकित चार प्रश्नपत्र होंगे –

1. राजनीतिक चिन्तन Political Thought
2. भारतीय शासन एवं राजनीति Indian Government & Politics
3. तुलनात्मक राजनीति Comparative Politics
4. अंतर्राष्ट्रीय संगठन एवं भारत की विदेश नीति International Organization and Foreign Policy in India

एम. ए. उत्तरार्द्ध – निम्नांकित पांच प्रश्नपत्र होंगे –

1. अंतर्राष्ट्रीय राजनीति International Politics
2. लोक प्रशासन Public Administration
3. शोध प्रविधि Research Methodology
4. छत्तीसगढ़ के राजनीति एवं प्रशासन (Politics administration in Chhattisgarh.)
5. अन्तर्राष्ट्रीय व्यवस्था में तृतीय विश्व एवं मानवाधिकार Third World & Human Rights in International Order

नियमावली –

1. एम. ए. पूर्वार्द्ध एवं उत्तरार्ध के समस्त प्रश्नपत्र अनिवार्य होंगे।
2. एम. ए. पूर्वार्द्ध में 4 प्रश्नपत्र होगा व पूर्णांक 400 होगा।
3. एम. ए. उत्तरार्द्ध में पांच प्रश्नपत्र व पूर्णांक 500 होगा।
4. प्रत्येक प्रश्नपत्र पांच इकाइयों में विभक्त रहेगा।

एम. ए. पूर्वार्द्ध – राजनीति विज्ञान

M.A. PREVIOUS - POLITICAL SCIENCE (NON COLLEGIATE)

प्रथम प्रश्नपत्र– राजनीतिक चिन्तन Political Thought

इकाई–1	महाभारत के शांतिपर्व में राजनीतिक विचार, कौटिल्य, स्वामी विवेकानंद, महात्मा गांधी
इकाई–2	डॉ. भीमराव अम्बेडकर, जयप्रकाश नारायण, एम.एन. राय, राममनोहर लोहिया
इकाई–3	प्लेटो, अरस्तु
इकाई–4	होब्स, लॉक, रूसो, मैकियावेली
इकाई–5	बैंथम, जे. एस. मिल, ग्रीन
	मार्क्स, माओ

द्वितीय प्रश्नपत्र– भारतीय शासन एवं राजनीति Indian Government & Politics

इकाई–1	भारतीय संविधान की पृष्ठभूमि, संगठन, कार्यप्रणाली वैचारिक आधार श्रोत प्रस्तावना, भारतीय संविधान की विशेषताएँ, मौलिक अधिकार, मौलिक कर्तव्य, नीति निर्देशक तत्व, संविधान संशोधन प्रक्रिया
इकाई–2	संघीय कार्यपालिका राष्ट्रपति, प्रधानमंत्री एवं मंत्रीपरिषद, संघीय न्यायपालिका, सर्वोच्च न्यायालय, न्यायिक सक्रियता, न्यायिक सुधार
इकाई–3	भारतीय राजनीति की चुनौतियाँ : जातिवाद, क्षेत्रवाद, भाषावाद, भ्रष्टाचार, सम्प्रदायवाद एवं अपराधीकरण
इकाई–4	राज्य की कार्यपालिका : राज्यपाल, मुख्यमंत्री एवं मंत्रीपरिषद, राज्य की व्यवस्थापिका : विधानसभा एवं विधान परिषद

	राज्य की न्यायपालिका : उच्च न्यायालय एवं अधिनस्थ न्यायालय
इकाई–5	राज्य स्वायत्ता की माँग, नये राज्यों के गठन की माँग अंर्तराज्यीय नदी जल विवाद, भारत में राज्य राजनीति को प्रभावित करने वाले कारक, राज्य योजना आयोग, राज्य वित्त आयोग, राज्य निर्वाचन आयोग, भारत में राज्य राजनीति की प्रमुख प्रवृत्ति

तृतीय प्रश्नपत्र– तुलनात्मक राजनीति Comparative Politics

इकाई–1	तुलनात्मक राजनीति अर्थ, प्रकृति क्षेत्र एवं समस्याएँ राजनीतिक व्यवस्था का महत्व, राजनीतिक व्यवस्था के अध्ययन के उपागम–डेविड ईस्टन व्यवस्था के सिद्धांत, आमण्ड एवं पावेल संरचनात्मक प्रकार्यात्मक
इकाई–2	परपम्परागत एवं आधुनिक राजनीतिक अध्ययन की विशेषताएँ व्यवहारवाद एवं उत्तर व्यवहारवाद
इकाई–3	राजनीतिक संस्कृति, राजनीतिक समाजीकरण, राजनीतिक संचार.
इकाई–4	सरकार का वर्गीकरण – एकात्मक संघात्मक, संसदीय अध्यक्षात्मक सरकार, संघवाद, राजनीतिक संस्थाएँ – व्यवस्थापिका, कार्यपालिका एवं न्यायपालिका। शक्ति पृथक्करण सिद्धांत, अवरोध एवं संतुलन
इकाई–5	राजनीतिक दल एवं दबाव समूह, नौकरशाही संरचना कार्य एवं भूमिका, राजनीतिक विकास, राजनीतिक अभिजन, राजनीतिक सहभागिता राजनीतिक आधुनिकीकरण

चतुर्थ प्रश्नपत्र– अंतर्राष्ट्रीय संगठन एवं भारत की विदेश नीति **International Organization and Foreign Policy in India**

इकाई–1	अंतर्राष्ट्रीय संगठन की प्रकृति एवं विकास अंतर्राष्ट्रीय संगठन राष्ट्र, राज्य एवं अंतर्राष्ट्रीय व्यवस्था का समन्वय, राष्ट्र संघ – निर्माण, संरचना, कार्य, सफलता एवं असफलता एवं मूल्यांकन
इकाई–2	संयुक्त राष्ट्र संघ निर्माण, संरचना कार्य विवादों के समाधान के शान्तिपूर्व एवं बाध्यकारी उपाय आर्थिक एवं सामाजिक विकास में संयुक्त राष्ट्र संघ की भूमिका
इकाई–3	क्षेत्रीय संगठन – सार्क, आसियान, युरोपियन युनियन, ब्रिक्स
इकाई–4	विदेश नीति : अर्थ, प्रकृति एवं निर्धारक तत्व, भारतीय विदेश नीति के निर्धारक तत्व आन्तरिक एवं बाह्य भारतीय विदेश नीति के सिद्धांत एवं उद्देश्य, भारत और अमेरिका, भारत एवं रूस
इकाई–5	भारत और अमेरिका, भारत एवं रूस, भारत एवं पाकिस्तान, भारत एवं चीन, भारत एवं श्रीलंका

एम. ए. उत्तरार्द्ध (अंतिम वर्ष)

राजनीति विज्ञान

M.A. FINAL - POLITICAL SCIENCE (NON COLLEGIATE)

प्रथम प्रश्नपत्र– अन्तर्राष्ट्रीय राजनीति के सिद्धांत International Politics

इकाई–1	अंतर्राष्ट्रीय राजनीति का विषय के रूप में विकास, प्रकृति एवं क्षेत्र। अध्ययन पद्धति – परम्परा एवं वैज्ञानिक। अंतर्राष्ट्रीय राजनीति के सिद्धान्त – यथार्थवाद, आदर्शवाद, साम्यावस्था, निर्णय–निर्माण, खेल, संचार एवं व्यवस्था सिद्धान्त।
इकाई–2	शक्ति की अवधारणा। राष्ट्रीय शक्ति के तत्व एवं सीमाएं। शक्ति संतुलन। सामूहिक सुरक्षा – नवसाम्राज्यवाद। राष्ट्रहित और अन्तर्राष्ट्रीय विचारधारा एवं नैतिकता।
इकाई–3	निशस्त्रीकरण। परमाणु अप्रसार – सी टी बी टी, एन पी टी। क्षेत्रीय संगठन – सार्क, एसिआन, ओपेक।
इकाई–4	अंतर्राष्ट्रीय राजनीति में असंलग्नता – आधार, भूमिका, महत्व एवं प्रासंगिकता। शीतयुद्ध एवं शीतयुद्ध की समाप्ति – कारण एवं परिणाम। नई विश्व व्यवस्था
इकाई–5	उत्तर शीतयुद्ध कालीन महत्वपूर्ण मुद्दे – वैश्वीकरण, मानवाधिकार, पर्यावरण, आतंकवाद। प्रमुख राष्ट्रों की विदेश नीतियाँ – भारत, संयुक्त राज्य अमेरिका, चीन, रूस।

द्वितीय प्रश्नपत्र– लोक प्रशासन **Public Administration**

इकाई–1	लोकप्रशासन : परिभाषा, प्रकृति, क्षेत्र, निजी प्रशासन से अंतर। अध्ययन के उपागम – व्यावहारिकवादी, तुलनात्मक, निर्णयपरका विकास–प्रशासन एवं नवीन लोक प्रशासन
इकाई–2	संगठन के सिद्धांत : नियंत्रण का क्षेत्र, आदेश की एकता, पदसोपान, प्रत्यायोजन, समन्वय। लोक निगम। भर्ती, पदोन्नति, प्रशिक्षण, सेवानिवृत्ति, संघ लोक सेवा आयोग, नौकरशाही।
इकाई–3	केन्द्रीयकरण, विकेन्द्रीकरण, मुख्य कार्यपालिका – प्रकार एवं भूमिका, सूत्र एवं स्टाफ अभिकरण, विभागीय संगठन, स्वतंत्र नियामिकीय आयोग।
इकाई–4	कर्मिकों की समस्याओं के निवारण की व्यवस्था (भारतीय प्रशासन के विशेष कार्मिक प्रशासन संदर्भ में)। वित्तीय प्रशासन : अर्थ, प्रकृति, विशेषताएं। बजट–सिद्धांत एवं महत्व, भारत में बजट निर्माण प्रक्रिया, कार्यपालिका, न्यायपालिका एवं जनसमूह का प्रशासन पर नियंत्रण।
इकाई–5	प्रशासनिक व्यवहार – नेतृत्व, निर्णय, संचार जवाबदेहिता लोक प्रशासन में भ्रष्टाचार आम्बुड्समैन, लोकपाल, लोकायुक्त एवं लोक संपर्क। स्थानीय स्वायतशासीय संस्थाओं की भूमिका एवं लोक संपर्क।

तृतीय प्रश्नपत्र– शोध प्रविधि **Research Methodology**

इकाई–1	सामाजिक शोध की प्रकृति, महत्व एवं उपयोग शुद्ध एवं व्यवहारिक शोध, शोध समस्या की पहचान, शोध अभिकल्प, उपकल्पना का निर्माण एवं परीक्षण

इकाई–2	सामाजिक सर्वेक्षण – उद्देश्य, महत्व, प्रक्रिया, तथ्य संकलन की तकनीकि, तथ्यों के प्राथमिक एवं द्वितीय स्त्रोत। अवलोकन पद्धति, साक्षात्कार पद्धति, प्रश्नावली एवं अनुसूची
इकाई–3	अध्ययन के विभिन्न प्रकार – पेनल केस एवं क्षेत्रीय अध्ययन, निदर्शन, अनुमापन प्रविधियों, प्रक्षेपी प्रविधियों
इकाई–4	अनुसंधान दल, अनुसंधान की समस्या, तथ्यों का वर्गीकरण एवं सारणीयन, तथ्यों का विश्लेषण एवं व्याख्या।
इकाई–5	प्रतिवेदन लेखन तथ्यों का चित्रमय प्रदर्शन, सामाजिक अनुसंधान में सांख्यिकी का प्रयोग एवं सीमाएँ। मीन, मोड, मीडियम। कम्प्युटर का उपयोग

<u>चतुर्थ प्रश्नपत्र– छत्तीसगढ़ के राजनीति एवं प्रशासन (Politics administration in Chhattisgarh.)</u>

इकाई–1	राज्यों का पुनर्गठन (2000) तथा छत्तीसगढ़ का निर्माण छत्तीसगढ़ राज्य निर्माण हेतु आन्दोलन, छत्तीसगढ़ की राजनीति के निर्धारक तत्व एवं विशेषता
इकाई–2	छ.ग. में स्थानीय स्वशासन एवं पंचायती राज, छ.ग. में जिला प्रशासन एवं जिलाधीश की भूमिका, छत्तीसगढ़ में लोकसभा एवं विधानसभा चुनाव, मतदान व्यवहार
इकाई–3	छ.ग. की राजनीति की उभरती प्रवृत्ति : जनजातीय राजनीति, किसान आन्दोलन, नक्सलवाद समस्या एवं समाधान के उपाय छ.ग. में विकास की राजनीति एवं विकास की योजनाएँ
इकाई–4	छत्तीसगढ़ की ऐतिहासिक, भौगोलिक एवं सांस्कृतिक पृष्ठभूमि, छत्तीसगढ़ में ब्रिटिश प्रशासन (1854 से 1947) स्वतंत्र भारत में छत्तीसगढ़ (1947–2000 तक)

इकाई–5	राष्ट्रीय आन्दोलन में छत्तीसगढ़ का योगदान : अहिंसक एवं क्रान्तिकारी संघर्ष छत्तीसगढ़ के राजनीतिक चिंतक : पं. रविशंकर शुक्ल, ठाकुर प्यारेलाल सिंह, डॉ. खुबचंद बघेल छत्तीसगढ़ के सामाजिक चिंतक : गुरू घासीदास, पं. सुन्दरलाल शर्मा, स्वामी आत्मानन्द

पंचम प्रश्नपत्र– अन्तर्राष्ट्रीय व्यवस्था में तृतीय विश्व एवं मानवाधिकार Third World & Human Rights in International Order

इकाई–1	तृतीय विश्व–अवधारणाात्मक विश्लेषण, सुरक्षा–दुविधा एवं निःशस्त्रीकरण की सम्भावनायें, विकास की रणनीति एवं मूल्यांकन।
इकाई–2	उत्तर–दक्षिण सम्बन्धों की जटिल निर्भरता–नई अंतर्राष्ट्रीय अर्थव्यवस्था से विश्वव्यापार संगठन तक। तृतीय विश्व की एकता की समस्याएं, समूह–77, उत्तर शीतयुद्ध काल में असंलग्नता।
इकाई–3	वैश्विकरण के संदर्भ में तृतीय विश्व में परिवर्तन एवं चुनौतियाँ। मानव अधिकार की अवधारणा–ऐतिहासिक विकास, मानवाधिकार–एक या अनेक।
इकाई–4	मानवाधिकारों का अन्तर्राष्ट्रीय–अन्तर्सरकारी संस्थात्मक संरचना का विकास, मानवाधिकार एवं संयुक्त राष्ट्र चार्टर के प्रावधान, मानवाधिकारों की सार्वभौमिक घोषणा तथा विभिन्न अन्य प्रमुख अभिसमय (कन्वेंशन)।
इकाई–5	मानवाधिकारों का अन्तर्राष्ट्रीय संरक्षण – नागरिक, राजनैतिक, सामाजिक एवं आर्थिक। सामूहिक अधिकार– आत्म निर्णय का अधिकार, समस्या एवं सम्भावनायें।

SYLLABUS FOR UNIVERSITY TEACHING DEPARTMENT AND AFFILIATED

COLLEGES IN P.G. CLASSES

M.A. in Economics: Semester Examination 2016-17

At post graduate level, candidates are required to study 15 papers in First, Second and Third semester (5 papers in each semester) and 04 papers in fourth semester examination. This is to be treated as the nineteen papers of the course structure. So there shall be 19 papers in the post graduate examination in Economics. Viva - voce examination be treated as a compulsory paper for M.A. fourth semester examination. Each paper shall carry 100 marks out of which 80 marks will be for theory paper and 20 marks for internal assessment. There shall be 2000 marks in M.A. Candidates shall have secure 36 percent marks in aggregate of all papers in order to pass the M.A. Examination. Examination and result shall be treated according to rules and regulations of ordinance no. 13.

M.A. SEMESTER-I and SEMESTER-II

PAPER	SEMESTER-I	Marks		SEMESTER-II	Marks	
		Theory	Internal Assessment.		Theory	Internal Assessment
PAPER-I	Micro Economics-I	80	20	Micro Economics-II	80	20
PAPER-II	Macro Economics-I	80	20	Macro Economics-II	80	20
PAPER-III	Quantitative Methods	80	20	Research Methods & Computer Application	80	20
PAPER-IV	Indian Economy	80	20	Indian Economic Policy	80	20
PAPER-V	Industrial Economics	80	20	Labour Economics	80	20

M.A. SEMESTER-III and SEMESTER-IV

PAPER	SEMESTER-III	Marks		SEMESTER-IV	Marks	
		Theory	Internal Assessment		Theory	Internal Assessment
PAPER-I	Economics of Growth	80	20	Economics of Development & Planning	80	20
PAPER-II	International Trade	80	20	International Economics	80	20
PAPER-III	Public Finance	80	20	Public Economics	80	20
PAPER-IV	Environmental Economics	80	20	Economics of Social Sector	80	20
PAPER-V	Demography	80	20	Viva-Voce	100	--

SEMESTER – I
Micro Economics -1
Paper - I

Unit-I Introduction: - Concept of Equilibrium, Economic Models, Neo Classical Demand Analysis. Elasticity of Demand (Price, Income & Cross), Elasticity of supply.

Unit- II Indifference curve, Marginal Rate of Substitution. Income & substitution effect, Hicks and Slutsky theorem, Revealed preference theory. Hicks's Revision of Demand, Hicksian Consumer surplus

Unit – III Theory of Production – Production function, the short period & long period production function, the law of variable proportion (isoquant approach) Marginal rate of Technical Substitutions, Returns to a factor and returns to scale. Expansion path, Cobb Douglas Production function, CES production function.

Unit- IV Theory of cost and Revenue analysis, Perfect Competition - equilibrium of firm in Perfect Competition. Monopoly - short run and long run equilibriums, price discrimination under monopoly competition, monopoly control and regulation. Comparison between monopoly and perfect competition.

Unit – V Monopolistic Competition – price and output determination under monopolistic competition, Group equilibrium, theory of excess capacity. Oligopoly – non- collusive oligopoly model: The kinked demand curve. The collusive oligopoly – Cartels: joint profit maximization or perfect cartels , price leadership : the low cost price leadership model.

Text Books

1. Jhingan M. L. (2014), Advanced Economic Theory, Vrinda Publication, New Delhi
2. Jhingan M. L. (2014), Micro Economics , Vrinda Publication, New Delhi
3. Agarwal , A (2014), Micro Economic analysis , Sahitya Bhawan Publication, New Delhi

Reference Books

1. Kraps, David M. (1990) a course in micro economics theory Princeton university press, Princeton.
2. Kout sayiannis; A (1979) modern Microeconomics (2nd Edition), macmillan press,London.
3. Layard, PRG and P.W. Watters (1978), Micro economic theory, McGraw Hill, New York.
4. San A (1999) Micro economics theory and Applications, Oxford University Press, New Delhi;
5. Stigler, G. (1996) theory of Price (4th edition), Princeton Hall of India, New Delhi.
6. Varian, H (2000) Micro economics Analysis, W.W. Norten, New York.
7. Baumol W.J., (1982) Economic theory and operations Analysis, Princeton Hall of lndia, New Delhi.
8. Handersan, J.M. and R.E. Quandy (1980) Micro economics theory - A Mathematical approach, Mc Graw Hill New Delhi.
9. Hirshleifer, J. And A Glazer (1997), Price theory and Application, Prentise Hall of India, New Delhi.

SEMESTER – I
MACRO ECONOMIC

Paper – II

Unit – I National Income and Accounts – Concept of National Income and National Product, Problems of Measurement, , Different forms of National Income Accounting – Social Accounting, Input Out-put Accounting, Flow of Funds, Balance of Payment – Accounting. Circular flow of Income – Two, Three and Four Sector Economy

Unit – II Classical Theory of Employment, Say's Law of Market , Principle of Effective Demand, Keynesian & Pigou Theory of Employment, Comparison of Classical and Keynesian Models. National Income Determination of Keynesian Model - Two, Three and Four Sector Economy.

Unit- III Consumption Function- Keynesian Psychological Law of Consumption, Short Run and Long Run Consumption Function. Theory of Consumption Function – Absolute Income Hypothesis, Duesanbery's Relative Hypothesis, Life Cycle and Permanent Income Hypothesis.

Unit –IV Investment Function,, Marginal Efficiency of Capital and Investment. Saving and Investment Equality, Multiplier and its working, Accelerator and its working, Super-Multiplier. Supply of Money, Determinants of Money Supply, Measurement of Money supply, Control of Money Supply. High Powered Money, Money Multiplier.

Unit – V Demand for Money –Fisher and Cash Balance (Cambridge) Approach, Fundamental Equation of Keynes. Friedman's re-formulation of the quantity theory of money. Post Keynesian Approach to Demand for Money- Patinkin, Bamuls, James Tobin, Friedman, and Gurley & Shaw's Approaches.

Text books

1 Sethi,T.T.(2008)Macro Economics ,Laxminarayan Agrawal ,Agra.
2 Jhingan,M.L.(2010)Monetary Economics,vrinda publications pvt.ltd.
3 Jhingan,M.L.(2000)Macro Economic theory,vrinda publications pvt ltd.
4 Shinghai G.C &Mishra J.P.(2013) Macroeconomic Analysis, Sahitya bhawan publication Agra.

SEMESTER- I
QUANTITATIVE METHODS
Paper – III

Unit – I Skewness – Symmetrical and asymmetrical distribution, Measurement of skewness – Karl Pearson's coefficient of Skewness, Bowley coefficient of skewness. Simple correlation- Measurement of correlation – Karl Pearson's coefficient of correlation and Spearman's rank correlation, Coefficient of correlation by the method of least square, Probable error and standard error in correlation, coefficient of determination of correlation.

Unit – II Regression analysis – regression and correlation, regression lines and regression coefficient, regression equations. Simple regression analysis, Multiple regression analysis (up to three variables only). Standard error of the estimates of simple regression analysis. Inter potation and extrapolation- Method of fitting a parabolic curve, Newton's advancing difference method, Direct binomial expansion method and Lagrange's method.

Unit – III Association of Attributes – Meaning and types of association, Consistency of data, Methods of determining association – Method of comparison of proportion, Coefficient of association using Yule's method. Probability – meaning and definition, Permutation and combination, Types of events, measurement of Probability – addition and multiplication theorem, conditional probability.

Unit – IV Index Number- Fisher's Ideal Index number, Reversibility Test – Time reversibility & factor reversibility tests. Time series Analysis – Components of time series, Measurement of long term trend- semi-average method, Moving average method and method of least squares.

Unit - V Functions: Meaning and types of functions, Differentiation: Meaning and rules of differentiation, Integration: Meaning and rules of integration, Problems related to differentiation and integration, Auto correlation.

Reference:

1. Shukla, S.M. and S.P. Sahay – Quantitative method's Sahitya Bhawan Publications, Agra.
2. Agrawal, D.R., 'Quantitative methods'. Vrinda Publications (P) Ltd.
3. Sancheti, D.C., 'Quantitative methods' Sultanchand and Sons, New Delhi.
4. Gupta, S.P. and others, "Quantitative Techniques." Sultanchand and Sons, New Delhi.
5. esgrk ,oa enukuh] ^vFkZ'kkL= esa izkjafHkd xf.kr*] y{ehukjk;.k vxzoky] vkxjk&3-

SEMESTER- I
INDIAN ECONOMY
Paper –IV

Unit – I - Indian Economy: Meaning, basic characteristics and major issues of development of Indian Economy, GDP and National Income of India – Components and Structure of GDP, Role of Primary, Secondary and Tertiary Sectors in GDP, National Income and Per Capita Income, Growth Rates of GDP and Per Capita Income.

Unit – II - Demographic Features of India – Size, Growth Rate, Sex Ratio, Age-Composition, Literacy and Density of Population, Migration, Rural-Urban Migration, Urbanization and Civic Amenities, Occupational Structure, National Population Policy, Demographic Features of Chhattisgarh State.

Unit – III - Agricultural Development in Indian Economy – Agricultural Growth and Productivity, Causes of Low Productivity and Measures to Increase it, Agricultural Marketing and Warehousing, Institutional Structure- Land Reforms in India, The Green Revolution, National Agricultural Policy and Food Security in India, Rural credit in India, NABARD and its role in rural credit.

Unit – IV- Industrial Development in India, Industrial Policies of 1956 and 1991, Public Sector Enterprises and their Performance, Privatization and Disinvestment, Small Scale Sector and Minor Medium Enterprises, Unorganized Sector and Informalisation of the Indian Economy and Knowledge Economy.

Unit – V - Infrastructure- Infrastructure and Economic Development, Energy, Power, Transportation- Road, Railway, Water and Civil Aviation in India, Private Investment in Infrastructure: Outlook and Prospect, Concept of Social Sector and Social Infrastructure, Education, Health and Family Welfare.

Reference:-

5 Ahulwalia, I. J. and I. M. E. Litle (Eds.) 1999): India's Economic Reforms and Development (Essay honor of Manohar Singh), Oxford University Press, New Delhi

6 .Bardhan, P. K. (9th Edition) (1998): The Political Economy of Development India, Oxford University Press, New Delhi.

7 Bawa, R.S. and Raikhy (Ed.) (1997): Structural Change in Indian Economy, Guru Nanak Dev University Press. Amritsar (PB).

8 Brahmananda, P. R. and V. R. Panchmukhi (9th Eds.) (2001): Development Experience in the Indian Economy: Interstate Perspectives, Bookwell, Delhi.

9 Chakravarty, S. (1987): Development Planning: The Indian Experience, Oxford University Press, New Delhi.

10 Dantwala, M. L. (1996): Dilemmas of Growth: the Indian Experience, Sage Publication, New Delhi.

SEMESTER- I
INDUSTRIAL ECONOMICS
Paper –V

Unit – I Concept and Organization of a Firm-Ownership, Control and Objectives of the Firm. Rationale of Industrialization: - Agriculture and Industrialization – patterns, process, speed, Implications of Industrialization. Theories of Industrial location, Alfred Weber and Sergeant Florence Theory. Factors Affecting Industrial Localization.

Unit – II Industrial Productivity, Efficiency and Capacity. Industrial Policy in India, Role Of Public and Private Sector industries in India. Recent Trends in Industrial Growth. Strategies for Industrial Growth, Regional Development of Industries.

Unit – III Owned, External and Other Components of Funds, Nature, Volume and Types of Institutional Finance – IDBI, IFCI, SFCs, SIDC, Commercial Bank.

Unit –IV Structure of Industrial Labour, Employment Dimensions of Indian Industry. Industrial Legislation, Industrial Relations, Exit policy and Social Security.

Unit – V Large scale industries:- Iron and Steel, Cement Jute, Sugar , paper industry . Development of Small-Scale and Cottage Industries in India.

Text books

1. Ahluwalia, I.J. (1985), Industrial Growth in India, Oxford University Press, New Delhi.
2. Barthwal, R.R. (1985) : Industrial Economics, Wiley Eastern Ltd., New Delhi.
3. Chernilam, F (1994) : Industrial Economics : Indian Perspective (3rd Edition), Himalaya Publishing House, Mumbai.
4. Desai, B. (1999), Industrial Economic in India (3rd Edition), Himalaya Publishing house Mumbai.
5. Kuchhal .S.C , the industrial economy of India , Chaitanya publishing house.

Reference

1. Divine, P.J. and R.M. Jones et. At. (1976) : An Introduction to industrial economics, George Allen and Unwin Ltd., London.
2. Government of India, Economic Survey (Annual)
3. Hay, D. and D.J. Morries (1979), Industrial Economics : Theory and Evidence, Oxford University Press, New Delhi.
4. Kuchhal, S.C. (1980) :Industrial Economy of India (th Edition), Chaitanya Publishing House, Allahabad.
5. Reserve Bank of India Report on Currency and Finance (Annual).
6. Singh, A. and A. Sadhu (1988) : Industrial Economics, Himalaya Publishing House

SEMESTER- II
MICRO ECONOMICS-II
Paper –I

Unit – I Sales maximization model: Baumol's model (price-output determination of a product without advertisement and optimal advertising outlay), Managerial theories of the firm: Williamson's model of managerial discretion, Marris theory of the firm. Theory of limit pricing: Bains model

Unit – II Theory of distribution: marginal productivity theory of distribution (Marshall – Hicks version), Product Exhaustion theorem. NEO-Classical Approach of Distribution: relative share of labor and capital, technological progress and factor shares in income, Determinants of rent, wages, interest and profit (Only modern Theory)

Unit – III Linear programming and Game Theory (Geographical and simplex methods)

Unit – IV Concept of Equilibrium: static and dynamic equilibrium, partial and general equilibrium. Walrasian Excess Demand.

Unit – V Welfare economics – introduction, value judgment, classicial welfare economics, Pigovian Welfare economics, Pareto optimal conditions. New welfare economics: compensation principle of Kaldor - Hicks. Social welfare function: Bergson – Samuelsons social welfare function, Arrow's impossibility theorem.

Text Books

1. Jhingan M. L. (2014), Advanced Economic Theory, Vrinda Publication, New Delhi
2. Jhingan M. L. (2014), Micro Economics , Vrinda Publication, New Delhi
3. Agarwal , A (2014), Micro Economic analysis , Sahitya Bhawan Publication, New Delhi

Reference Books

1. Mansfield, E. (1997), Microeconomics (9th Edition), W.W. Norton and Company, New York.
2. Ray, N.C. (1975), An Introduction to Microeconomics, Macmillan Company of India Ltd., delhi.
3. Ryan, W.J.L. (1962), Price Theory, Macmillan and Co. Limited, London.
4. Samuelson, P.A. and W.D. Nordhaus (1998), Economics, Tata McGraw Hill, New Delhi.
5. Stonier, A.W. and D.C. Hague (1972), A Textbook of Economic Theory, ELBS and Longman Group, London.

SEMESTER- II
MACRO ECONOMICS
Paper –II

Unit – I Theory of Inflation – Classical, Keynesian and Monetarist Approaches to Inflation, Semi And Full inflation, Theory of Structural Inflation, Stagflation, Control of Inflation. Philips Curve Analysis – Short Run and Long Run Philip's Curve. The Natural Rate of Unemployment Hypothesis, Tobin's Modified Philip Curve.

Unit – II Business Cycles, Main Features of Business Cycles, Types of Business Cycle, measures to control business cycle. Theories of Business Cycles :- Hawtrey's Monetary Theory of Trade Cycle, Schumpeter's, Keynes, Hicks, Samuelson's, Friedman, Kaldor Model of Trade Cycle.

Unit – III Monetary Policy-Meaning of Monetary Policy, Instrument of Monetary Policy, Objective Of Monetary policy, Limitations of Monetary Policy, Monetary Policy and EconomicDevelopment. Fiscal Policy – Meaning of Fiscal Policy, Instruments of Fiscal Policy, Objectives of Fiscal Policy, Fiscal Policy and Economic Growth, Effectiveness of Fiscal Policy, Monetarism Vs Fiscalism – The Debate, Similarities between Monetary Policies and Fiscal Policies.

Unit – IV IS-LM Model, The Product Market Equilibrium, The Money Market Equilibrium, Equilibrium of Product and Money Market, Merits and Demerits of IS-LM Curve, Extension of IS-LM Models With Flexible Prices and Labour Market.

Unit – V The Rational Expectation Hypothesis: - Adaptive Expectations, Rational Expectations. The New Classical Macro - Economics , Policy implications of New Classical Macro-Economics. Supply side economics: - main features, policy prescriptions.

Text books

1. Sethi,T.T.(2009-10) Macro economics ,Laxminarayan Agrawal ,Agra.
2. Jhingan,M.L.(2008) Monetary Economics,vrinda publications pvt.ltd.
3 Jhingan,M.L.(2010) Macroeconomic theory,vrinda publications pvt ltd.
4 Shinghai G.C. & Mishra J.P. (2013) Macro Economic Analysis, Sahitya Bhawan Publication Agra.

Reference

1. Blackhouse, R. and A. Salansi (Eds.) (20()), Macroeconomics and the Real World (2 vols) Exford University Press, London.
2. Branson, W.A. (1989), Macroeconomics Theory and Policy, (3rd Edition), Harper and Row, New York.
3. Aornbusch, R and F. Stanley (1997), Macroeconomics, McGraw Hill, inc., New York
4. Hall, R.E. and J.B. Taylor (1986), Macroeconomics, W.W>Norton, New York.
5. Heijdra, B.J. and V.P. Frederick (2001), Foundations of Modern Macroeconomics, Oxford University Press, New Delhi.
6. Jha, R. (1991), Contemporary Macroeconomic Theory and Policy, Wiley Eastern Ltd. New Delhi.
7. Romer, DL. (1996), Advanced macroeconomics, McGraw Hill Company Ltd., New York.
8. Scarte, B.L. (1997), Cycles, Growth and inflation, McGraw Hill, New York.
9. Markeley, G. (1978), Macroeconomics Theory and Policy, macmillan, New York.

SEMESTER - II
RESEARCH METHODOLOGY AND COMPUTER APPLICATION
Paper –III

Unit – I Research methodology and research methods, research : meaning, types of research, motivation of research, main stages of statistical research, primary and secondary data, methods of collecting primary data, secondary data -different sources, precautions while constructing questionnaire/schedule, editing of primary data.

Unit – II Sampling- Meaning and need for sampling, size of sampling, merits and limitations of sampling, sampling and non- sampling errors, sampling frame, how to judge the reliability of samples. Various methods of sampling. Sampling design- meaning and steps in sample design,

Unit – III Classification and tabulation of data- meaning and objectives of classification, types of classification, tabulation of data, parts of a table, types of tables. Processing and analysis of data- processing operations, some problems in processing, Elements/types of analysis.

Unit – IV Hypothesis : Meaning of hypothesis, basic concepts concerning testing of hypothesis, procedure for hypothesis testing, test of significance based on students 't' test, chi-square test F ratio test and paired T test, practical problems related to students 't' test, Chi-square test, F ratio test and paired T test .

Unit – IV Computer : What is ' Computer'? important characteristics of a computer, history of computer, different parts of a computer - hardware and software, various types of computer, main characteristics of a computer, elementary knowledge of INTERNET and MS office, role of computer in economic research.

Reference Books

1.Kothari, C.R. 'Research methodology'.2. Sharma, Dr. Ramnath, 'Methods and Techniques of Social Survey and Research, A Rajhans Publication.
3. Bajpai, Dr. S.R., 'Methods of Social Survey and Research' Kitab Ghar, Kanpur-3
4 eq[kthZ] jfoUnzukFk] lkekftd 'kks/k ,oa lkaf[;dh] foosd izdk'ku] tokgj uxj] fnYyh & 7
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SEMESTER- II
INDIAN ECONOMIC POLICY
Paper – IV

Unit – I Planning in India– Objectives and Strategies of Planning, Twelfth Five Year Plan, Development Strategy, LPG Model of Development, PURA- a Neo Gandhian Approach to Development, Developing Gross–root Organization: Panchayats, NGO'S.

Unit – II Problem of Poverty and Inequality – The Concept of Poverty, Measurement and Estimation of Poverty in India, International Comparison of Poverty and Inequality of Incomes, Poverty Eradication Programmes, Causes of Failure to Remove Poverty.

Problem of Unemployment in India- Nature of Unemployment, Various Schemes to Reduce the Unemployment, Balanced Regional Development- Indicators, Causes, Changing Scenario and Policy Measures to remove Regional Disparity.

Unit – III Indian Finance System – An overview, Functions of the Reserve Bank of India, Commercial Banking system, Progress of Banking since 1969, RRBs, DFIs and NBFCs, Financial Sector Reforms in India, Stock Exchange in India, Composition of Indian Capital Market, SEBI and Capital market reform.

Unit – IV Foreign Trade of India- Importance of Foreign Trade for a developing Economy, Foreign Trade since 1991, Structure and Direction of Foreign Trade, Balance of Payments of India, Issues in Export Import Policies, External value of the Rupee and Foreign Exchange Reserves, FEMA, SEZs, Trade Reforms in India.

Unit – V WTO and its Impact on the Different Sector of Economy, Economic Reforms – Rational of Internal and External Reforms, Cooperative movement in India- Organization, Structure and Development of different types of Cooperatives in India.

Reference:-

1. Ahulwalia, I. J. and I. M. E. Litle (Eds.) 1999): India's Economic Reforms and Development (Essay honor of Manohar Singh), Oxford University Press, New Delhi,.
2. Bardhan, P. K. (9th Edition) (1998): The Political Economy of Development India, Oxford University Press, New Delhi.
3. Bawa, R.S. and Raikhy (Ed.) (1997): Structural Change in Indian Economy, Guru Nanak Dev University Press. Amritsar (PB).
4. Brahmananda, P. R. and V. R. Panchmukhi (9th Eds.) (2001): Development Experience in the Indian Economy : Interstate Perspectives, Bookwell, Delhi.
5. Chakravarty, S. (1987): Development Planning: The Indian Experience, Oxford University Press, New Delhi.
6. Dantwala, M. L. (1996): Dilemmas of Growth: the Indian Experience, Sage Publication, New Delhi.

SEMESTER- II
LABOUR ECONOMICS
Paper – V

Unit – I Labour Economics - Definition, Nature, Scope & Importance. Labour Market – Nature and Characteristics of Labour Markets in India .Supply of Labour - Labour force,factors affecting Law of Labour Supply. Demand for Labour – Labour productivity, Demand for Labour by Industrialist..

Unit – II Theories of labour market: - Classical Theory of labour,Marginal productivity theory of Labour Concept of wages – Real Wages , Nominal Wages, Factors Affecting Real wages , Theories of Wage Determination - Classical Theory, New Theory, The theory of Collective Bargaining.

Unit – III Theories of Labour Movement - Labour Unions in India, Rise and Growth of Labour Union, Achievements of Labour Unions. Structure and Pattern of Trade Union - Objectives, Growth, Achievements and Failures.

Unit – IV Labour Legislation in Indian Labour, Laws and Practices in Relation to International Labour Standards. State and Labour , State and Social Security of Labour, Concept of Social Security and its Evolution.

Unit – V Labour Welfare in India, Rural and Agricultural Labour in India, Child Labour, Female Labour, Concept of Industrial Peace, Settlement of Industrial Dispute, Second National Labour Commission.

Text books

1. Goyal, Sunil & Goyal, M.L.(2008):Labour Economics, R.B.S.A. Publications, Jaipur.
2. Saxsena, R.C.(2010): Labour Problems & Social Welfare, K. Nath and Company Publication, Meret.
3. Singh, Dilip Kumar,(2008): Workers Participationin in Management and Industrial Relation, Rawat Publication, Jaipur & Delhi.
4. Singh, Usha & Singh, H.P.(2011):Child Labour in India :Problem and Solutions,Classical Publication ,New Delhi
5. Gupta .P.K , labour economics , vrinda publications .

SEMESTER – III
ECONOMICS OF GROWTH
PAPER – I

UNIT I - Economic Growth: Economic Growth and Development, Measurement of Economic Growth, Vicious Circle of poverty, Physical Quality of Life Index.Human development Index, Gender Development index, Gender empowerment measure, UNDP - Human Development Report 2015.

Unit – II- The Concept of Capital Output Ratio, Input-Output Analysis, Project Evaluation and its methods and Cost – Benefit analysis , Shadow Prices. The Concept of Capital Output Ratio, Input-Output Analysis, Project Evaluation and its methods and Cost – Benefit analysis , Shadow Prices.

Unit – III- Theories of Growth :- Harrod - Domar model ,Joan Robinson model, Meads Neo-Classical Model, Solow Long- Run , Kaldor model of Distribution.

Unit – IV Approaches to Growth: -. Kaldor model of Growth, The Pesinetti Model of Profit and Growth, The Models of Technical Change , The Golden rule of Accumulation model.

Unit - V Steady State Growth , Growth Accounting , The Fel'dman Model,The Mahalanobis Four Sector Model.

Text Books

1. Jhingan,M.L.(2008)31ST edition,The economics of development and planning,vrinda publication pvt.Ltd.
2. Shinghai G.C. & Mishra J.P.(2013) Macroeconomic Analysis,Sahitya bhawan publication Agra.
3. Mishra, J.P.(2012)Economics of Growth and development Sahitya bhawan publication Agra.

Reference Books

1. Hajela P.D. (1998), Labour Restructuring in India : A Critique of the New Economic Policies, Commonwealth Publishers, New Delhi.
2. Jhabvala, R. and R.K. Subrahmanya (Eds.) (2000). The Unorganised Sector : Work Security and Social Protection. Sage Publication, New Delhi.
3. Lester, R.A. (1964). Economics of Labour. (2nd Edition), Macmilan, New York.
4. Mc Connell, C.R. and S.L. Brue (1986). Contemporary Labour Economics, Mc Graw-Hill New York.
5. Papola, T.S.P.P. Ghosh and A.N. Sharma (Eds.) 1993, Labour, Employment and industrial Relations in India, B.R. Publishing Corporation New Delhi.
6. Rosenberh M.R. (1998), Labour Markets I Low Income Countries in Chenery, H.B. and T.N. Srinivasan, (Eds.) The Handbook of Development Economics, North-Holland, New York.
7. Venkata Ratnam, C.S. (2001), Globlization and Labour- Management Relations Dynamics of change, Sage publications/ Response Books, New Delhi.

SEMESTER- III
INTERNATIONAL TRADE
Paper – II

Unit – I Theory of International Trade – Meaning and Distinguishing Features of Inter- regional and International Trade, The Comparative Cost Theory, Refinements of the Comparative Cost Theory, Opportunity Cost Theory, Theory of Reciprocal Demand.

Unit – II Modern Theory of International Trade, Factor Price Equalization, Theorem of International Trade, Stopler Samuelson and Rybezynski Theorems.

The Terms of Trade – Concepts, Determination of Terms of Trade, Factors Affecting Terms of Trade, Terms of Trade & Economic Development, Its Empirical Relevance and Policy Implications for Less Developed Countries, Terms of Trade & Welfare Implications.

Unit – III The Theory of Intervention – Tariffs, Quotas, and Non-tariff Barriers, Economic Effects of Tariff and Quotas on National Income, Output, Consumption, Price, Employment, Terms of Trade & Income Distribution, The Stopler – Samuelson Theorem of Tariff on Income Distribution, The Learner's Paradox.

Unit – IV Balance of Payments – Meaning and components, Equilibrium and Disequilibrium in the BoP, Measures to Correct the Adverse BoP, Adjustment Mechanisms of BoP, Devaluation- The J-curve effect, Marshall-Lerner's Conditions under Devaluation, Expenditure Reducing and Expenditure Switching Policies and Direct Control.

Unit – V Income Adjustment- Foreign Trade Multiplier, Foreign Repercussion or Back-Wash Effect, Foreign Exchange Rate-Spot and Forward Exchanges Rates, Fixed and Flexible Exchange Rates, their Merits and Demerits, Hybrid Exchange Rate, Floating Rate of Exchange, Managed Floating System.

Reference:-

1. Bhagwati, J. (Ed). (1981): International Trade, Selected readings, Cambridge, University Press, Massachusetts.
2. Carbough, R.J. (1999), International Economics, International Thompson Publishing, New York.
3. Chacholiades, M. (1990), International Trade: Theory and Policy, McGraw Hill, Kogakusha, Japan.
4. Dana, D. S. (2000), International Economics: Study Guide and Work Book, (5^{th} Edition), Routledge Publishers, London.
5. Dunn, R. M., and J. H. Mutti (2000), International Economics, Routledge, London.
6. Kenen, P.B. (1994), The International Economy, Cambridge University Press, London.
7. Kindleberger, C. P. (1973), International Economics and International Economic Policy A Ready, McGraw Hill International, Singapore.
8. Krugman, P. R. and M. Obstfeld (1994), International Economics : Theory and Policy, Glenview, Foresman.

SEMESTER- III
PUBLIC FINANCE
Paper – III

Unit – I Definition, Nature and scope of Public Finance, Role of Public Finance in developing Countries, Principles of Maximum Social Advantages. Taxation – features of good tax system, Objectives of Taxation, Principles of Taxation, canons of Taxation, Shifting, Effects and Incidence of Taxation. Impact of Tax under Laws of Returns and Perfect Competition.

Unit – II Public Expenditure: - Meaning and Scope, Different Forms of Expenditure, Canons of Public expenditure, Structure and Growth of Public Expenditure in India. Trends in Central Government Expenditure. Economic Effects of Public Expenditure on Production and Distribution. Public Expenditure and Economic Growth.

Unit – III Public Revenue: - Meaning, classification, sources, principles and effects of public revenue. Classification of taxation: - Indirect & Direct Tax, Goods and service tax GST) New Direct tax, Central Excise, Custom Duties, Taxes on Land and Agriculture, Value Added Tax, Modvat , Service Tax. Taxable Capacity.

Unit – IV Public Debt – Meaning and Objectives of public debt, Different Sources of Public Debt, Redemption of Public Debt. Principle of Public Debt Management, Growth of Public Debt in India, Burden of Public Debt.

Unit – V Budget – Meaning, Objectives , Different forms of Budget, Budgetary Process in India, Kinds of Budget – traditional Budget, Performance Budget, Zero Based Budget, Out- come Budget, Gender Budget. Budget Theory – Classical Viewpoint (Balance Budget), Modern View Point (Imbalanced Budget.)

Text Book

1. Lekhi, R.K.,(2014), Public Finance, Kalyani Publication Ludhiana New Delhi
2. S.K., Sing, (2013) Principal of Public Finance Sahitya Bhavan Publication, Agra.
3. Pant, K.C., (2012) Public Finance
4. Sinha, V.C.,(2013) Public Finance and Economic, Sahitya Bhavan Publication.

Reference Books

1. Atkinson, A.B. and J.E. Siglitz (1980), Lectures on Public Economics, Tata McGraw Hill, New York.
2. Auerbach, A.J. and M. Feldstern (Eds.), Handbook of Public Economics, Vol. 1, North Holland, Amsterdam.
3. Government of India (1992), Reports of the Tax Reforms Committee – Interim and Final (Chairman : Raja J. Chelliah).
4. Chelliah, Raja J. et. Al (1981)., Trends and issues in India's Federal Finance, NIPFP. New Delhi.
5. Peacock, A and G.K. Shaw (1976), Th Economic Theory of Fiscal Policy, George Alen and Unwin, London.
6. Sahni, B.S. (Ed.) (1972), Public Expenditure Analysis: Selected Readings, Rotherdam University Press.
7. Musgrave, R.A. and P.B. Musgrave (1976), Public Finance in Theory and Practice, Mcgraw Hill, Kogakusha, Tokyo.
8. 14th Finance commission Report-2015
9. Central Govt. and Stat Govt. Budget- 2015

SEMESTER- III
ENVIRONMENTAL ECONOMICS
Paper – IV

Unit – I The Economics of Environment - Environmental Micro Economics and Macro Economics, The Circular Flow Model. Theory of Resources Environment and Economic Development - Economic Growth and The Environment, Future of Economic Growth and The Environment. Criterion of Social Welfare- Bentham Criteria, Pareto Optimality Criteria, Kaldor-Hicks Compensation Criterion.

Unit – II Economic Theory of Environmental Issues - The Theory of Environmental Externalities, Accounting for Environmental Cost, Internalizing Environmental Cost, Positive Externalities. Welfare Analysis of Externalities - Property Rights and The Environment. Common Property Resources and Public Goods - Common Property, Open Excess and Property Rights, Market Failure and Public Goods, Social choice of optimum pollution, Pigovian Taxes and subsidies, Maximization of Social Welfare Under Perfect Competition.

Unit – III Population, Agriculture and The Environment - Population and the Environment- Demographic Transition and Environment, Population Growth and Economic Growth, Population Policy for the 21st Century, Agriculture, Food and Environment, Sustainable Agriculture for the Future, Environment and Neo-Classical Modal of Natural Resources, Energy and Resources.

Unit – IV Ecological Economics, National Income and Environmental Accounting - Ecological Economics Basic Concept, Natural Capital and Accounting for Changes in Natural Capital, Macro Economic Scale, Model of Economic and Ecological System. National Income and Accounting - Natural Capital, System of Environment and Economic Accounts (SEEA).

Unit – V Environmental Value and Methods - Use Value, Option Value and Non Use Value, Cost Benefit Analysis, Methods of environmental valuation- Hedonic Pricing. Household Production Function, Travel Cost Method, Averting Behavior Approach, Contingent Valuation Method, International Carbon Tax. Environment and W.T.O.

Reference

1. Madhu Raj – Environmental Economics.
2. Steve Baker – Environmental Economics.
3. D.W. Pearce – Environmental Economics.
4. Baurnol, W.J. and W.E. Oates. (1988): The Theory of Environmental Policy, (2nd Edition), Cambridge University Press, Cambridge.
5. Thomas and Callan (2009): Environmental Economics.
6. Charles D. Kolasted (2005): Environmental Economics, Oxford University Press.
7. Brian Roach, Jonathan M. Harries and Anne Marie codur (2015): Microeconomics and the environment, Global Development and Environment Institute, Tufts University, Medford.
8. Jonathan M. Harries and Anne-Marie codur (2004): Macroeconomics and the environment, Global Development and Environment Institute, Tufts University, Medford.

SEMESTER- III
DEMOGRAPHY
Paper – V

Unit – I Demography – Meaning and Importance, Theories of Population – Theory of Optimum Population and Theory of Demographic Transition. Measures of Population Change and Distribution – Rate of Population Change and Distribution, Measures of Degree of Concentration of Population – Lorenz Curve and Gini Concentration Ratio.

Unit – II Migration – Kinds and Factor Affecting of Migration, Hurdles of Migration, Measurement of Internal Migration, Migration Rates and Ratio. Urbanization- Factors Influencing Urbanization and Effects of Urbanization, Population and Economic Development. Human Resource Development in India.

Unit – III Mortality – Meaning and Sources of Mortality Data, Causes of High Death Rate in India, Trends in Death Rate in India, Measurement of Mortality Based on Death Statistics, Crude Death, Specific Death Rate, Infant Mortality Rate and Standardized Death Rate, Child Mortality Rate, Maternal Mortality Rate, Life Table – Functions and Construction of Life Table. Problems Related to Death Rates and Life Table.

Unit – IV Fertility– Meaning, Causes of High Birth Rate in India, Trends in Birth Rate in India, Measurement of Fertility and Reproduction – Crude Birth Rate, General Fertility Rate, Age-Specific Fertility Rate, Total Fertility Rate. Gross Reproduction Rate and Net Reproduction Rate. Problems Related to Fertility and Reproduction Rates.

Unit – V Women Empowerment - Economic Status, Women in Decision Making, Women and Labour Market; Women Work Participation: Concept and Analysis of Women's Work Participation, Structure or Wages across Regions and Economic Sector's, Determinants of wage Differentials, Gender and Education.

Text Books

1. Agrawal, S. N. 'India's population Problems, Tata Mc-Graw Hill co. Bombay.
2. Bogue, D. J., 'Principles of Demography', Honwiley, New York.
3. Sinha, V. C. and Pushpa Sinha, 'Principles of Demography', Mayur Paper backs.
4. Mishra, Jai Prakash, Demography', Sahitya Bhawan Publications, Agra.
5. Pathak, K. B. and F. Ram, 'Techniques of Demographic Analysis', Himalaya Publishing House.
6. Jhingan, M. L. and others, 'Demography', Vrinda Publications (P) Ltd.
7. Srinivasan, K., 'Basic Demographic Techniques and Applications', Sage Publication.

Reference Books

1. Census India SRS Bulletins, Registrar General of India, Govt. of India, 2011
2. Rural-Urban distribution *Census of India: Census Data 2001: India at a glance >> Rural-Urban Distribution.* Office of the Registrar General and Census Commissioner, India. Retrieved on 2008-11-26.
3. Number of Villages *Census of India: Number of Villages* Office of the Registrar General and Census Commissioner, India. Retrieved on 2008-11-26.
4. Urban Agglomerations and Towns *Census of India: Urban Agglomerations and Towns.* Office of the Registrar General and Census Commissioner, India. Retrieved on 2008-11-26.
5. Preston, S.H. (1976). Family Sizes of Children and Family Sizes of Women. *Demography* 13(1): 105-**114.**
6. Pritchett, L.H. (1994). Desired Fertility and the Impact of Population Policies. *Population and Development Review* 20(1): 1-55.

SEMESTER - IV
ECONOMICS OF DEVELOPMENT AND PLANNING
Paper – I

Unit – I Economic Planning; Objectives. Achievements and Failures of Indian Plans, Resource Mobilization in Indian Plans, Strategy of Indian Plan. Saving, Capital Formation and Overall Growth Rate, Twelfth Five Year Plan (2012-17) Achievement of Eleventh Five Year Plan.

Unit – II Theories of Development: - The Marxian Model, The Schumpeterian Model, Keynesian Theory of Development , Rostow's Stages of Economic Growth.

Unit – III Approaches to Development :- Arther Lewis Model of Unlimited Supply of Labour, Ranis & Fie Model, Leibenstein's Critical Minimum Effort thesis , The Big push theory.

Unit – IV Development Models: - the doctrine of Balanced Growth, the concept of Unbalanced Growth , The Limits to Growth Model ,Myrdal's Theory of Circular Causation.

Unit - V Investment Criteria in Economic Development; The social Marginal Productivity Criteria, The capital Turnover Criteria, The Re-investment Criterion, Time Series Criterion, the Choice of Techniques.

Text books

1. Jhingan,M.L.(2003),The Economics of development and planning,vrinda publication pvt. Ltd.
2. Shinghai ,G.C. & Mishra ,J.P.(2013)Macro Economic Analysis,Sahitya bhawan publication Agra.

3 . Mishra, J.P.(2012)Economics of Growth and Development, Sahitya bhawan publication Agra.

Reference Books

1. Todaro, M.P. (1996) (6th edition) Economic Development, Longman London.
2. Solow, R.M. (2000), Growth Theory An Exposition, Oxford University Press, Oxford.
3. United Nations, Human development Department report 2005.
4. Behrman, S. and T.N. Shrinivasan (1995), Hand book of Development Economics, Vol 1, 2 & 3, Elsevier; Amsterdam.
5. Ghatak,s (1986), An introduction to development Economics, Allen & elnein, London.
6. Sen, A.K. (Ed.) 1990 growth Economics, Penguin, Harmondsworth.
7. Dasgupta, P.A.K. Sen and S. Marglin (1972), Guidelines for project Evaluation, UNIDO, Vienna,
8. Mehrotra, S. and J. Richard (1998), Development with a Human Face, Oxford University Press New Delhi.

SEMESTER- IV
INTERNATIONAL ECONOMICS
Paper – II

Unit – 1 Foreign Trade and Economic Development, The Theory of Regional Blocks- Customs Union, Static and Dynamic Effects of a Customs Union and Free Trade Area, Rational of Economic Progress of SAARC, ASEAN, IBSA and BRICS.

Unit – II Regionalism of European Union, The Euro-Dollar Market, NIEO,WTO- Functions of WTO, Multilateralism and WTO, TRIPS, TRIMS, Agriculture, Market- Access, Textile Clothing, Patent Rights, Ministerial Conferences of WTO, UNCTAD.

Unit – III Theory of Short Term & Long Term Capital Movement and International Trade– Port Folio Investment and International trade, FDI and International Trade, Merits & Demerits of Long Term Capital Movement in International Trade, Factors Affecting International Capital Movement, The Transfer Problem, Optimum Currency Area, Global Financial Crises.

Unit – IV International Monetary System, International Liquidity, IMF, World Bank, The World Bank Group, ADB, Foreign Capital in India.

Unit – V International Organisations- G-20, G-15, BIMSTEC, OPEC, NAFTA, OECD, Working and Regulations of MNCs in India.

Reference:-

1. Bhagwati, J. (Ed). (1981): International Trade, Selected Readings, Cambridge, University press, Massachusetts.
2. Carbough, R. J. (1999), International Economics, International Thompson Publishing, New York.
3. Chacholiades, M. (1990), International Trade: Theory and Policy, McGraw Hill, Kogakusha, Japan.
4. Dana, M.S. (2000), International Economics: Study Guide and Work Book, (5th Edition), Routledge Publishers, London.
5. Dunn, R. M. And J. H. Mutti (2000), International Economics, Routledge, London.
6. Kenen, P. B. (1994), The International Economy, Cambridge University Press, London.
7. Kindleberger, C. P. (1973), International Economics and International Economic Policy A Reader, McGraw Hill International, Singapore.
8. Krugman, P. R. and M. Obstfeld (1994), International Economics: Theory and Policy, Glenview, Foresman.

SEMESTER- IV
PUBLIC ECONOMICS
Paper – III

Unit – I Role of Public Finance in Economic Development, Major Fiscal Function, Concept of Social Goods. Fiscal Federalism in India, Principles of Fiscal Federalism, Vertical and Horizontal Imbalances.

Unit – II Federal Finance – Principle of Federal Finance in India, Centre – State Financial Relation,Resource Transfer From Centre to States, Godgil's Formula. Fourteen Finance Commission.

Unit – III Indian Tax System: - Salient Features, Merits, Demerits, Measures for improvement of Indian Tax system Government measures for improvement: - Taxation enquiry Commission (1953-54), Wanchoo committee, Jha Committee, Kelkar Committee Report , Chelliah Committee Recommendations for reforming the taxation system.

Unit – IV Analysis of Centre & Chhattisgarh Govt , Budget. Taxable and Non Taxable Income of Chhattisgarh. Performance of the Chhattisgarh government budget.

Unit – V Financial Responsibilities and Budget Management Act. Structure and Growth of Public Expenditure in Chhattisgarh , Revenue Expenditure and Capital Expenditure. Plan & Non Plan Expenditure in Chhattisgarh.

Text Books

1. Lekhi, R.K.,(2014), Public Finance, Kalyani Publication, Ludhiana New Delhi.
2. S.K., Sing, (2013) Principal of Public Finance Sahitya Bhavan Publication, Agra.
3. Pant, K.C., (2012) Public Finance
4. Sinha, V.C., (2013) Public Finance and Economic, Sahitya Bhavan Publication.

Reference Books

1. Government of India (1992), reports of the Tax Reforms Committee – Interim and Final (Chairman : Raja J. Chelliah).
2. Chelliah, Raja J. et. Al (1981)., trends and issues in India's Federal Finance, NIPFP. New Delhi.
3. Peacock, A and G.K. Shaw (1976), The Economic Theory of Fiscal Policy, George Allen and Unwin, London.
4. Sahni, B.S. (Ed.) (1972), Public Expenditure Analysis : Selected Readings, Rotherdam University Press.
5. Jha, R. (1998), Modern Public Economics, Routledge, London.
6. Musgrave, R.A. and P.B. Musgrave (1976), Public Finance in Theory and Practice, McGraw Hill, Kogakusha, Tokyao.
7. Cornes, R. and T. Sandler (1986). The Theory of Externalities, Public Goods and Club Goods, Cambridge University Press. Cambridge.
8. Economic Servey Centre and State (2014-15)
9. 14th Finance commission Report- 2015
10. Central Govt. and Stat Govt. Budget- 2015

SEMESTER- IV
ECONOMICS OF SOCIAL SECTOR
Paper – IV

Unit – I Pollution- classification of pollution, Air, Water and Land Pollution, Cause & Effects of pollutant. Problem of solid waste management, Pollution control strategies, Equi Marginal law of pollution, Global environmental issues- Climate change, Global warming, Green House Effect, Ozone depletion.

Unit – 2 Development and Environment: Relation between development & environmental stress, The Environmental Kuznets Curve, The concept of Sustainable Development, Indicators of sustainability, Measuring sustainable development, Green Economy.

Unit – 3 Economics of Resources- Classification of resources, Renewable & Non-renewable resources, Optimum use of resources. Land resources, Forest resources, Social forestry, Peoples participation in the management of Common & forest land. Energy- Sources of energy, energy efficiency & environment, Alternative sources of energy.

Unit – 4 Economics of Education- Expenditure on education, Productive expenditure on education, Productivity of education, the return of education, Human capital, Human capital Vs Physical capital, Educational reforms and Right to Education Act.

Unit – 5 Health Economics- Determinants of health care, Malnutrition. The concept of Human life, Inequalities in health- class & gender, Perspective HDI, GDI, GEM and HPI.

Reference

1. Baurnol, W.J. and W.E. Oates (1988): The Theory of Environmental Policy, (2nd Edition), Cambridge University Press, Cambridge.
2. Berman, P. (Ed.) (1995): Health Sector reform in Developing Countries: Making health development sustainable, Boston: Harvard Series on Population and International health.
3. Blaug, M. (1972) : Introduction to Economics of Education J Penguin, London.
4. Bromely, D.W. (Ed.) (1995) : Handbook of Environmental Economics, Blackwell, London.
5. Cohn, E. and T. Gaske (1989) : Economics of Education, Pergamon Press, London.
6. Fisher, A.C. (1981): resource and Environmental Economics, Cambridge University Press, Cambridge.
7. Hanley, N.J.F. Shogern and B. White (1997): Environmental Economics in Theory and Practice, Macmillan.
8. Hussen, A.M. (1999) : Principles of Environmental Economics, Routledge. London.
9. Jeroen, C.J.M. van den Bergh (1999): Handbook of Environmental and Resource Economics, Edward Elgar Publishing Ltd. U.K.
10. Thomas and Callan (2009): Environmental Economics.

M.A. ECONOMICS

ANNUAL SYSTEM

2016-17

ECONOMICS
M.A. PREVIOUS AND M.A. FINAL EXAMINATION - 2016-17

At post-graduate level candidates required to-study ten compulsory papers during two years period. There shall be five compulsory papers in M A previous and five compulsory papers in M A final examinations. So, there shall be ten compulsory papers in the post-graduate examination. Each paper shall carry 100 marks. Candidate shall have to secure 36 percent marks in aggregate of all papers in order to pass the M A previous and M A final examination.

M.A. Previous

Paper I Micro Economics
Paper II Macro Economics
Paper III Quantitative Methods
Paper IV Indian Economic Policy
Paper V Demography

M.A. Final

Paper I Economics of Growth and Development
Paper II International Trade and Finance
Paper III Public Economics
Paper IV Economics of Social Sector and Environment
Paper V Agricultural Economics

M.A. (Previous) Economics
PAPER - I
MICRO ECONOMICS

UNIT-1 Introduction, Basic Concepts and Demand Analysis:

Basic Economic Problem- Choice and Security, Deductive and Inductive Methods of Analysis, Positive and Normative Economics, Economic Models, Characteristics of Equilibrium and Disequilibrium Systems.

Elasticity (price, Cross, Income) of demand- theoretical aspects and empirical estimation, elasticity of supply ; theories of demand-utility, Indifference Curve, Income and substitution effects, Slutsky theorem, compensated demand curve and their application, revealed preference theory, revision of demand theory of Hicks ; characteristics of goods approach consumer's surplus, elementary theory of price determination - demand and supply equilibrium.

UNIT-2 Theory of Production and Costs;

Production Function - Short period and long period, law-of variable proportions and returns to scale, isoquants - least cost combination of inputs, returns to factor,

Economics of scale, elasticity of substitution, Euler's theorem, technical progress and production function cob-Douglas, CES, production functions and their properties. Marginal analysis as an approach to price and output determination, supply curve; Monopoly-short run and long run equilibrium price determination, Welfare aspects monopoly control and regulation.

UNIT-3 Monopolistic competition, General and Chamberlin approaches to equilibrium, (equilibrium of the firm and the group with product differentiation and selling Costs, excess Capacity under monopolistic and imperfect Competition, Criticism of monopolistic competition.

Oligopoly-Non-Collusive (Cournot, Bertrand, Edseworth, Chamberlin; Kinked demand curve) and Collusive (Carter and merger, price leadership and basic point price system) models.

UNIT-4 Critical evaluation of marginal analysis, Baumol's sales revenues maximization model, willamsan's model of managerial discretion, morris model of managerial enterprises. Full cost pricing rule, Bains limit pricing theory and its recent developments, including styles, labinis model, and behavioral model of the firm.

NEO-CLASSICAL APPROACH OF DISTRIBUTION WELFARE ECONOMICS AND GENERAL EQUILIBRIUM Marginal Productivity theory, Product Exhaustion theorem, Elasticity of Technical Substitution, technical progress and factor shares, theory of distribution in imperfect product and factor markets, Determinants of rent, wages, interest and profit.

UNIT-5 Pigovian welfare economics, Pareto optimum conditions value-judgment, social welfare function; compensation principle, inability to obtain .optimum welfare- imperfections, market failures decreasing costs uncertainty and non-existent and incomplete markets.

Partial and General equilibrium, Walrasian Excess Demand and input- output approaches to general equilibrium, existence, stability and uniqueness of equilibrium and general equilibrium.

BASIC READING LIST

1. Kraps, David M. (1990) a course in micro economics theory princation university press, Princeton.
2. Kout sayiannis; A (1979) modern Microeconomics (2nd Edition), macmillan press, London.
3. Layard,PRG andWattersPW(1978), Micro economic theory, McGraw Hill, New York.
4. San A (1999) Micro economics theory and Applications, Oxford University Press, New Delhi;.
5. Stigler, G. (1996) theory of Price (4th adition), Prentise Hall of India, New Delhi.
6. Varian, H (2000) Micro economics Analysis, W.W. Norten, New York.
7. Baumol W.J., (1982) Economic theory and operations Analysis, perntice Hall of India, New Delhi.
8. Handersan, J.M. and R.E. Quandy (1980) Micro economics theory - A Mathematical approach, Mc Graw Hill New Delhi.
9. Hirshleifer, J. And A Glazer (1997), Price theory and Application, Prentise Hall of India, New Delhi.
10. Health fields and wibs (1'987) An introduction to cost and production function, Macmillan, London.

PAPER- II
MACRO ECONOMICS

UNIT-1 National Income and accounts - Concepts of National Income and National Product. Problems of Measurement,' Circular Flow of Income in two, three and four sector economy; different forms of national income accounting, Social accounting, input-output accounting and flow of funds and balance of payment accounting. Consumption Function - .Keynes psychological law of consumption - implications of the law; short run and long-run consumption function, Empirical evidence on consumptions function; Income-consumption

relationship Absolute income, Relative income, Life cycle and Permanent income hypotheses.

UNIT-2 Investment Function - Marginal efficiency of capital and investment - long run and short run; The accelerator and investment behavior, Saving and Investment equality, Multiplier; concept of Multiplier; Super Multiplier.

Supply of Money - money supply determination, demand determined money supply process, RBI approach to money supply; High powered money and money multiplier; budget deficits and money supply, money supply and open economy; control of money supply.

UNIT-3 Demand for money - Classical approach to demand for money - quantity theory approach, Fisher's equation, Cambridge quantity theory, Keynes's liquidity preference approach, transaction, precautionary and speculative demand for money - aggregate demand for money; Post - Keynesian approaches to demand for money - Patinkin and the real Balance Effect, Approaches of Baumol and Tobin; Friedman and the modern quantity theory; Crisis in Keynisian economics and the revival of monetarism. New-classical and Keynesian, views on interest: The IS-LM model; Derivation of IS curve; Derivation of LM curve; General equilibrium of Product and money market.

UNIT-4 Theory of Inflation - Classical, Keynesian and Monetarist approaches to inflation;

Structuralism theory of inflation; Philips curve analysis - Short run and long run, Philips curve; The Natural rate of unemployment hypothesis; Tobin's modified Philips curve; Adaptive expectations and rational expectation; Policies to control inflation. Business Cycles - Theories of Schumpeter, Kaldor, Samuelson and Hicks, Control of, business cycles.

UNIT-5 Monetary and fiscal policies - Types of Monetary Policy; Instruments of monetary Policy; Relative effectiveness of monetary and fiscal policies. Macro Economic Policies Development - Role of Monetary and fiscal Policies in India, New classical Macro economics.

BASIC READING LIST

1.Markley, G. (1978), Macroeconomics; Theory and Policy; Macmillan, New York.
2.Blackhouse, R. and A. Salansi (Eds.) (20()), Macroeconomics and the Real World (2vols) Exford University Press, London.
3.Branson, W.A. (1989), Macroeconomics Theory and Policy, (3rd Edition), Harper and Raw, New York.
4. Aornbusch, R. and .F. Stanley (1997), Macroeconomics, McGraw Hill, Inc., New York.
5.Hall, R.E. and J.B. Taylor (1986), Macroeconomics, W.W. Norton, New York.
6.Heijdra, B.J. and V.P. Frederick (2001), Foundations of Modern Macroeconomics, Oxford University' Press, New Delhi.
7.Jha, R. (1991), Contemporary Macroeconomic Theory and Policy, Wiley Eastern Ltd. New Delhi.
8.Romer. DL. (1996), Advanced Macroeconomics, McGraw Hill Company Ltd., New York.
9. Scarte, B.L. (1977), Cycles, Growth and Inflation; McGraw Hill, New York.
10.Shapiro, E. (1996), Macroeconomic Analysis', Galgotia. Publications, New Delhi.
11.Surrey, MJC (Ed) (1976), Macroeconomics Themes, Oxford University Press, Oxford

PAPER - III
QUANTITATIVE METHODS

UNIT-1 Concept and types of production functions-Cobb-Douglas production function; linear programming- Basic concept; formulation of a linear programming problem its structure and variables; nature of feasible, basic and optimal solution; solution of linear programming through graphical method; concept of game; strategies - simple and mixed; value of game ; saddle point solution; simple applications, limitations of the game theory.

UNIT-2 Skewness : Symmetrical and asymmetrical distribution; measurement of skewness - Karl Pearson's of coefficient Skewness, Bowley's coefficient of skewness; meaning, assumptions and limitations of simple correlation; measurement of correlation coefficient.. Karl Pearson's coefficient of correlation and spearman's rank correlation; probable error and standard error in correlation; regression analysis, regression lines regression equations,

regression coefficient, correlation and regression, partial correlation and multiple correlation; multiple regression analysis (up to three variables) standard error of the estimates.

UNIT-3 Interpolation and extrapolation, methods of fitting a parabolic curve dirnct binomial expansion method. Newton's advancing difference method and Lagrange's method; Association of attributes, meaning and types of association, consistency of data, in association. Theory of probability, various types of events, addition and multiplication theorems, conditional probability and concept of inter dependence.

UNIT-4 Index Number - Type of index number, Fisher's ideal index number, Reversibility test, Cost of living index, Time series data Analysis - Components of time series. Short period and long period trend line; moving average method.

UNIT-5 Census and sample methods of statistical inquiry: Deliberate and random sampling, simple, random, stratified random and P.P.S. sampling. Concept of an *estimator* and its sampling distribution. desirable properties of an estimator; formulation of statistical hypotheses - null and alternative; goodness of fit. Confidence intervals and levels of significance, hypothesis testing based on z, t, x2 (Chi-square) and F tests, Type-1 and Type-2 errors.

BASIC READING LIST

1. Allen, R.G.D. (1974): Mathematical Analysis for Economics, Mcmillan Press and ELBS, London.
2. Chiang, A.C. (1986): Fundamental methods of Mathematical Economics, Mc Graw Hill, New York.
3.Gupta S.C. (1993): Fundamental of Applied Statistics S. Chand & Sons, New Delhi.

PAPER - IV
INDIAN ECONOMIC POLICY

UNIT-1 Economic Development and its determinants approaches to economic development and its measurement-sustainable development, role of state, market and other institutions, indicators of development-PQLI-Human Development Index (HDI), Gender development indices.

Planning in India- Objectives and strategy of planning, failures and achievements of plans - developing grass-root organizations for development, Panchayats, NGOs and pressure groups.

UNIT-2 Demographic Features, Poverty and inequality, broad demographic features of Indian population, rural-urban migration, urbanization and civic amenities, poverty and Inequality. Resource Base and' Infrastructure Energy - Social infrastructure, education and health.

UNIT-3 The Agriculture-Sector-Institutional Structure, land reforms in India, technological change in agriculture, pricing of agricultural inputs and outputs. Terms of trade between agriculture and industry, agricultural finance policy. The Industrial Sector, Industrial Policy, public sector enterprises and their performance, problem of sick units in India. Privatization. and disinvestment debate, growth and pattern of industrialization, small-scale sector, productivity in industrial sector.

UNIT-4 Public Finance - Fiscal Federalism, Centre-state financial relations, finances of central government, finances of state government, parallel economics, problems relating to fiscal sector reforms in India, Money, Banking and prices - Analysis of price behavior in India, Financial sector reforms, Interest rate policy, Review of monetary policy of RBI.

UNIT-5 External sector - structure and direction of foreign trade, Balance of payments, Issues in Export-import policy and FEMA, Exchange rate policy, Foreign capital and MNCs in India; The progress of trade reforms in Indian. Economic Reforms - Rational of internal and external reforms: Globalization of Indian economy, W.T.O. and its impact on the different sectors of the economy.

BASIC READING LIST

1. Ahulwalia, I.J. and I.M.D. Litle (Eds.) (1999): India's Economic Reforms and Development (Essays honor of Mariohar Singh), Oxford University Press, New Delhi.
2. Bardhan, P.K. (9th Edition) (.1999): The Political Economy of Development India, Oxford University Press, and New Delhi.
3. Bawa, A.S. and Raikhy (Ed.) (1997): Structural change in Indian Economy, Guru Nanak Dev University Press, Amritsar.
4. Brahmananda, P.A. and V.A. Panchmukhi (9th Eds.) (2001): Development Experience in Indian Economy: Inter-state Perspectives, Bookwell, Delhi.
5. Chakravarty, S. (1987): Development Planning: The Indian Experience, Oxford University Press, New Delhi.
6. Dantwala, M.L. (1996): Dilemmans of Growth: The Indian Experience, Sage Publication, New, Delhi.

PAPER - V
DEMOGRAPHY

UNIT-1 Meaning, Scope and importance of demography sources of demographic data, Tools of demographic analysis, measurement of population growth and population pyramid; Theories .of population - Malthus theory, Socio-cultural and economic theories of population, Biological theories of population, Theory of optimum population, Theory of demographic transition.

UNIT-2 Fertility - meaning and definition of fertility, Measurement of fertility - child woman ratio, crude birth rate, corrected birth rate, General fertility rate, Age specific fertility rate, Total fertility rate, Gross reproduction rate, and Net reproduction rate, calculation of fertility rates, determinants of fertility, Trends fertility in India.

UNIT-3 Mortality and morbidity - Importance of mortality data causes of death, meaning of morbidity, Differentials in mortality and morbidity, measurement of mortality crude death rate, Age-specific death rate, Infant mortality rate, Standardized death rate and maternal mortality rate, calculation of mortality rates, Trends in mortality in India, life table.

UNIT-4 Migration and urbanization, Population projection, growth of population in India, population and economic development, population explosion in India, Demographic characteristics of developing countries. Population Policy of India.

UNIT-5 Women empowerment - Economic status, Women in decision making, Women and labour market; Women work participation: Concept and analysis of women's work, structure or wages across regions and economic sector's, Determinants of wage Differentials, Gender and education.

BASIC READING LIST

1.Agrawal S.N. (1972), India's Population Problem, Tata McGraw-Hill Co. Bombay.
2.Bose, S. (1996), India's Basic Demographic Statistics, B.A. Publishing Corporation, New Delhi.
3. Bogue, D.J. (1971), Principles of Demography, Hon Wiley, New York

4.Handry, A.T. (1999): Operations Research, Prentice Hall of India, New Delhi.
5. Speigal, M.R. (1992): Theory and problems of statistics, Mc Graw Hill Book Co., London.
6. Taha, H.A. (1997): Operations Research: An Introduction (6th editian), Prentice Hall of India Pvt. Ltd.; New Delhi.
7. Yamans, Tare (1975): Mathematics for Economics, Prentics Hall af India, New Delhi.
8. Mathur, P.N. & R. Bhardwaj (Eds.) 1967: Economic Analysis in input-autput Research, Input Output, Research Association of India, Pune.
9.Kathari, C.R. (1992): An introductian to. Operations Research Vikas Publishing House, New Delhi.
10.Hadley, G.(1962): Linear Programming, Addisan Wesley Publishing Co. Massachusetts.
11. Chou a (1975): Statistical Analysis Halt, Rainhart and Winstan, New Yark.

M.A. (Final) Economics
PAPER - I
ECONOMICS OF GROWTH AND DEVELOPMENT

UNIT-1 Economic Growth: Economic growth and development, Factors affecting economic growth, Capital, labor and technology. Measuring economic development, development gap. Common characteristics of developing economics. Obstacles to economic development: Human development index and other indices of development, Quality of life index, Food security. Human Resource Development.

UNIT-2 Theories of development- Ricardo, Karl marx, Schumpeter and Harrod-Domar model, Neoclassical model- solow, Meade. Mrs John Robinson and kaldor model. Technology progress and economic growth - Hick, Hayek learning by doing, Production function approach to economic development.

UNIT-3 Approaches to development - Vicious circle of poverty, circular causation unlimited supply of labour, big push theory, theory of critical minimum effort, Balanced and unbalanced growth, Low income equilibrium trap, Ranis-fie model.

UNIT-4 Problems of Development- Measuring poverty and income inequalities in developing countries. Nature and causes of poverty and income inequality. Capital formation, Capital output ratio, Human Capital formation in developing countries. Role of State in economic development.

UNIT-5 Allocation of resources - Need for investment criterion in developing countries. Marginal rate of resource criteria, the rate of turn over criterion, the time series criterion, and cost benefit Analysis, Project evaluating and UNIDO guide lines. Shadow prices, Input-output Analysis.

BASIC READING LIST

1. Adelman, I (1961), Theories of Economic Growth and Development Stanford University press, Stanford.
2. Jhingan,M.L.(2008)31ST edition,The economics of development and planning,vrinda publication pvt.Ltd.
3. Shinghai G.C. & Mishra J.P.(2013) Macroeconomic Analysis,Sahitya bhawan publication Agra.
4. Mishra, J.P.(2012)Economics of Growth and development Sahitya bhawan publication Agra.
5. Hajela P.D. (1998), Labour Restructuring in India : A Critique of the New Economic Policies, Commonwealth Publishers, New Delhi.
6. Jhabvala, R. and R.K. Subrahmanya (Eds.) (2000). The Unorganised Sector : Work Security and Social Protection. Sage Publication, New Delhi.
7 .Lester, R.A. (1964). Economics of Labour. (2nd Edition), Macmilan, New York.
8. Mc Connell, C.R. and S.L. Brue (1986). Contemporary Labour Economics, Mc Graw-Hill New York.
10. Papola, T.S.P.P. Ghosh and A.N. Sharma (Eds.) 1993, Labour, Employment and industrial Relations in India, B.R. Publishing Corporation New Delhi.

PAPER - II
INTERNATIONAL TRADE AND FINANCE

UNIT-1 Theory of International Trade: The pure theory of international trade- Theories of absolute advantage, Opportunity cost, Modern theory of international trade, Theorem of factor price equalization, Heckscher-Ohlin theory of trade, Kravis and Linder theory of trade, Factor intensity reversals; Stapler-Samuelson and Rybczynski theorems, Empirical testing of comparative costs and H.O. theories, Economic growth and international trade.

UNIT-2 Measurement of gains-Measurement of gains from trade and their distribution, concepts of terms of trade- their uses and limitations, Determination of terms of trade, its empirical relevance and policy implications for less-developed countries, Welfare implications. The theory of intervention (Tariffs, quotas and non-tariff barriers), Economic effects of tariffs and quotas on national income,. output, employment, terms of trade, income distribution, Balance of payments on trading partners both in partial and general equilibrium analysis, The political economy of non-tariff barriers and their implications,

Nominal effective and optimum test of tariffs their measurement, impact and welfare implications.

UNIT-3 Balance of payments - Meaning and components of balance of payments, Equilibrium and disequilibrium in the balance of payments, The process of adjustment under systems of gold standard, Fixed exchange rates and flexible' exchange rates, Expenditure-reducing and expenditure-switching policies and direct controls of adjustment, Policies for achieving internal and external equilibrium simultaneously under alternative exchange rate regimes, foreign trade multiplier. Determination of national income and output, Relative merits and Demerits of fixed and flexible exchange rates.

UNIT-4 The theoy of regional blocks-Forms of economic co-operation, Reforms for the emergence of trading blocs at the global level, static and dynamic effects of a customs union and free trade area, Rationale an economic progress of SAARC / SAPTA and ASEAN regions, Problems and prospects of forming a customs union in the Asian region, Regionalism (EU, NAFTA), Multilateralism and WTO, Rise and fall of gold standard and Breton-woods system, Need, adequacy and determinants of international reserves, Conditionality clause of IMF, Emerging international monetary system Reforms of the International Monetary System, India and developing countries.

UNIT-5 Theory of short-term capital movements and East-Asian crisis and lessons for developing countries; international trade and financial instructions- functions of GATT/WTO (TRIPS. TRIMS), UNCTAD, IMF, World Bank and Asian Development Bank- Their achievements and failure WTO and World Bank from the point of view of India. Trade policies in India- Trade Problems and trade policies in India during the last five decades, Recent change in the direction and composition of trade and their implications, Rational and impact of trade reforms since 1991 on balance of payments, problems of India's international debt, working and regulations of MNCs in India. Export policies.

BASIC READING LIST

1. Bhagwati, J. (Ed). (1981) : International Trade, Selected Readings, Cambridge, University Press, Massachusetts.
2. Carbough, R.J. (1999), International Economics, International Thompson Publishing; New York.
3.Chacholiades, M. (1990), International Trade: Theory and Policy, McGraw Hill, Kogakusha, Japan.
4. Dana, M.S. (2000), International Economics: Study, Guide and Work Book, (5th Edition), Routledge Publishers, London.
5.Dunn, R.M. and J.H. Mutti (2000), International. Economics, Routledge, London.
6.Kenen, P.B. (1994), the International Economy. Cambridge University Press, London.
7.Kindleberger. C.P. (1973), International Economics and International Economic Policy: A Reader, McGraw Hill International, and Singapore.
8.Krugman, P.R and M. Obstfeld (1994), International Economics: Theory and Policy, Glenview, Foresman.

PAPER - III
PUBLIC ECONOMICS

UNIT-1 Role of Government in organized society, Government in a mixed economy, Public and Private goods, principles of maximum social advantages, Taxation- different forms, principles of taxation, shifting, effects and incidence of taxation, Indian taxes- personal income tax, excise duty, central excise and custom duties, taxes on land and agriculture, taxable capacity.

UNIT-2 Public Expenditure - Different forms of expenditure, economic effect of public expenditure on production and distribution, public expenditure and economic growth in developing countries, Wagner's law of increasing state activities, Wiseman Peacock hypothesis, pure theory of public- expenditure, structure and growth of public expenditure in India.

UNIT-3 Public Debt- different sources of public debt, Redemption of public debt, economic effects of public debt, Burden of public debt. Classical view of public debt, principles of debt management and repayment of public debt, growth of public debt in India.

UNIT-4 Fiscal policy - Objectives of fiscal policy in under-developed countries, economic stability and fiscal policy,' fiscal policy and full employment, balanced budget multiplier, functional finance.

UNIT-5 Finance Commission - Twelfth Finance Commission Report - only, Analysis of Central and State Government Budgets, Financial Administration, Budget and budgetary procedure in India, Gadgil formula, federal finance, principles of federal finance in India.

BASIC READING LIST

1. Atkinsan, A.B: and J.E. Siglitz (1980), Lectures an Public Economics, Tata McGraw Hili, New Yark.
2. Auerbach, A.J. and M. Feldstern (Eds.), Handbook of Public Ecanamics, Vol. 1, North Holland, Amsterdam.
3. Lekhi, R.K.,(2014), Public Finance, Kalyani Publication Ludhiana New Delhi
4. S.K., Sing, (2013) Principal of Public Finance Sahitya Bhavan Publication, Agra.
5. Pant, K.C., (2012) Public Finance
6. Sinha, V.C.,(2013) Public Finance and Economic, Sahitya Bhavan Publication.

PAPER - IV
ECONOMICS OF SOCIAL, SECTOR AND ENVIRONMENT

UNIT-1 Welfare Economics - Definition of Welfare Economics, Criterion of Social welfare, Benthem's Criterion, Cordiality Criterion. The Pareto optimality Criterion, Kaldor Hicks Compensation Criterion, The Bergson Criterion. The problem of second best. Social welfare function, Maximization of Social Welfare. Welfare Maximization in Perfect Competition.

UNIT-2 Environmental Economics - Definition of Environmental economics, Public Goods, Private goods. Market Failure and Public goods. Theory of Externalities-Economics and Diseconomies. External Costs, Marginal social cost, Marginal private cost. Pigouian Taxes and Subsidies Environmental Values use value, Option value, and non use value. International Carbon Tax. Environment and W.T.O. Macro-economic policy and Environment

UNIT-3 Pollution - Classification of Pollution, Control of Pollution, Air Pollution Control, Water, Pollution Control, Pollution Control Strategies, Cost-benefit analysis of pollution; Environmental Laws. Protection of Environment. Environment and Development, Sustainable Development. Population Growth and Environment.

UNIT-4 Resources - Classification of resources, Renewable resources, Non renewable resources, Optimal use of resources, Land resources, Forest resources, Social forestry, people's participation in the management of common and forest lands Energy Efficiency and environment. Energy Taxation-subsidies for Biomass, Automobile Fuels.

UNIT-5 Education - Economics of Education, The Return of education, Expenditure on education, The productivity of education. Human capital, Human capital vs Physical capital, Demand production Benifit of education, Educational Planning. Education, and Labour Market. Poverty Unemployment and Education. Health Economics Determinants of health, dimension of health care, Malnutrition. The concept of human life. Inequalities in health-Care and Gender Perspectives.

BASIC READING LIST

1.Baumol, W.J. and W.E. Oates (1988): The Theory of Environmental Policy, (2nd Edition), Cambridge University Press, Cambridge.
2.Berman, P. (Ed.)(1995) : Health Sector Reform in Developing Countries : Making health development sustainable, Boston: Harvard Series on Population and International Health.
3.Blaug, M. (1972): Introduction to Economics of Education J Penguin, London. (15)

4.Bromely, D.W. (Ed.) (1995): Handbook of Environmental Economics, Blackwell, and London.
5.Cohn, E. and T. Gaske (1989) : Economics of Education, Pergamum Press, London.
6.Fisher, A.C. (1981): Resource and Environmental Economics, Cambridge University Press, Cambridge.
7.Hanley, N.J.F. Shoge'rn and B. White (1997): Environmental Economics in theory and-Practice, Macmillan.
8.Hussen, A.M. (1999): Principles of Environmental Economics, Routledge, London.
9.Jeroen, C.J.M. van den Bergh (1999)': Handbook' of -Environmental and resource Economics, Edward Elgar Publishing .Ltd: U.K:
10. Madhu Raj - Environmental Economics.

PAPER - V
AGRICULTURE ECONOMICS

UNIT-I Nature and scope of Agricultural economics- Traditional and Modern agriculture, role of agriculture in economic development. Problems in rural industrialization, development of Agro-based industries, interdependence between agriculture and industry. Green revolution. Agricultural production, Production function analysis, cost concept in agricultural product, farm budgeting, Resource use and efficiency in Agricultural sector.

UNIT-II Land use, Principles of land utilization, land distribution, Land values and rent, Land reform measures and performance, Land tenures and farming systems, problems of marginal and small farmers. Rural Labour supply, Mobility of labour and labour market in agriculture sector. Nature of employment in rural sector Agriculture wages in India. Male-Female wage difference in agriculture.

UNIT-III Rural Finance - Role of rur.al capital and rural credit, Rural capital and capital formation, Characteristics and source of rural credit, Institutional and non institutional rural credit, Rural Banks, Commercial Banks,. Regional Rural Banks and Rural credit Co-operatives Societies. Agricultural prices-Agricultural markets, Behavior of agricultural prices, agricultural. Markets and agricultural marketable surplus. Taxation, crop insurance, state policy and Agricultural price policy.

UNIT-IV Agricultural Growth in India - Recent trends, inter-regional variation in growth of agricultural product, cropping pattern, factors affecting productivity, pricing of inputs, role of subsidies, role of technology and input of irrigation in Agricultural sector. Problems and prospects of Globalization and W.T.O. in India Agricultural commodities.

UNIT-V Infrastructure - Infrastructure and economic development, the structure of Transportation costs, Demand for transportation, Cost function in the transport Sector, Telephone utilities, role of postal services, Demand for Energy, Energy conservation, Renewable and Non-conventional Sources of Energy.

BASIC READING LIST

1. Bhahacharjee, J.P. - Studies. in Indian Agricultural Economics.
2. Rao, V.K.R.V.- New Challenge before Indian Agriculture.
3. Mellor, J.W. - The Economics of Agricultural Development.
4.Bhadure, A. (1984), The Economic Structure of Backward Agriculture, Macmillan, Delhi.
5.Bilgrami, S.A.R. (1996), Agricultural Economics, Himalaya Publishing House, Delhi.
6.Dantewada, M.L. Et.al,(1991),Indian Agricultural Development Since independence, Oxford & BH, New Delhi.
7.Government of India (1976), Report of the National Commission of Agriculture, New Delhi.
8.Government of India, Economic Survey (Annual), New Delhi.
10.Joshi, P.C. (1975), Land Reforms in India: Trends and. Prospects. Alled Publishers, Bombay.
12.Rao, C.H.I.Hanumanth (1975), Agricultural Growth, Rural Poverty. and Environmental Degradation in India, Oxford University Press, New Delhi.
14.Rudra,A. (1982), Indian Agricultural Economics, Myths and Relaity, Alled Publishers,New, Delhi.

M.A./M. Sc. GEOGRAPHY
SEMESTER I (2016-17)

M. A. /M. Sc. Geography Semester I shall consist the following papers:

S. No.	Paper	Title	M. M.		
			Written	Inte. Asse.	Total
1.	I	Geomorphology	80	20	100
2.	II	Climatology	80	20	100
3.	III	Geographical Thought	80	20	100
4.	IV	Geography of India	80	20	100
5.	V	Practical-I : Advanced Cartography	---	---	100

1. The M. A. /M. Sc. Semester I examination in Geography shall consist of 500 marks.

There shall be four theory papers each of 100 marks and one practical of 100 marks as follows:

Paper I	Geomorphology
Paper II	Climatology
Paper III	Geographical Thought
Paper IV	Geography of India
Paper V	Practical-l: Advanced Cartography

2. The theory papers shall be of three hours duration.

3. Candidates will be required to pass separately in theory and practical examinations.

4. (a) In the practical examination the following shall be the allotment of time and marks.

(i)	Practical record	20%
(ii)	Lab work (up to three hours)	70%
(iii)	Viva on i. ii.	10%

(b) The external and internal examiners shall jointly submit marks.

(c) All the candidates shall present at the time of the practical examination their practical record regularly signed by the teachers concerned.

PAPER –I (2016-17)

GEOMORPHOLOGY

UNIT – I Nature and scope of Geomorphology; Fundamental concepts; Interior of the earth; Earth movement: epeirogenic and orogenic movements With reference to the evolution of the Himalaya: Forces of Crustal instability, Isostasy, Geosyncline, Plate tectonic, Mountain building, Earthquake and Vulcanicity.

UNIT – II Exogenic processes: concept of gradation; Agents and processes of gradations: weathering, wasting and erosion, aggradations; Climatic Geomorphology and morphogenetic regions; slope evolution, Arid and Semi-Arid and Karst topography.

UNIT – III Concept of Geomorphic cycle and its controversy; Dynamic of glacial and pergiglacial processes and resulting landforms, Complications of fluvial geomorphic cycle and resulting landforms.

UNIT – IV Geological structure and landform: development of landscape and drainage on uniclinal, folded and domal structures and Erosion surfaces, Applied Geomorphology.

SUGGESTED READINGS:

1. Ahnned, E.: Coastal Geomorphology of India.
2. Chorley, R.. J.: Spatial Analysis in Geomorphology, Methuen, London, 1972.
3. Cooke R.IJ. and Doornkamp, J.C. : Geomorphology in Environmental Management. An Introduction, Clarendon press, Oxford, 1974.
4. Dury, G.H.: The Face of the Earth, Penguin Hormondsworth 1959.
5. Fairbridge, R.W. Encyclopedia of Geomorphology, Reinholdts, New York, 1968.
6. Goudie, A.: The Nature of the Environment Oxford & Blackwell, London, 1993.
7. Garner, H.F. : The Origin of landscape- A Synthesis of Geomorphology, Oxford University Press. London, 1974.
8. Holms, A.: Principles of Physical Geology, Thomas Nelson, London.
9. Mitchell, C.W.: '1'erra.ii'i Evaluation. Longman, London, 1973.
10. Oilier, C.D. : Weathering, Longman, London, 1979.
11. Pitty, A.F.: Introduction to Geomorphology, Methuen, London, 1971.
12. Stoddart, D.R. (ed.) : Process and Form in Geomorphology, Roullcdge, New York, 1996.
13. Skinner, B.J. & Porter, S.C.: The Dynamic Earth John Wilely. New York, 1995.
14. Sparks, B.W. Geomorphology, Longman, London, 1960.
15. Sharma, H.S. (cd.): Perspective in Geomorphology, Concept, New Delhi, 1980.
16. Singh, S : Geomorphology, Prayag Publication, Allahabad, 1998.
17. Steers, J.A. : The Unstable Earth Methuen, London.
18. Thornbury, W.I.). Principles of Geomorphology, John Wiloy, New York, 1960.
19. Strahler, A.N.: Physical Geography, Willey, New York.
20. कौशिक, एस.डी. : भू–आकृति विज्ञान
21. नेगी, बी.एस. : भू–आकृति विज्ञान
22. दयाल परमेश्वर : भू–आकृति विज्ञान
23. यादव तथा रामसुरेश : भू–आकृति विज्ञान, ग्रनीय, कानपुर
24. सिंह, सविन्द्र के. भू–आकृति विज्ञान, शारदा पुस्तक भवन, इलाहाबाद

PAPER - II (2016-17)

CLIMATOLOGY

UNIT – I Nature and scope of climatology and its relationship with meteorology; composition of atmosphere; Insolation, heat balance of the earth, stability and instability, green house effect, vertical and horizontal distribution of temperature.

UNIT – II Jet stream; General circulation in the atmosphere; Acid rain; concept of air masses and Front. EL Nino and La Nina. Monsoon winds and cyclones.

UNIT – III The application of general principles of elementary physical and synoptic meteorology to the study and classification of climate. Climatic classification of Koppen and Thornthwaite. Major climate of the world-tropical, temperate, desert and mountain climate.

UNIT – IV Climatic changes during geological and historical times, evidences, possible causes, global warming, Applied climatology.

SUGGESTED READINGS:

1. Barry, R.G. and Chorley P..1.; Atmosphere, Weather and Climate, Roulledge, London and New York, 1998.
2. Critchfiedid, J.H. : General Climatology, Prentico Hall, India, New Delhi, 1993.
3. Das, P.K. : Monsoons 'National Book Trust, New Delhi, 1987.
4. Fein, J.S. and Slephens, P.N. : Monsons. Wiley Interscience, 1987.
5. India Met. Deptt : Climatologically Tables of Observatories in India, Govt. of India 1968.
6. Lal, D.S. : Climatology, Chaitanaya Publications, Allahabad, 1986.
7. Lydolph, P.H. : The Climate of the Earth, Rowiman, 1985.
8. Menon, P.A. : Our Weather, N.B.T.., New Delhi, 1989.
9. Pelerson, S. : Introduction to Meteorology, Me G-r-aw Hill Book, London, 1969.
10. Robinson, P.J. and Henderson S. : Contemporary Climatology, Henlow, 1999.
11. Thompson, R.D. and Perry, A (ed.) : Applied Climatology, Principles and Practice. Raoutledge, London. 1997.
12. तिवारी अनिल कुमार : जलवायु विज्ञान, राजस्थान हिन्दी ग्रंथ अकादमी

PAPER – III (2016-17)

GEOGRAPHICAL THOUGHT

UNIT – I The Field of geography, its place in the classification of science, geography as a social science, and natural science. Definition, scope and functions of geography; Geography as science of relationship, as science of areal differentiation, as spatial science, Spatial Organisation, Geography and environmentalism : forms of man-nature relationship and current view; Dualism in geography; Regional Concept.

UNIT – II The growth of geographical knowledge from earliest times up to the 15th century. Contributions of Greek and Roman thinkers. Arab Geographers and their contributions. Geographical information in Ancient Indian literature. The dark age in Geography. The Great Age of Maritime Discovery and Exploration.

Contributions of various schools of thought in modern Geography:

(i) German School (ii) French School

(in) British School (iv) American and Russian Schools.

UNIT – III Scientific explanations: routes to scientific explanation (inductive/deductive); Type of explanation: cognitive description, cause and effect, temporal, functional/ecological, systems; Laws, theories and models in geography; Quantitative revolution and philosophy of positivism.

UNIT – IV Responses to positivism, behaviourlism and humanistic, relevance movement and radical geography; Changing paradigms; Status of Indian Geography; Future of Geography.

SUGGESTED READINGS:

1. Abler, Ronald; Adams, John S. Gold, Peler : Spatial Organization : The Geographer's view of the world. Prentice Hall, N.J. 1971.
2. Ali S.M. : The Geography of Puranas, Peoples Publishing House, Delhi, .1968.
3. Amedeo, Douglas : An Introduction to Scientific Reasonign in Geography, John Wiley, U.S.A. 1971.
4. Dikshit, R.D. (ed.): The Art & Science of Geography Rand Me Nally & Co., 1959.
5. Hartshorne, R.: Perspectives on Nature of Geography Rand Me Nally & Co., 1959.
6. Husain, M. : Evolution of Geographic Thought, Rawat Pub., Jaipur, 1984.
7. Johnston, R.J.: Philosophy and Human Geography, Edward Arnold, London, 1983.
8. Johnston, R.J.: The Future of Geography, Methuen, London, 1988.
9. Minshull, R.: The Changing Nature of Geography, Hutchinson University Library, London, 1970.
10. Ali, S. M.- Arab Geography.
11. Taylor, G.: Geography in the 20th Century.
12. Dikshit, R.D.: Geographical Thought : A Contexual History of Ideas, Prentice Hall of India, New Delhi.
13. Harvey D. : Explanation in Geography.

14. सिंह उजागर : भौगोलिक चिन्तन का विकास
15. त्रिपाठी एवं बिरले : भौगोलिक चिंतन का विकास एवं विधितंत्र
16. कौशिक , एस.डी. : भौगोलिक विचारधाराओं का इतिहास एवं विधितंत्र
17. सिंह , जगदीश : भौगोलिक चिंतन का मूलाधार.

PAPER – IV (2016-17)

GEOGRAPHY OF INDIA

UNIT – I Physical and Biological elements in the Geography of India: Geological structure, relief, climate Drainage, vegetation and soils.

UNIT – II Agriculture: Major characteristics and problems, Impact of infrastructural and institutional factors on agriculture. Important crops-wheat, rice, cotton, sugarcane, oil-seeds, tea and coffee, Agricultural regions. Green revolution, Agro-climatic regions.

UNIT – III Sources of power: Coal; Petroleum, Natural gas. Hydroelectricity and Atomic energy. Mineral resources with special reference to iron ore, manganese and bauxite. Industrial development with special reference to iron and steel, cement, cotton, jute, sugar and paper industries; Industrial regions.

UNIT – IV Regional division of India: Purpose and Methodology. Major schemes of regions of India: O.H.K. Spate and R.L. Singh. Physical and cultural geography of Chhattisgarh State.

SUGGESTED READINGS:

1. Centre for Science & Environment (1988) State of India's Environment, New Delhi.
2. Desphande C.D. India. : a Regional Interpretation ICSSR & Northern Book Centre 1992.
3. Dreza, Jean & AMartya. Sen (ed.) India Economic Development and Social opportunity Oxford University Person, New Delhi. 1996.
4. Kundu A. Raza Moonis : lndian Economy : the Regional Dimension Speclaum Publishers, New Delhi, 1992.
5. Robinson, Francs : The Cambridge Encyclopedia of India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan & Maldives Cambridge University Press, London, 1989.
6. Singh R.L. (ed.) : India - A Regional Geography National Geographical Society, India Varanasi, 1971.
7. Spale OHK & ATA Learnont-India & Pakistan Methuen, London. 1967.
8. Tirtha R. & Gopal Krishna, Emerging India Reprinted by Rawat Publications, Jaipur 1996.
9. Sharma T.C. and O. Coutinho : Economic and Commercial Geography of India.
10. अग्रवाल पी.सी. भारत का भौतिक भूगोल, एशिया प्रकाशन कं.,रायपुर 2003
11. बंसल सुरेशचंन्द, भारत का भूगोल, मिनाक्षी प्रकाशन, मेरठ.
12. वर्मा रामविलास, भारत : एक भौगोलिक विवेचन, भवदीय प्रकाशन श्रृंगारघाट–अयोध्या, फैजाबाद, पिन –224123, 2007.

PAPER – V (2016-17)

PRACTICAL I - ADVANCED CARTOGRAPHY

Graphs and Diagrams: Triangular graph. Logarithmic and semi logarithmic graphs, scatter graphs; climatograph. Proportional circles, spheres and cubes.

Thematic Maps: Choropleth maps, isolines, Flow maps, isochrones and class intervals. Morphometric Analysis: Profiles, Slope Analysis; Altimetric, and Clinographic curves; Block Diagrams.

SUGGESTED READING:

1. Monk house F.J. & H.R. Wilkinson: Maps and Diagrams, Methuen, London.
2. मॉक हाउस तथा विल्किन्सन (अनु.प्रो.प्रेमचन्द अग्रवाल) : मानचित्र तथा आरेख, म.प्र. हिंदी ग्रंथ अकादमी.
3. हीरालाल : प्रायोगिक भूगोल.

M.A./M. Sc. GEOGRAPHY (2016-17)

SEMESTER – II

M. A. /M. Sc. Geography Semester II shall consist the following papers:

S. No.	Paper	Title	M. M.		
			Written	Inte. Asse.	Total
1.	VI	Economic and Natural Resource Management	80	20	100
2.	VII	Oceanography	80	20	100
3.	VIII	Regional Development and Planning	80	20	100
4.	IX	Social Geography	80	20	100
5.	X	Practical-II : Map Projections, Map Interpretation and Surveying	---	---	100

1. The M. A./M. Sc. Semester II examination in Geography shall consist of 500 marks.

There shall be four theory papers each of 100 marks and one practical of 100 marks as follows:

Paper VI Economic and Natural Resource Management.

Paper VII Oceanography

Paper VIII Regional Development and Planning

Paper IX Social Geography

Paper X Practical-II : Map Projections, Interpretation and Surveying.

2. The theory papers shall be of three hours duration.

3. Candidates will be required to pass separately in theory and practical examinations.

4. (a) In the practical examination the following shall be the allotment of time and marks.

(i) Practical record 20%

(ii) Lab work (up to three hours) 40%

(iii) Field work (up to three hours) 30%

(iv) Viva on i, ii & iii above 10%

(b) The external and internal examiners shall jointly submit marks.

(c) Candidates shall be examined in survey individually. They will however be allowed to take the help of a labourer each at their own expense.

(d) All the candidates shall present at the time of the practical examination their

Practical record regularly signed by the teachers concerned.

PAPER- VI (2016-17)

ECONOMIC AND NATURAL RESOURCE MANAGEMENT

UNIT – I Nature and scope of economic Geography; fundamental concepts in economic geography; classification of economies, sectors of economy (primary, secondary, tertiary). Meaning, nature and classification of resources, Resource appraisal : human want and social objective, technological status and resources. Appraisal of quality and quantity of human resources, relation between population and resource, natural resources and economic development, resource adequacy and scarcity, limits to growth. Resource use, concept of absolute and relative abundance of resources, optimum, under use, misuse and over use of resources.

UNIT – II World pattern of major natural resources: land and soils, biotic resources, water resources mineral and energy resources, oceanic resources.

UNIT – III Classification of Industries, Theories of industrial location; case studies of selected industries; Iron and Steel; Aluminium, Chemical, Textile. Means of transport, International trade, trade blocks, globalization and Indian economy.

UNIT – IV Conservation and management of resources; evolution of the concept, principles, philosophy and approaches to conservation, resource conservation and management methods. Policy making and resource management; sustainable development of resources.

SUGGESTED READING:

Ahemd, Jaleel - Natural Resources in Low Income Contries.

Bennet, II.II. - Elements of Soil Conservation.

Ciriacy, Wantrup,S.V.& Persons (eds.) - Natural resources: Quality & Quantity

Betall,R.C. & R.O.Buehanan - Industrial Activity and Economic Geography.

Edvard and Rosers - Agricultural Resources.

Freeman, T.W. - Geography and Planning.

Fryer, D.M. - World Economic Development.

Isard, Walter - Method of Regional Analysis.

Mehta, M.M. - Human Resource Development Planning.

Owen, O.S. - Natural Resource Conservation.

Peach, W.N.& James, A. - Zimmerman's World Resources Contenting and Conservation.

Parkin's,E.A. & J.R. Whitakr - Our Natural Resource and their conservation.

Renner, G.T. - Conservation of National Recourses.

Stamp, L.D. - Land of Britain Its use and Misue.

Smith, G.H.(ed.) - Conservation. of Natural Recourses.

Symoos, L. - Agriculture Geography.

Thomas W.L.(et.al.reds.) - Man's Role in Changing the face of the Earth.

Wales, H.& H.O. Lathrop - The Conservation of Natural Recourses.

Wheeler, T.O. et al - Economic Geography, John Wiler New York 1995.

PAPER – VII (2016-17)

OCEANOGRAPHY

UNIT – I Nature and scope of Oceanography; Distribution of land and water; Major features of ocean basins; Marine sediments. Physical and chemical properties of sea water.

UNIT – II Interlink between atmospheric circulation and circulation pattern in the oceans, surface currents, themohaline, waves and tides.

UNIT – III Marine biological environment : Bio geochemical cycle in the ocean. biozones, types of organisms; plankton, nekton and benthos, food and mineral resources of the sea. Major marine environments; coastal : esturary, deltas, barrier island, rocky coasts : Open : reefs, continental shelf, continental slope and deep : Pelagic environment and floor of the ocean basins.

UNIT – IV Impact of Humans on the marine environment. Law of the sea; exclusive economic zone; marine deposits and formation of coral-reefs.

SUGGESTED READINGS:

1. Davis Rechard J.A. : "Oceanography-An Introduction to the Marine Environment". Wm. C. Brown Iowa, 1986.
2. Duxbury, C.A. and Duxbury B. : An Introduction to the world's Oceans-C. Brown. Iowa 2nd ed., 1986.
3. Garrison, T. : "Oceanography - An Introduction to Marine Science" Books/Cole, Pacific Grove, USA, 2001.
4. Gross, M. Grant : Oceanography, a View of the earth, prantice-Hall inc, New Delhi, 1987.
5. King C.A.M. Oceanography for Geographers 1962.
6. Sharma, R. C. "The Oceans" Rajesh N. Delhi, 1985.
7. Urnmerkutty, A.N.P. Science of the Eceans and Human life, NBT, New Delhi, 1985.
8. Ornmany, F.D. : The Ocean.
9. Sharma, R. C. & M. Vital : Oceanography : A Brief Introduction kislaya Pub. New Delhi.
10. Siddartha, K.. : Oceanography : A Brief Introduction, Kislya Pub. New Delhi.
11. नेगी, बी.एस. : जलवायु तथा समुद्र विज्ञान.

PAPER – VIII (2016-17)

REGIONAL DEVELOPMENT AND PLANNING

UNIT – I Regional Planning: Definition, Scope, evolution and Objectives. Region and Regionalism, Planning Regions: Concept and Delineation. Type of Regions. Central Place Theory, Concept of core and periphery Friedmann's Model of Spatial Organisation and Economic Growth.

UNIT – II Regional Development Theories: Development Theories of Myrdal and Hirschman, Economic and Export Base model, Frank's Theory of Under development.

UNIT – III Approaches and Strategies of Regional Development: Growth Pole Theory Agropolitan Development, Community Development, River Basin Planning, Metropolitan Planning (with reference to India)

UNIT – IV Regional Planning in India. Regional Imbalances and Inequalities, Indicators of Regional Development; Regional Policies in Five Year Plans, Centre State Relations and Multilevel Planning, Planning for special problem Regions: Hill area, Tribal areas, Drought prone areas, Command areas and River basins. Regional development and planning in India.

SUGGESTED READING:

1. Daysch, C.H.J. & others: Studies in Regional Planning.
2. Deckinsonm R.E. : City Region and Regionalism.
3. Freeman, E.W. : Geography arid Planning.
4. Golksin A. : Regional Planning and Development.
5. Keeble, L. : Principle and Practice of Town and Country Planning.
6. Stamp L.D. : The Land of Britain : Its use and Misure.
7. Sdasyuk. Gatina and Dengupta, P. : Economic Regionalization of India problems and Approaches.
8. Desai, P.B. & others : Regional Perspective of Industrial and Urban Growth the case of Kanpur, Bombay, 1969.
9. Prakash, Rao V.L. & S.P. : Regional Planning.
10. Censuts of India : Economic and Socio Cultural Dimensions of regionalization (An Indo-USSR Collaborative Study)
11. Friedmann J. & Alonsow : Regional Development and Planning, M.I.T. Press.
12. Misra R.P. (ed.) : Regional Planning : Concept; Techniques, Policies and cade studies Mysore 1969.
13. Misra, R.P. & others : Regional Development and Planning in India.
14. Timbergen : Essays on World Regional Planning.
15. Lord, W. : Methods of Regional Analysis, M.I.T., I960.
16. Zimmerinan, E.W. : World Resources and Industries.
17. Burton & Kates : Reading in Resource Management Conservation.
18. Burton & Kates : Regional Planning in India.
19. Ahamed, Enayet : Regional Planning with particular Reference to India. Vol. I and li New Delhi.
20. Bhatt L.S. and others: Micro level planning - A Case Study of Karnal Area, Hyryana (K.B. Publishing, New Delhi)
21. Bhatt LS : Regional Planning in India, Statistical Publishing Society, Calcutta, 1973.
22. Gosal GS, and G. Krishanan : Regional Disparities in levels of Socio-economic Development in Punjab, Vishal Publications Kurukshetra, 1984.
23. Chandna, R.C. : Regional Planning : A comprehensive 'Text-Kajyani Publishers.

24. Ray Choudhari, Jayasri : An Introduction to Development and Regional Planning Orient Longman.
25. Sundaram, KV (ed) Geography and Plann8ing, Essaya in houour of VLS Prakasa Rao, Concept Publishing Co., New Delhi, 1985.
26. Raza, Meomis (ed) Regional Development, Hefitage Publishiers, Delhi, 1988.
27. Mishra R.P. et al : Multilevel Planning, Heritage Phulishers Delhi,1980
28. श्रीवास्तव व्ही.के. एवं अन्य : प्रादेशिक नियोजन एवं संतुलित विकास.
29. ओझा, रघुनाथ : प्रादेशिक नियोजन का भूगोल.
30. शर्मा, राजीवलोचन : प्रादेशिक एवं नगरीय नियोजन.
31. चन्द्राकर, इन्द्रमण : व्यावहारिक भूगोल, वसुन्धरा प्रकाशन, गोरखपुर, 1998.

PAPER – IX (2016-17)

SOCIAL GEOGRAPHY

UNIT – I Definition, meaning and scope of Social geography and it's Nature and relationship with other Social sciences. Development of Social Geography, Approaches to the study of Social Geography.

UNIT – II Concept of Society – Social Environment, Geographic bases of Social Formation. Social Geography of India - Social Stratification, Caste and Class. Social organization and groups, Social transformation and change in India, Religion and linguistic group of India. Evolution of Socio-Cultural Regions of India.

UNIT – III Social well- being– meaning and indicators of Social well- being. Quality of life, Pattern and bases of rural and urban society. Deprivation and discrimination issues relating to women and under privileged groups. Cultural Realms and Cultural Region of the World.

UNIT – IV Social development planning – meaning and importance. Public policy and Social planning in India : Review of Five year Plans strategies to improve Social well being in tribal, hill, drought and flood prone Areas.

SUGGESTED READINGS:

1 Ahmad Aijazuddin, Social Geography, Rawat Publication, New Delhi, 1999.
2 De Blij. H.D. Human Geography. John Wiley and son, New York.
3 Dreze Jean, Amariya Sen,Economic Development and Social opportunity. Oxford University Press. New Delhi. 1996
4 Dubey. S.C : lndian Society. National Book Trust, New Delhi, 1991.
5. Gregory. D . and J. Larry (Eds.) Social. relations and spatial structures. MCMillan. 1985.
6. Haq. Mahbubul : Reflections on Human Development. Oxford University Press, New Delh6.
7. Jones, Emrys, Reading in Social Geography, Oxford University Press, Ely House, London, 1977.
8. Jones, Emrys and John Eyles, An Introduction to Social Geography, Oxford University Press, London,1977.
9. Maioney. Clarence: People of South Asia, Winston, New York, 1974.
10. Planning Commission, Government of India: Report on Development of Tribal areas, 1981.
11. Rao, M.S.A.. Urban Sociology in India, Orient Iongman, 1970.
12. Schwartzberg Joseph : An Historical Atlas of South Asia, University of Chicago Press, (Chicago, 1978.
13. Sen, Amartya & Dreze Jean. Indian Development : Selected Regional Perspectives. Oxford University Pres-s, 1996
14. Smith, David: Geography : A welfare Approach, Edward Arnold, London, 1977.
15. Sopher, David. An Expoloration of Inda, Cornell University Press, 1980.

16. Subba. Rao. Personality of India : Pre and Proto Historic foundation of India and Pakistan, M.S. University Baroda. Vadodai'a, 1958
17. मौर्य,एस.डी., सामाजिक भूगोल शारदा पुस्तक भवन,11,युनिवर्सिटी रोड, इलाहाबाद–2 , 2004.

PAPER – X (2016-17)

PRACTICAL II- MAP PROJECTIONS, INTERPRETATION AND SURVEYING

Map Projections: Mathematical construction of world projections.

Interpretation of Maps: Geological Maps.

Principles and methods of topographical surveying involving the use of Theodolite and Dumpy level. Solution of problems in Surveying.

Topographical Information – International series, South east Asia Series, Indexing, Classification & Interpretation of topographical sheets.

SUGGESTED READINGS:

1. Davis, R. C. & E. S. Forte : Surveying : Theory and Practical.
2. Kanetkar, T.R. & S.V. Kulkarni: Surveying and leveling part I & IJ A.V.G. Prakashan, Poona.
3. Monkhouse F.J. & H.R. Wilkinson: Maps and Diagrams, Methuen, London.
4. मॉक हाउस तथा विलकौन्सन (अनु.प्रो.प्रेमचन्द अग्रवाल) : मानचित्र तथा आरेख, म.प्र. हिंदी ग्रंथ अकादमी.
5. हीरालाल : प्रयोगिक भूगोल.

M.A./M. Sc. GEOGRAPHY
SEMESTER III (2016-17)

M.A./M. Sc. Geography Semester III shall consist the following papers:

S. No.	Paper	Title	M. M.		
			Written	Inte. Asse.	Total
1.	XI	Population Geography	80	20	100
2.	X II	Settlement Geography	80	20	100
3.	XIII (A)	Remote Sensing Techniques	80	20	100
	OR	**OR**			
4.	XIII (B)	Biogeography and Ecosystem	80	20	100
5.	IV	Research Methodology	80	20	100
	V	Practical-III : Remote Sensing and Quantitative Techniques	---	---	100

1. The M.A. /M. Sc. Semester III examination in Geography shall consist of 500 marks.

   There shall be four theory papers each of 100 marks and one practical of 100 marks as' follows:

   Paper XI : Population Geography

   Paper XII : Settlement Geography

   Paper XIII (A) : Remote Sensing Techniques

   OR

   Paper XIII (B) : Biogeography and Ecosystem

   Paper XIV : Research Methodology

   Paper XV : Practical – III: Remote Sensing and Quantitative Techniques

2. The theory papers shall be of three hours duration.

3. Candidates will be required to pass separately in theory and practical examinations.

4. (a) In the practical examination the following shall be the allotment of time and marks.

   (i) Practical record : 20%

   (ii) Lab work (up to Four hours) : 70%

   (iii) Viva on i.& ii. Above : 10%

   (b) The external and internal examiners shall jointly submit marks.

   (c) All the candidates shall present at the time of the practical examination their practical record regularly signed by the teachers concerned.

SEMESTER – III (2016-17)

PAPER - XI

POPULATION GEOGRAPHY

UNIT – I Definition and scope of Population Geography. Relation of Population Geography with other subjects of social sciences. Historical development of Population Geography in western countries and in India. Sources of population data, Census and its history.

UNIT – II Distribution of Population: The concept of population density and its types. Factors affecting population distribution. Distribution & Density of population in the world with special reference to Europe, Asia and India. Growth of population: Measure of decennial and annual rates of population growth, prehistoric and modern trends of population growth in the world. Regional aspect of population growth in India. Population theories. Demographic transition.

UNIT – III Population composition in terms of age and sex, rural, urban residence, educational status and occupational structure. Significance of these elements in population analysis, factors affecting their composition in population, broad world patterns and detailed spatial patterns in India. Fertility and Mortality of population: Significance and factor. Indices and rates. World pattern and pattern in India. Human Development Index and its Components.

UNIT – IV Migration of population: Causes, characteristics and types. Methods of estimating value of internal migration. Important international migrations of the world, internal migration in India: Population and Resources: Population-Resource regions. Population Regions: Concept and methods, population regions of India, population policies of India.

SUGGESTED READINGS:

1. Bilasborruw, Richard Ii and Daniel Hogan, Population and Deforestation in the Humid Eropics, International Union for the Scientific Study of Population, Belgium 1999.
2. Boglia, D.J. Principles in Demography, John Wiley, New York 1969.
3. Bose, Ashish el at. : Population in India's Development (1947-2000); Vikas Publishing House, New Delhi, 1974.
4. Census of India, India : A State Profile, 1991.
5. Chandna, R. C. Geography of Population, Concept, Determinants and Patterns. Kalyani Publishers, New York, 2000.
6. Clarke, John 1. Population Geography, Pergamon Press, Oxford, 1973.
7. Crook, Nigel Principles of Population and Development Pergmaon Press. New York 1997.
8. Daugherty, Helen Gin, Kenneth C.W. Kammeyir, An Introduction to Population (Second Edition), The Guilford Press, New York, London, 1998.
9. Garnicr, B.J. Geography of population Longrrian, London. 1970.

10. Koclihar, Ra)esh, The Veclic People : Their History and Geography Orient I ongman Ltd., New Delhi, 2000.'
11. Mamoria, C.B. India's Population Problem, Kitab Mahal New Delhi, 1981.
12. Mjtra, Ashok India's Population : Aspects of Quality and (control Vol I & 11. Abhiman Publications, New Delhi, 1978.
13. Premi, M.K. India's Population : Heading Towards a Billion, B.R.., Publishing Corporation 1991.
14. Srinivasan, K. and M. Vlassoff, Population Development Nexus in India :Challenges for the New Millennium Lata Me Graw-Hill, New Delhi, 2001.
15. Srinivasan K. Basic Demographic Techniques and Applications Sage, Publications, New Delhi, 1998.
16. Sunda.ra.m K. V. a.nd Sudesh Nangia., (ed.) Population Geography, Henlage Publications, Delhi, 1986.
17. UNDP : Human Development Report, Oxford University Press, Oxford, 2000.
18. United Nations, Methods for Projections of urban and Rural Population No. VIII, New York, 1974.
19. Woods R.. Population Amalysis' in Geography Longman, London, 1979.
20. Zeiinsky Wilbur, A Prologue to Population Geography, Prentic Hall, 1966.
21. बघेल, अनुसुइया : अनुसूचित जातियों एवं अनुसूचित जनजातियों में प्रजननता प्रतिरूप : छत्तीसगढ़ राज्य के रायपुर संभाग के विशेष संदर्भ में', पं. रविशंकर शुक्ल विश्वविद्यालय, रायपुर, 2002.
22. बघेल, अनुसुइया : शिशु मर्त्यता : सिंघई पब्लिशर्स एण्ड डिस्ट्रीब्यूटर, रायपुर, 2004.
23. शर्मा, सरला : औद्योगिक नगरों में जनसंख्या आप्रवास (भिलाई एवं कोरबा नगर के विशेष संदर्भ में), पं. रविशंकर शुक्ल विश्वविद्यालय, रायपुर, 2002.
24. शर्मा, सरला : छत्तीसगढ़ बेसिन में ग्रामीण शिशु मर्त्यता प्रतिरूप.
25. पंडा, बी.पी. : जनसंख्या भूगोल.
26. ओझा, रघुनाथ : जनसंख्या भूगोल.
27. हीरालाल : जनसंख्या भूगोल.
28. चन्दना, आर.सी. : जनसंख्या भूगोल.
29. त्रिपाठी, रामदेव : जनसंख्या भूगोल.

SEMESTER – III (2016-17)

PAPER - XII
SETTLEMENT GEOGRAPHY

UNIT – I Meaning, Objectives and Scope of Settlement Geography; Evolution, Distribution, Types and Patterns of Rural Settlements; Rural House Types; Rural Service Centers.

UNIT – II Evolution and growth of urban settlements; The Geographical setting of Urban Centers: Site, Situation and Location.

UNIT – III Rank- size-relationship; Cities as Central Places, Central Place Theory, Growth Centre Theory.

UNIT – IV City- Country Relationship : Umland, Rural-Urban Fringe.

SUGGESTED READINGS:

1. Abercrombee, Sir P. : Town and Country planning 1961.
2. Alani, Shah Manzoor : Hyderabad Secuiidrabad (Twin Cities) A. study in urban geography)
3. Alam, S.M. & V.V. Tokshishevesky : Urbanization in developing countries.
4. Berry Brain .1. L. : Geographic Prospective on Urban .Systems.
5. Bresse, C. & D.F. Whiteman : An approach to Urban Planning
6. Dickinson, R.E, : City, Religion and Regionalism.
7. Gallion and Fisher : The Urban Pattern.
8. Grifitth, , J.P : A study of Urban constructions in India.
9. Gibbs : Urban Research Methods.
10. Mayor, H.M. & (.,'.1". Kohn : Readings in Urban Geography.
11. Morgan, F.W. : Ports and Harbours.
12 Mumford L. : Culture of cities.
13. Robson, W.A. : Great cities of world.
14. Robson, B.T. : Urban Growth : An approach, Methuen, London.
15. Carter, Harold : Study of Urban Geography, London, Edward Arnold, 1979.
16. Singh R.I.,. & K.N. Singh : Readings in Rural Settlement Geography, NGSI Varanasi, 1975.
17. सिंह, उजागिर : नगरीय भूगोल ।

SEMESTER – III (2016-17)

PAPER – XIII (A)
REMOTE SENSING TECHNIQUES

UNIT – I Historical development of remote sensing as a technology - Relevance of remote sensing in Geography - Concepts and basics: Energy source, energy and radiation principles, energy interactions in the atmosphere and earth surface features, remote sensing systems: platform sensors and radiation records. Microwave sensing interpretation of SLAR imageries, thermal imageries.

UNIT – II Remote Sensing Satellite: platforms LANDSAT, SPOT, NOAA, RADARSAT, IRS, INSAT: principles and geometry of scanners and CCD arrays, orbital characteristics and data products - MSS, TM, LISS I & II, SPOTPLA & MLA, SLAR.

UNIT – III Image Processing: Types of imagery, techniques of visual interpretation, ground verification transfer of interpreted thematic information to base maps-digital processing: rectification and restoration, image enhancement - contrast manipulation, Classification: Supervised and Unsupervised, post-classification analysis and accuracy assessment.

UNIT – IV Applications : Air photo and image interpretations arid mapping land use and land cover, land evaluation, urban land use, landform and its processes, weather studies and studies of water resources : integration of Remote Sensing and GIS. Remote sensing and hazard management, remote sensing and environmental management.

SUGGESTED READINGS:

1. American Society of Photogrammetry: Manual of Remote Sensing. ASP, Falls Church V.A., 1983.
2. Barrett E.C. and L.F. Curtis : Fundamentals of Remote Sensing and Air Photo Interpretation on, Memillan, New York, 1992.

3. Compbell J.: Introduction to Remote Sension, Guilford, New York, 1989.
4. Curran, Paul J.: Principles of Remote Sensing. Longman, London, 1985.
5. Hord R.M. : Digital Image Processing of Remotely Sensed Date, Academic, New York, 1983.
6. Luder D„ Aerial Photography Interpretation: Principles and Application, CcGraw Hill, New York, 1959.
7. Pratt W.K. Digital Image Processing. Wiley, New York, 1978.
8. Rao D. P. (eds.): Remote Sensing for Earth Resources, Association of Exploration Geophysicist, Hederabad, 1998.
9. Thomas M. Lollesand and Ralph W. Kefer, Remote Sensing and Image Interpretation, Wiley & sons, New York, 1994.
10. Aronoff S. Geographic Information Systems : A. Management Perspective, Publication Offiawa, 1989.
11. Burrough P.A. Principles of Geographic Information Systems for Land Reson Assessment Oxford University Press, New York, 1986.
12. Fraser Taylor D.R. Geographic information Systems. Pergamor Press, Oxford 1990.
13. Maquire D.J.M.F. Goodchild and D.W. Rhind (eds.). Geographic information System 'Principles arid Application. Taylor & Francis, Washingron, 1991.
14. Mark S. Monmonier. Computer - assisted Cartography, Prentice-Hall, Englewood Cliff, Jersey, 1982.
15. Peuquet D. .1. and D.F.- Marble, Introductory Reading in Geographic. Information System Taylor & Francis, Washington, 1990.
16. Star J. and J. Estes, Geographic Information Systems : An Introduction, Prentice Englewood Cliff, New Jersey, 1994.
17. चौनियाल, देवी दत्त : सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली.

PAPER – XIII (B) (2016-17)

BIOGEOGRAPHY AND ECOSYSTEM

UNIT – I Definition and scope of Biogeography Environment, Habitat and Plant-animal association, Biome Types.

UNIT – II Elements of plant geography, distribution of forests and major communities. Plant successions in newly formed land forms. Zoogeography and its Environmental Relationship. Pale botanical and Palaeo climatological records of environmental change.

UNIT – III Ecosystems: concept and components, Ecosystem-form and function: tropic level, ecological pyramids, ecological niche, energy and nutrients in the ecosystem, hydrological cycle, food chains and food webs. Major terrestrial ecosystems of the world : agriculture, forests, grassland and desert. Population growth and environment.

UNIT – IV Biodiversity and its Conservation. Preservation and conservation of the ecosystem through resource management, Environment legislation. The Stockholm conference, the Earth summit, Environmental laws in India (the Wild Life Act, Water Act, Forest Act, Environment Protection Act and National Environment Tribunal Act).

SUGGESTED READINGS -

1. Agrawal D.P. : Man and Environment in India through Ages, Book & Books, 1992.
2. Bradshaw, M.J. : Earth and Living Planet, ELBS. London, 1979.
3. Cox, C.D. and Moore, P.D. : Biogeography : An Ecological and Evolutionary Approach 5th edn. Blackwell, 1993.

4. Gaur, R. : Environment and Ecology of Early Man in Northern India R. B. Publication Corporation 1987.
5. Hoyt, J.B. Man and the Earth, Prentice Hall, U.S.A. 1992.
6. Huggett. R.J. : Fundamentals of Biogeography, Routledge, U.S. A. 1998.
7. Illes, J. : Introduction to Zoogeography, Mcmillan, London, 1974.
8. Khoshoo, T. N. and Sharma. M. (eds) : Indian Geosphere-Biosphere Har-Anand Publiction, Delhi 1991
9. Lapedes, D.N.(ed) : Encyclopedia of Environmental Science, McGraw Hill, 1974.
10. Mathur H.S. : Essentials of Biogeography, Anuj Printers, Jaipur, 1998.
11. Pears, N. : Basic Biogeography, 2nd edn. Longman, London, 1985.
12. Simmons, I.G. Biogeography, Natural and Cultural, Longman, London, 1974.
13. Tivy J. : Biogeography: A Study of Plants in Ecosphere 3rd edn. Oliver and Boyd, U.S. A., 1992.
14. Ackerman, E.A. : Geography as a Fundamental Research Discipline, University of Chicago Research Papers, 1958
15. Agarwal, A. and Narain, S. : The Citizens Fith Report. Centre for Science and Environmental, New Delhi, 1999.
16. Bertalanffy, L. : General Systems Theory, George Bragiller, New York, 1958.
17. Bodkin, E. : Environmental studies, Charles E Merril Pub. Co., Columbus, Ohio, 1982.
18. Chandana, R.C. : Environmental Awareness, Kalyani Publishers, New Delhi, 1958.
19. Chorley, R.J. : Geomorphology and General Systems Theory, U.S.G.S. Professional Paper, 500B, 1962.
20. Eyre, S.R. and Jones, G.R.J. (eds) Geography as Human Ecology, Edwares Arnold, London, 1966.
21. Kormondy, E.J. : Concepts of Ecology, Prentice Hall, 1989.
22. Manners, I.R. and Mikesell, M.W. (eds.) Prespectives on Environment, Commission on College Geography, Publ. No. 13 Washington, D.C., 1974.
23. Nobel and Wright : Environmental Science, Prentice Hall, New York, 1996.
24. Odum, E.P.: Fundamentals of Ecology, W.B. Saunders, Philadelphia, 1971.
25. Russwurm, L.H. and Sommerville, E. (eds.) : Man's Natural Environment-A Systems Approach, Duxbury, Massachuselts, 1985.
26. Sharma, H.S. : Ranthambhore Sanctuary – Dilemma of Eco-development, Concept, New Delhi, 2000.
27. Simmons, I.G. : Ecology of Natural Resources, Edward Arnold, London, 1981.
28. Singh S. : Environmental Geography, Prayag Publications, Allahabad, 1991.
29. Smith, R.L. : Man and his Environment : An Ecosystem Approach, Harper & Row, London, 1992.
30. U.N.E.P. : Global Environmental Outlook, U.N. Pub. , New ork, 1998.
31. World Resources Institute : World Resoources, (Latest Report) Washington.
32. कुलश्रेष्ठ, कामता प्रसाद : जैव भूगोल

SEMESTER – III (2016-17)

PAPER - XIV
RESEARCH METHODOLOGY

UNIT – I Research Methodology-An Overview; Procedure of scientific Research, Defining Research Problem; Formulating Hypothesis; Research Design.

UNIT – II Methods of Data Collection: Observation, Questionnaire, Schedule and Interview; Sampling: Sampling Methods, Size of Sample;

UNIT – III Processing and Analysis of Data: Processing- Editing, Coding, Classification and Tabulation, Analysis – Measurement of Central Tendency, Dispersion, Correlation.

UNIT – IV Preparation of Research Reports: Steps, Layout and Types of Reports

SUGGESTED READING:

1. Selltiz, C.M. Jahoda, M. Deutsch and others.	Research Methods in Social Relations, Holt, . New York, 1961.
2. Goode, W and P.K, Hatt	Methods in Social Research, Mc Graw Hill, .Tokyo, 1962.
3. Harvey, David	. Explanation in Geography, Edward Arnold, London, 1971
4. Chorley, R.J. and P. Hagg & tt (ed)	Models in Geography, Methuen, London, 1967.
5. Minshull, R.	Introduction to Models in Geography. Longman London, 1975.
6. Sheskin, I.M.	Survey Research for Geographers Scientific Publisher, Jodhpur, 1987.
7. Kothari, C. R.	Research Methodo!ogy : Methods and Techniques, Wishwa Prakashan, 1994.
8. Misra H.N. and V.P. Singh	Research Methodology in Geography: Social, Spatial and Policy Dimensions, Rawat Publications New Delhi, 1998.
9. Har Prasad	Research Methods and Techniques in Geography, Rawat Publications, New Delhi. 1992.

SEMESTER – III (2016-17)

PAPER - XV

PRACTICAL -III

Remote Sensing, Interpretation of Topographical Sheets and Quantitative Techniques

1. **Principles of Photogrammetery: -** Air Photo- Stereo test, Orientation of stereo model under mirror stereoscope, Preparation of photo/line index and determination of photo scale, Use of parallax bar and determination of heights, Identification of features on aerial photo graph, Tracing of details from stereo pair, Interpretation of physical and cultural details, Preparation of Land use map pre field interpretation, Field visit for ground truthing.
2. **Remote Sensing:–** Study of satellite Image – Annotation Identification of features on FCC imageries, Tracing of details from satellite imageries, Basic Principles of Image interpretation, Interpretation of Physical and Cultural details and preparation of land use and land cover map using IRS Images. Pre field visit.
3. **Land use Processing System:-** Familiarization and startup procedure, Visualization of satellite image data, importing data, Creating a subset image, Identification of object on video display, Display of Histogram and image information, Image rectification and

registration, Image to image registration, Image Enhancement techniques, Filtering techniques, Band Rationing, Principal component Analysis, Image classification.

Statistical Techniques:

Product moment and Rank Correlation Coefficients, Linear Regression. Hypothesis Testing: Chi-Square test, t-test & F test, Sampling Techniques, Point, Line and Area Sampling.

SUGGESTED READINGS:

1. American Society of Photogrammetry : Manual of Remote Sensing. ASP, Falls Church V.A. 1983.
2. Barren E.C. and I...F. Clirtis : Fundamentals of Remote Sensing and Air Photo Interpretation 'on, Memillan, New York, 1992.
3. Conipbell .1. : Introduction to Remote Sension, Glinford, "New York, 1989.
4. Clirran, Paul J. : Principles of Remote Sensing. Longman, London, 1985.
5. Hord R.M. : Digital Image Processing of Remotely Sensed Date, Academic, New York,1983
6. Luder D., Aerial Photograpliy Interpretation : Principles and Application, Cc Graw Hill, New York, 1959.
7. Pratt W.K. Digital Image Processing. Wiley, New York, 1978.
8. Rao D. P.. (eds.) : Remote Sensing for Earth Resources, Association of Exploration Geophysicisi, Hederabad, 1998.
9. Thomas M. Lollesand and Ralph W. Keler, Remote Sensing and Image Interpretation, Wiley & sons. New York, 1994.
10. Aronoff S. Geographic Information Systems: A Management Perspective, Publication Offawa, 1989.
11. Burroligh P..A. Principles of Geographic Information Systems for Land Reson Assessment Oxford University Press, New York, 1986.
12. Fraser Taylor D.R. Geographic information Systems. Pergamor Press, Oxford 1990.
13. Maquire D.J.M.F. Goodchiln and D.W. Rhind (eds.). Geographic information System Principles and Application. Taylor& Francis, Washingron, 1991.
14. Mark S. Monrnonicr. Computer-assisted Cartography, Prentice Hall, Englewood Cliff, Jersey, 1982.
15. Peuquer D.J. and D.F. Marble, Introductory Reading in Geographic Information System Taylor & Francis, Washington, 1990.
16. Star J. and J. Estes, Geographic Information Systems; An Introduction, Prentice Eaglewood Cliff, New Jersey. 1994.

M.A./M. Sc. GEOGRAPHY
SEMESTER IV (2016-17)

M.A./M.Sc. Geography Semester IV shall consist the following papers:

S. No.	Paper	Title	M. M.		
			Written	Int. Ass.	Total
1.	XVI	Urban Geography	80	20	100
2.	X VII	Agricultural Geography	80	20	100
3.	XVIII (A)	Geographical Information System	80	20	100
	OR	**OR**			
4.	XVIII (B)	Environmental Geography	80	20	100
	XIX	Field Work (Physical and Socio-Economic)	---	---	100
5.	XX	Practical-IV:Geographical Information System and Quantitative Techniques	---	---	100

1. The M.A./M.Sc. Semester IV examination in Geography shall consist of 500 marks.

   There shall be three theory papers and one Field Work report each of 100 marks and one practical of 100 marks as follows.

S. No.	Paper		Title
1.	XVI	:	Urban Geography
2.	XVII	:	Agricultural Geography
.3.	XVIII (A)	:	Geographical Information System
			OR
	XVIII (B)	:	Environmental Geography
4.	XIX	:	Field Work (Physical and Socio-Economic)
5.	XX	:	Practical-IV: Geographical Information system and Quantitative Techniques

2. The theory papers shall be of three hours duration.
3. Candidates will be required to pass separately in theory and practical examinations.
4. Candidates will be required to submit their Field Report in three copies in hard bound at least one hundred pages for Valuation.
5. (a) In the practical examination the following shall be the allotment of time and marks.
   - (i) Practical record 20%
   - (ii) Lab work (up to Four hours) 70%
   - (iii) Viva on i. & ii. above 10%

   (b) The external and internal examiners shall jointly submit marks.

   (c) All the candidates shall present at the time of the practical examination their practical record regularly signed by the teachers concerned.

SEMESTER – IV (2016-17)

PAPER-XVI

URBAN GEOGRAPHY

UNIT – I Definition, Objective and Scope of urban geography, General Nature of City Structure.

UNIT – II Internal structure: Morphology and Land use. Theories of Urban Structure: The Concentric Zone Theory, the Sector Theory, the Multiple Nuclei Theory. Commercial Structure of Cities; The Central Business District (CBD),

UNIT – III Centrifugal and Centripetal forces in Geography, Economic Base of Towns: Basic, Non-basic concept. Urban Functions: Functional Classification of Towns: Webb, Harris, and Nelson.

UNIT – IV Contemporary Urban Issues: Urban renewal, Urban sprawl, Slums, Environmental Pollution, Urban Planning; Landuse Planning, Urban and Metropolitan Planning in India.

SUGGESTED READINGS:

1. Abercrombee, Sir P. : Town and Country planning 1961.
2. Alam, Shah Manzoor : Hyderabad Securdrabad (Twin Cities) A. study in urban geography)
3. Alam, S.M. & V.V.Tokshishevesky : Urbanization in developing countries.
4. Berry Brain .1. L. : Geographic Prospectives on Urban .Systems.
5. Bresse, C. & D.F. Whiteman : An approach to Urban Planning
6. Dickinson, R.E, : City, Religion and Regionalism.
7. Gallion and Fisher : The Urban Pattern.
8. Grifitth, , J.P : A study of Urban constructions in India.
9. Gibbs : Urban Research Methods.
10. Hall P. : Urban and Regional Planning, Rout ledge, London, 1992.
11. Kundu, A. : Urban Development and Urban Research in India, Khanna Publication, 1992.
12. Mayor, H.M. & Kohn : Readings in Urban Geography.
13. Morgan, F.W. : Ports and Harbours.
14. Mumford L. : Culture of cities.
15. Nangia Sudesh : Delhi Metropolitan Region ; A Study in Settlement Geography, Rajesh Publication, 1976.
16. Robson, W.A. : Great cities of world.
17. Robson, B.T.: Urban Growth : An approach, Methuen, London.
18. Smailes, A E : The Geography of Town, Hutchinson, London, 1953.
19. Tewari, Vinod K, Jay A : Indian Cities : Ecological
20. Weinstein, VLS Prakash Rao (editors) : Perspectives, Concept, 1986.
21. Carter, Harold: Study of Urban Geography, London, Edward Arnold, 1979.
22. Singh R.I.,. & K.N. Singh: Readings in Rural Settlement Geography, NGSI Varanasi, 1975.
23. सिंह, उजागर : नगरीय भूगोल.
24. करन, एम.पी. : नगरीय भूगोल.
25. बंसल सुरेश चन्द्र : नगरीय भूगोल.
26. सिंह, ओमप्रकाश : नगरीय भूगोल.
27. तिवारी आर.सी. : आधिवास भूगोल, प्रयाग पुस्तक भवन, इलाहाबाद, 1997.
28. करण एवं यादव : आधिवास भूगोल.
29. यादव रामसुरेश : अधिवास भूगोल

SEMESTER – IV (2016-17)

PAPER – XVII

AGRICULTURAL GEOGRAPHY

UNIT – I Nature, scope, significance arid development of agricultural geography. Approaches to the study of agricultural geography: Commodity, systematic and regional systems. Origin and dispersal of agriculture. Sources of agricultural data.

UNIT – II Determinants of agricultural land use - Physical, economic, social, and technological Land holding and land tenure systems, Land reforms, land use Agriculture policy and planning. Selected agricultural concepts and their measurements; cropping pattern, crop concentration, intensity of cropping, degree of commercialization, diversification and specialization, efficiency and productivity, crop combination regions and agricultural development.

UNIT – III Theories of agricultural location based on several multi-dimensioned factors:-Von Thunen's theory of agricultural location and its recent modifications; Whittlesey's classification of agricultural regions; land use and land capability.

UNIT – IV Contemporary Issues: Food, nutrition and hunger, food security, drought and food-security, .food aid Programmes; role of irrigation, fertilizers, insecticides and pesticides, technological know-how. Employment in the agricultural sector: landless labourers, woman, children: occupational and agricultural activities.

SUGGESTED READINGS:

1. Bayliss Smith, IP.: The Ecology of Agricultural Systems. Cambridge University London, 1987.
2. Berry, BJ.L et. al. : The Geography of economic Systems. Prentice Hall, New York, 1976.
3. Brown, L.R. : The Changing World Food Prospects - The Nineties and Beyond, World Watch Institute, Washington D.C., 1990.
4. Dyson, T. : Population and Food - Global Trends and Furure Prospects. Routledgle. London, 1996.
5 Gregor, H.P. : Geography of Agriculture. Prentice Hall, New York, 1970.
6. Grigg, D.B. : The Agricultural Systems of the World. Cambridge University Press, New York 1974.
7. Hartshorn, T.N. and Alexander, J.W. : Economic Geography. Prentice Hall, New Delhi, 1988
8. Mannion, A.M. : Agriculture and Environment Change, John Wiley, London, 1995.
9. Morgan W.B. and Norton , R.J.C. : Agricultural Geography. Mathuen, London, 1971.
10. Morgan, W.B.:Agriculture in the Third World - A Spatial Analysis. Westview Boulder, 1978.
11. Sauer, C.O. : Agricultural Origins and Dispersals,. M.I.T. Press, Mass, U.S.A., 1988.
12. Singh, J. and Dhillon, S.S. : Agricultural Geography. Tata McGraw Hill' Pub.; Delhi, 1988.
13. Tarrant, J.R. : Agricultural Geography. Wiley, New York, 1974.

SEMESTER – IV (2016-17)

PAPER – XVIII (A)
GEOGRAPHICAL INFORMATION SYSTEM

UNIT – I Spatial Science : Geography as a spatial science, maps and spatial information dynamics of spatial information, elements of information technology, Geographic objects and their relations definition and development of GIS, computer environment for GIS.

UNIT – II Spatial Data: Elements of spatial data: data sources: Primary and secondary census and sample data, quality and error variations Raster and vector data structures, data conversion comparison of raster and vector data bases, methods of spatial interpolation – GIS data formats for the computer environment.

UNIT – III GIS Technology: Coordinate system-basic principles of cartography and computer assisted cartography for GIS – remote sensing data as a data source for GIS integration of GIS and remote Sensing-GPS and GIS: technology, data generation and limitations – visualization in GIS-Digital Elevation Models (DEM and TINS).

UNIT – IV GIS Application: GIS as a Decision Support System –expert system for GIS-basic flow chart for GIS application – GIS standard legal system and national GIS policy application of GIS in Land Information System, Urban Management, Environmental Management and Emergency Response System.

SUGGESTED READINGS:

1. American Society of Photogrammetry : Manual of Remote Sensing. ASP, Falls Church V.A., 1983.
2. Barrett E.C. and L.F. Curtis : Fundamentals of Remote Sensing and Air Photo Interpretation on, Memillan, New York, 1992.
3. Compbell J. : Introduction to Remote Sension, Guilford, New York, 1989.
4. Curran, Paul J. : Principles of Remote Sensing. Longman, London, 1985.
5. Hord R.M.:Digital Image Processing of Remotely Sensed Date, Academic, New York, 1983.
6. Luder D,, Aerial Photography Interpretation : Principles and Application, CcGraw Hill, New York, 1959.
7. Pratt W.K. Digital Image Processing. Wiley, New York, 1978.
8. Rao D. P. (eds.) : Remote Sensing for Earth Resources, Association of Exploration Geophysicist, Hederabad, 1998.
9. Thomas M. Lollesand and Ralph W. Kefer, Remote Sensing and Image Interpretation, Wiley & sons, New York, 1994.
10. Aronoff S.Geographic Information Systems: A. Management Perspective, Publication Offiawa, 1989.
11. Burrough P.A. Principles of Geographic Information Systems for Land Reson Assessment Oxford University Press, New York, 1986.
12. Fraser Taylor D.R. Geographic information Systems. Pergamor Press, Oxford 1990.
13. Maquire D.J.M.F. Goodchild and D.W. Rhind (eds.). Geographic information System 'Principles arid Application. Taylor & Francis, Washingron, 1991.
14. Mark S. Monmonier. Computer-assisted Cartography,Prentice-Hall, Englewood Cliff, Jersey, 1982.
15. Peuquet D. .1. and D.F.- Marble, Introductory Reading in Geographic. Information System Taylor & Francis, Washington, 1990..
16. चौनियाल, देवी दत्त, : सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली.

SEMESTER – IV (2016-17)

PAPER – XVIII (B)
ENVIRONMENTAL GEOGRAPHY

UNIT – I Environment: Meaning, definition, concepts and theories related to environment. Environment and its components: Classification, Characteristics and their interdependent relationship, Development of the environmental studies and their approaches: Development of environmentalism in Geography.

UNIT – II Environment and development. Ecological concepts; Geography as human ecology; Ecosystem: meaning definition, Concept and components. Main terrestrial ecosystems of the world-forests and agriculture.

UNIT – III Environmental hazards- natural and human made, environmental pollution : meaning definition, nature and types-air, water, noise and others. Ecological impacts of pollution. Resource use and ecological imbalance with special reference to soil, forests and water resources.

UNIT – IV Environmental Management : meating, importance and approaches, need for environmental policy and laws. Preservation and conservation of environment through resource management (Green revolution, Chioko movement, National Parks). Environmental Actions: concept, need and importance Stockholm Conference, Earth Summit, E.I.A. definition and methods and need for EM Environmental education and People's participation.

Suggested Readings :

1. Agrawal, Anil and Sunita Narain. Dying Wisdom : The Fourth citizen Report. Centre for Science and Environment, New Delhi, 1998.
2. Burton I.; R.W. Kates & G.F. Whiley. The Environment as Hazards. O. U.P. New York, 1978, Carledge, Bryen. Population and the Environment, O.U.P., New York, 1995.
3. Chandna, R.C. Environmental Awareness Kalyani Punlishers, New Delhi, 1998.
4. Dawson, J. and J.C. Doornkamp, eds.: Evaluating the Human Environment. Edward Amold, London, 1975
5. Detwyler, J.R.: Man,s impact on Environment. Pelican, 1970.
6. Edington, J.M. & M.A. Edington : Ecology and Environmental Planning. Chapmap & Hall, London, 1977.
7. Goudie, Andrew. The Human Impact on the Natural Environment, Blackwell Oxford, U.K. 1994
8. Jain, R. K., L.V. Urban and G.S. Stacy; Environmental Impact Analysis-A New Dimension in Decision-Making. Van Norstrand Reinhold Co. New York, 1977.
9. Khoshoo, T.N. Environmental Concepts and Strategies. Ashish Publishing House, New Delhi.
10. Mohan, M. Ecology and Development. Rawat Publications; Jaipur, 2000.
11. Munn, R.E. Environmental Impact Assessment : Principles and Procdures. John Wiley & Sons, New York, 1979.
12. Narain, Sunita. The Citizen Fifth Report. Centre for Science and Environment, New Delhi 2003.

13. Mukherji, A and V. K. Agnihotri : Environment and Development. Concept Pu. Co. New Delhi, 1993.
14. Rudig Wolfgeng. Environmental Policy Edward Elger Publishing Ltd. UK. 1998.
15. Saxena, H.M. Environmental Geography. Rawat Punlications, Jaipur, 1999
16. Saxena, H.M. Environmental Management. Rawat Punlications, Jaipur, 2000
17. Sharma, B.L. & Puar P: Global Environmental Challenges. Rohini Books, Publishers & Distriburors, Jaipur, 2004.
18. Singh, K.N. and D.N. Singh : Population Growth, Environment and Development Issues, Impacts and Responds. Environment & Development Study Centre, Varanasi, 1991.
19. Singh, R. B. and S. Mishra : Environmental Law in India : Issues and responses, Concept Pub. Co. New Delhi, 1966.
20. Singh, S. Environmental Geography. Prayag Pustak Sadan, Allahabad, 2000.
21. Smith, R.L. : Man and his Environment: An Ecosystem Aproach. Harper & Row. London, 1992.
22. U.N.E.P.: Global Environmental Outlook. U.N. Pub. New York.
23. अवस्थी एन. एम. एवं आर.पी. तिवारी पर्यावरण भूगोल, मध्यप्रदेश ग्रथ अकादमीए भोपाल ।
24. नेगी, पी. एस. : परिस्थितिकीय विकास एवं पर्यावरण भूगोल, रस्तोगी एन्ड कम्पनी, मेरठ, 1995।
25. रघुवंशी अरूण और चन्द्रलेखा रघुबंशी : पर्यावरण तथा प्रदूषण, मध्यप्रदेश हिन्दी ग्रथ अकादमी, भोपाल, 1989 ।
26. सविन्द्र सिंह : पर्यावरण भूगोल, प्रयाग पुस्तक सदन इलाहाबाद, 1993 ।
27. शर्मा, बी एल : पर्यावरण : साहिन्य भवन, आगरा, 1992।
28. तिवारी, विजय कुमार : पर्यावरण और परिस्थितिकी, हिमालय पब्लिशिंग हाउस, दिल्ली 1998 ।
29. तिवारी, विजय कुमार, : पर्यावरण अध्ययन, हिमालय पब्लिशिंग हाउस, दिल्ली, 1998 ।

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PAPER - XIX

FIELD WORK (PHYSICAL AND SOCIO- ECONOMIC) Physical

UNIT – I Trace the prominent features of area to be surveyed. Identify salient landform features of selected area on a topographical sheet. Identify the landforms on the surface, while in the field. Also note the agents of erosion, transportation and deposition associated with the landforms.

UNIT – II Identity and classify the Bio-diversity in the area (Flora & fauna). Observe the relationship of various landforms, flora and fauna with land-use, settlement structure and life style of people.

Socio – Economic

UNIT – III Procure a cadastral map of the village/town for field mapping of the features of land-use and land quality. Procure/prepare the settlement –site map through rapid survey to map the residential, commercial, recreational (parks, playground), educational, religious and other prominent features. Conduct a socio-economic survey of the households with a structured questionnaire. Supplement the information by personal observations and perceptions.

UNIT – IV Based on observations of the land-use and results of the socio-economic enquiry of the households, prepare a critical field-survey report. Photographs and sketches, in addition to maps and diagrams, may supplement the report.

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PAPER - XX

PRACTICAL-IV

GEOGRAPHICAL INFORMATION SYSTEM AND QUANTITATIVE TECHNIQUES

Geographical Information System

An overview of GIS software, Elements of GIS: Data capture-verification and preprocessing-data storage and maintenance of databases-Database Management Systems: Spatial data creation, Editing the layers and table creation, Creation of non Spatial data, data manipulation, analysis (integrated analysis of spatial and attribute data, overlay analysis, neighborhood operations and connectivity functions) and spatial modeling-output format and generation. Buffer analysis, Network Analysis, Creation of DEM & TIN Generation of thematic map.

GPS – Demonstration and handling of Hand held GPS receivers, Checking and updating of existing map, Use of GPS to Check/update the existing topographical map, Ground truthing by GPS.

Quantitative Techniques:

Running mean, Mean centre, Nearest Neighbor Analysis; Lorenz Curve, Normal distribution curve, Probability.

SUGESSTED READINGS:

1. Singh, R.L. & P.K. Dutt : Elements of Practical Geography Students trends.
2. Monkhouse, F.J. & H.R. Wilkinson; Maps and Diagrams Mathuen, London.
3. Mahmood, Aslam 1971 : Statistical Methods in Geographical studies Rajesh Pub., New Delhi.
4. Gregory, S. Statistical Methods and The Geographer.
5. Hammond & Mccullah 1977 : Quantitative Techniques in Geography, Clarendon Press,Oxford.
6. Fitz, Gomid, B.P. : Science in Geography, Developments in Geographical Method, Oxford University Press.
7. Yeaters, M. : An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.
8. मॉक हाउस तथा विल्किन्सन 1976 : मानचित्र तथा आरेख, म.प्र. केदारनाथ , रामनाथ, मेरठ.
9. नेगी, डी.एस. : भूगोल में आधारभूत सांख्यिकी, केदारनाथ , रामनाथ, सेठ.
10. हीरालाल : प्रायोगिक भूगोल, किताबघर, कानपुर.
11. आर.सी. तिवारी एवं सुधाकर त्रिपाठी : अभिनव प्रयोगात्मक भूगोल, प्रयाग पुस्तक भवन, इलाहाबाद.

M.A./M.Sc. GEOGRAPHY

ANNUAL SYSTEM

2016-17

GEOGRAPHY (Code-021)

M.A./M.Sc. पूर्व भूगोल में निम्नलिखित प्रश्न पत्र होंगे -

क्रमांक	प्रश्न पत्र	प्रश्न पत्र का नाम	कोड संख्या	पूर्णांक
1.	प्रथम	Geomorphology	(0399)	100
2.	द्वितीय	Climatology & Oceanography	(0400)	100
3.	तृतीय	Geographical Thought	(0401)	100
4.	चतुर्थ	Advanced Geography of India	(0402)	100
5.	पंचम	Population Geography	(0403)	100
6.	प्रायोगिक	Advanced cartography and surveying		100

The M.A./M.Sc. Previous examination in Geography shall consist of 600 marks.
There shall be five theory papers and one practical each of 100 marks as follows:

Paper I	Geomorphology
Paper II	Climatology & Oceanography
Paper III	Geographical Thought
Paper IV	Advanced Geography of India
Paper V	Population Geography
Practical	Advanced Cartography and Surveying

The theory papers shall be of three hours duration.
Candidates will be required to pass separately in theory and practical examinations.
Each theory paper in M.A./M.Sc. Previous Geography has been divided into four units.

(a) In the practical examination the following shall be the allotment of time and marks.

(i) Practical record	20%
(ii) Lab work (up to three hours)	50%
(iii) Field work (up to three hours)	25%
(iv) Viva on i. ii. & iii above	5%

(b) The external and internal examiners shall jointly submit marks.

(c) Candidates shall be examined in survey individually. They will however be allowed to take the help of a labourer each at their own expense.

(d) All the candidates shall present at the time of the practical examination their practical record regularly signed by the teachers concerned.

PAPER - I
GEOMORPHOLOGY
(Paper Code - 0399)

UNIT-1 Nature and scope of Geomorphology; Fundamental concepts; Interior of the earth; Earth movements: epeirogenic and orogenic movements : Forces of crustal instability, isostasy, plate tectonics, earthquakes, volcanic activities, faulting, mountain building.

UNIT-2 Exogenic processes : concept of gradation; Agents and processes of gradationn : weathering, mass wasting and erosion, aggradation; soil formation; Climatic Geomorphology and morphogenetic regions; slope evolution.

UNIT-3 Concept of geomorphic cycle and its controversy; Dynamics of fluvial, glacial, peri-glacial, aeolian and marine (coastal) processes and resulting landforms; Complications of fluvial geomorphic cycle.

UNIT-4 Geological structure and landforms: development of landscape and drainage on uniclinal, folded and domal structures and in Karst region; Erosion surfaces; Applied geomophology

SUGGESTED READINGS -

1. Ahmed, E. : Coastal Geomorphology of India.
2. Chorley, R.J. : Spatial Analysis in Geomorphology, Methuen, London, 1972
3. Cooke R.U. and Doornkamp, J.C.: Geomorphology in Environmental Management A introduction, Clarendon Press, Oxford, 1974
4. Dury, G. H. : The Face of the Earth, Penguin Harmondsworth 1959
5. Fairbridge, R.W. Encyclopedia of Geomorphology, Reinholdts, New York, 1968.
6. Goudie, A.: The Nature of the Environment Oxford & Blackwell, London, 1993.
7. Garner, H.F. : The Origin of landscape- A Synthesis of Geomorphology, Oxford University Press, London, 1974.
8. Holms, A. : Principles of Physical Geology, Thomas Nelson, London.
9. Mitchell, C.W.: Terrain Evaluation, Longman, London, 1973.
10. Ollier, C.D.:Weathering, Longman, London, 1979.
11. Pitty, A.F.: Introduction to Geomorphology, Methuen, London, 1971.
12. Stoddart, D.R. (ed.): Process and Form in Geomorphology, Roulledge, New York, 1996.
13. Skinner, B.J. & Porter, S.C.: The Dynamic Earth John Wilely, New York, 1995.
14. Sparks, B.W. Geomorphology, Longman, London, 1960.
15. Sharma, H.S.(ed.): Perspectives in Geomorphology, Concept, New Delhi, 1980
16. Singh, S: Geomorphology, Prayag Publication, Allahabad, 1998.
17. Steers, J.A. : The Unstble Earth Methuen, London.
18. Thombury, W.D. Principles of Geomorphology, John Wiloy, Now York, 1960.
19. Strahler, A.N. : Physical Geography, Willey, New York.
20. कौशिक, एस.डी. : भू - आकृति विज्ञान
21. नेगी, बी.एस. : भू - आकृति विज्ञान
22. दयाल परमेश्वर : भू - आकृति विज्ञान
23. यादव तथा रामसुरेश :. : भू - आकृति विज्ञान, ग्रन्थय, कानपुर
24. सिंह, सविन्द्र के. : : भू - आकृति विज्ञान, शारदा पुस्तक भवन, इलाहाबाद

PAPER - II

CLIMATOLOGY AND OCEANOGRAPHY

(Paper Code - 0400)

(A) CLIMATOLOGY

UNIT-1 Nature and scope of climatology and its relationship with meteorology; composition of the atmosphere; Insolation, heat balance of the earth, stability and instability, green house effect, vertical and horizonal distribution of temperature; Jet stream; General circulation in the atmosphere; Acid rain; concept of air masses and atmospheric disurbances. Ocean atmospheric interaction. EL Nino and La Nino. Monsoon winds and cyclones.

UNIT-2 The application of general principles of elementary physical and synoptic meteorology to the study and classification of climate. Climatic classification of Koppen and Thornthwaite. Major climates of the world- tropical, temperate, desert and mountain

climate. Climatic changes during geological and historical times. evidences. possible causes, global warming, environmental impacts and society's response. Applied climatology.

(B) OCEANOGRAPHY

T-3 Nature and scope of oceanography; Distribution of land and water; Major features of ocean basins; Marine sediments. Physical and chemical properties of sea water; Interlink between atmospheric circulation and circulation pattern in the oceans, surface currents, thermohaline, waves and tides.

T-4 Marine biological environment: Bio geochemical cycle in the ocean. biozones, types of organisms; plankton, nekton and benthos, food and mineral resources of the sea. Major marine environmetns; coastal: esturary, deltas, barrier island, rocky coasts: Open: reefs, continental shelf, continental slope and deep: Pelagic environment and floor of the ocean basins. Impact of Humans on the marine environment. Law of the sea; exclusive economic zone; marine deposits and formation of coral-reefs.

GGESTED READINGS :

Barry, R.G. and Chorley P.J.: Atmosphere, Weather and Climate, Roulledge, London and New York, 1998

Critchfiedld, J.H.: General Climatology, Prentico Hall, India, New Delhi, 1993.

Das, P.K.: Monsoons Natiional Book Trust, New Delhi, 1987.

Fein, J.S. and Slephens, P.N.: Monsons. Wiley Intersclence, 1987.

India Met. Deptt. : Climatological Tables of Observatories in india, Govt. of India 1968.

Lal, D.S.: Climatology, Chaitanaya Publications, Allahabad, 1986.

Lydolph, P.E. : The Climate of the Earth, Rowman, 1985.

Menon, P.A.: Our Weather, N.B.T., New Delhi, 1989.

pelerson, S.: Jontroduction to Meteorology, Mc Graw Hill Book, London, 1969.

Robinson, P.J. and Henderson S.: Contemporary Climatology, Henlow, 1999.

Ihompson, R.D. and Perry, A (ed.): Applied Climatology, Principles and Practice, Routledge, London, 1997.

Davis Richard J.A.: "Oceanography- An Introduction to the Marine Environment". Wm. C. Brown lowa. 1986.

Duxbury, C.A. and Duxbury B.: An Introduction tothe world's Oceans-C. Brown. lowa 2nd ed. 1986.

Garrison, T.: "Oceanography - An Introduction to Marine Science" Books/Cole, Pacific Grove, USA, 2001

Gross, M. Grant: Oceanography, a View of the earth, prantice- Hall inc, New Jersy, 1987.

King C.A.M. Oceanography for Geographers 1962.

Sharma, R.C. "The Oceans" Rajesh N. Delhi. 1985.

Ummerkutty, A.N.P. Science ofthe Oceans and Human life, NBT, New Delhi 1985.

Trewartha, G.T. : An Introduction to weather and climates.

Ommany, F.D. : The Ocean

Sharma, R.C. & M. Vatal : Oceanography : A Brief Introduction kislaya Pub. New Delhi.

Siddartha, K. : Oceancgraphy : A Brief Itroduction, Kislya Pub. New Delhi.

तिवारी, अनिल कुमार : जलवायु विज्ञान, राजस्थान हिन्दी ग्रंथ अकादमी

नेगी, बी. एस. : जलवायु तथा समुद्र विज्ञान

PAPER-III

GEOGRAPHICAL THOUGHT

(Paper Code - 0401)

UNIT-1 The field of geography, its place in the classification of science; geography as a social science, and natural science. Definition, scope and functions of geography; Geography as science of relationship, as science of areal differentiation, as spatial science, Geography and environmentalism: forms of man-nature relationship and current view; Dualism in geography; Regional Concept.

UNIT-2 The growth of geographical knowledge from earliest times upto the 15th century. Contributions of Greek and Roman thinkers. Arab Geographers and their contributions. Geographical information in Ancient Indian literature. The dark age in Geography. The Great Age of Maritime Discovery and Exploration.

Contributions of various schools of thought in Modern Geography:

(i) German School. (ii) French School

(iii) British School (iv) American and Russian Schools.

UNIT-3 Scientific explanations: routes to scientific explanation (inductive/deductive); Types of explanation: cognitive description, cause and effect, temporal, functional/ ecological, systems; Laws, theories and models in geography; Quantitative revolution and philosophy of positivism.

UNIT-4 Responses to positivism, behaviouralsm and humanistic geography, relevance movement and radical geography; Changing paradigms; Status of indian Geography; Future of geography.

SUGGESTED READINGS :

1. Abler, Ronald; Adams, John S. Gold, Peler: Spatial Organization: The Geographer's view of the World, Prentice Hall, N.J., 1971.
2. All S.M.: The Geography of Puranas, Peoples Publishing House, Delhi, 1968.
3. Amedeo, Douglas: An Introduction to Scientific Reasonign in Geography, John Wiley, U.S.A.,1971.
4. Dikshit, R.D. (ed.): The Art & Science of Geography Rand Mc Nally & Co., 1959.
5. Hartshorne, R.: Perspectives on Nature of Geography Rand Mc Nally & Co., 1959.
6. Husain, M.: Evolution of geographic Thought, Rawat Pub. Jaipur, 1984.
7. Johnston, R.J.: Philosophy and Human Geogrpahy, Edward Arnold, London, 1983.
8. Johnston, R.J.: The Future of Geography, Methuen, London, 1988.
9. Minshull, R.: The Changing Nature of Geography, Hutchinson University Library, London, 1970.
10. Ali, S.M. : Arab Geography
11. Taylor, G. : Geography in the 20th Century.
12. Dikshit, R.D. : Geographical Thought : A Contexual History of Ideal, Prentice Hall of India, New Delhi.
13. Harvey D. : Explanation in Geography
14. सिंह उजागिर : भौगोलिक चिन्तन का विकास
15. त्रिपाठी एवं बिरले : भौगोलिक चिन्तन का विकास एवं विधितंत्र
16. कौशिक, एस.डी. : भौगोलिक विचारधाराओं का इतिहास एवं विधितंत्र
17. सिंह, जगदीश : भौगोलिक चिन्तन का मूलाधार

PAPER-IV
ADVANCED GEOGRAPHY OF INDIA
(Paper Code - 0402)

UNIT-1 Physical and Biological elements in the Geography of India : Geological structure, relief, climate, water resources, vegetation and soils.

UNIT-2 (a) Population: distribution, density and growth, problems and policies.

(b) Irrigation

(c) Agriculture : Major characteristics and problems, impact of infrastructural and institutional factors on agriculture. Important crops-wheat, rice, cotton, sugarcane, oil-seeds, tea and coffee, Agricultural reigons. Green revolution, Agro- climatic regions.

(d) Sources of power: Coal, Petroleum, Natural gas, Hydroelectricity and Atomic energy.

UNIT-3 (a) Mineral resources with specific reference to iron ore, manganese and bauxite.

(b) Industrial development with specific reference to iron and steel, cement, cotton, jute, sugar and paper industries; Industrial regions.

(c) Transport infrastructure: Road, rail, water and air.

(d) Trade: Internal and Foreign.

UNIT-4 (a) Regional division of India: Purpose and Methodology.

(b) Major schemes of regions of India: O.H.K. Spate and R.L. Singh.

(c) Detailed regional study of the following: Kashmir valley, Middle Ganga Plain, Narmada Basin, Marusthali and Kerala.

(d) Physical and cultur geography of Chhattisgarh State.

SUGGESTED READINGS :

1. Centre for Science & Environment (1988) State of India's Environment, New Delhi.
2. Desphande C.D. india: a Regional Interpreation ICSSR & Northern Book Centre 1992.
3. Dreze, Jean & Amartya Sen (ed.) India Economic Development and Social opportnity Oxford University Person, New Delhi. 1996.
4. Kundu A. Raza Moonis: Indian Economy: the Regional Dimension Speclaum Publishers, New Delhi, 1992.
5. Robinson, Francs: The Cambridge Encyclopaedia of India, pakistan Bangladesh, Sri Lanka, Nepal, Bhutan & Maldives Cambridge University Press, London, 1989.
6. Singh R.L. (ed.): India- A Regional Geography National Geographical Society, India Varanasi, 1971.
7. Spale OHK & ATA Learmont-India & Pakistan Methuen, London. 1967.
8. Tirtha R. & Gopal Krishna, Emerging India Reprinted by Rawat Publications, Jaipur 1996.
9. Sharma T.C. and O. Coutinho : Economic and Commercial Geography of India.
10. अग्रवाल पी.सी. : भारत का भौतिक भूगोल, एशिया प्रकाशन कं., रायपुर 2003.
11. जोशी, यशवन्त गोविंद : नर्मदा बेसिन का कृषि भूगोल
12. देशबंधु प्रकाशन : संदर्भ छत्तीसगढ़

PAPER - V
POPULATION GEOGRAPHY
(Paper Code - 0403)

UNIT-1 Definition and scope of Population Geography. Relation of Population Geography with other subjects of social sciences. Historical development of Population Geography in western countries and in India. Sources of population data, Census and its history.

UNIT-2 Distribution of Population : The concept of population density and its types, Factors affecting population distribution. Distribution of population in the world with special refercnce to Europe and Asia. Distribution of population in India.

Growth of population: Measure of decennial and annual rates of population growth, prehistoric and modern trends of population growth in the world. Regional aspect of population growth in India.

Population theories. Demographic transition. Future growth of population.

UNIT-3 Population composition in terms of age and sex, rural-urban residence, educational status and occupational structure. Significance of these elements in population analysis, factors affecting their composition in population, broad world patterns and detailed spatial patterns in India.

Fertility and Mortality of population : Significance and factor, Indices and rates. World pattern and pattern in India.

UNIT-4 Migration of population: Causes, characteristics and types. Methods of estimating value of internal migration, Important international migrations of the world, internal migration in India.

Population and Resources: concept of optimum population, over population and under population, Population-Resource regions.

Populatiion Regions: Concept and methods, population regions of India, causes and consequences of population growth. population policies of India. Human Development Index and its components.

SUGGESTED READINGS :

1. Bilasborrow, Richard E and Daniel Hogan, Popopulation and Delorestation in the Humid Eropics, International Union for th Scientific Study of Population, Belgium 1999.
2. Bogua, D.J. Principles in Demography, john Wiley, New York 1969.
3. Bose, Ashish el at.: Population in India's Development (1947-2000); Vikas Publishing House, New Delhi 1974.
4. Census of India, India: A State Profile. 1991.
5. Chandna, R.C. Geography of Population; Concept, Determinants and Patterns. Kalyani Publishers, New York 2000.
6. Clarke, John I. Population Geography, Pergamon Press, Oxford 1973.
7. Crook, Nigel Principles of Population and Development. Pergmaon Press. New York 1997.
8. Daugherty, Helen Gin, Kenneth C.W. Kammeyir, An Introduction to Population (Second Edition)The Guilford Press, New York London 1998.
9. Garnier, B.J. Geography of Population Longman, London 1970.
10. Kochhar, Rajesh, The Vedic People: Their History and Geography Orient l ongman ltd., New Delhi 2000.
11. Mamoria, C.B. India's Population Problem, kitab Mahal New Delhi 1981.
12. Mitra, Ashok India's Population: Aspects of Quality and Control Vol I & II. Abhiman Publications, New Delhi 1978.

13. Premi, M.K.India's Population: Heading Towards a Billion, B.R., Publishing Corporation 1991.
14. Srinivasan, K. and M. Vlassoff. Population Development Nexus in India: Challenges for the New Millennium Lata Mc Graw- Hill, New Delhi 2001.
15. Srinivasn K. Basic Demographic Techniques and Applications Sage Publications, New Delhi 1998.
16. Sundaram K.V. and sudesh Nangia, (ed) Population Geography, Henlage Publications, Delhi 1986.
17. UNDP: Human Development Report, Oxford University Press, Oxford 2000.
18. United Nations, Methods for Projections of urban and Rural Population No VIII, New York 1974.
19. Woods R. Population Amalysis in Geography Longman, London 1979.
20. Zelinsky Wilbur, A Prologue to Population Geography, Preglic Hall, 1966
21. पंड़ा, बी.पी. : जनसंख्या भूगोल
22. ओझा, रघुनाथ : जनसंख्या भूगोल
23. हीरालाल : जनसंख्या भूगोल
24. चन्दना, आर. सी. : जनसंख्या भूगोल
25. त्रिपाठी रामदेव : जनसंख्या भूगोल

PRACTICAL

ADVANCED CARTOGRAPHY AND SURVEYING.

SECTION A

Max. Marks 25

Graphs and Diagrams : Triangular graph. Logarithmic and semi logarithmic graphs, scatter graphs; climatograph. Proportional circles, spheres and cubes.

Thematic Maps: Choropleth maps, isolines, Flow maps, Isochrones and class intervals.

Morphometric Analysis : Profiles, Slope Analysis; Altimetric, and Clinographic curves; Block Diagrams.

SECTION B

Max. Marks 25

Map Projections: Mathematical construction of world projections.

Interpretation of Maps : Geological Maps.

SECTION C

Max. Marks 25

Principles and methods of topographical surveying involving the use of Theodolite and Dumpy level. Solution of Problems in Surveging.

SUGGESTED READING :

1. Davis, R.C. & E.S. Forte : Surveyina : Theory and Practical
2. Knetkar, T.R. & S.V. Kulkarni : Surveyina and levelling part I & II A.V.G. Prakashan, Poona.
3. Monk house F.J. & H.R. Wilkirson : Maps and Diagrams, Methuen, London.
4. Mahmood, Aslam : Statistical Methods in Geographical studies.
5. Gregory, S. : Statistical Methods and the Geographers.
6. Hmmond & Mc Gullagh : Quantitative Techniques in Geography.
7. Fitz Gerald, S.P. : Science in Geography & Data Description and Presentation by Petter Davis.
8. मॉक हाऊस तथा विलकौन्सन (अनु. प्रो. प्रेमचन्द अग्रवाल) : मानचित्र तथा आरेख, म.प्र. हिन्दी ग्रन्थ अकादमी
9. नेगी, बी.एस. : भूगोल में आधार भूत सांख्यिकी
10. हीरालाल : प्रायोगिक भूगोल

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GEOGRAPHY (Code- 022)

M.A./M.Sc. अंतिम भूगोल में निम्नलिखित प्रश्न पत्र होंगे –

क्रमांक	प्रश्न पत्र	प्रश्न पत्र का नाम	कोड संख्या	पूर्णांक
1	VI	Economic Geography and Natural Resource Management,	(0404)	100
2	VII	Settlement Geography	(0405)	100
3	VIII	Regional Development and Planning	(0406)	100
4	IX (A) Or	Remote Sensing Techniques and Geographical Information System	(0407)	100
5	IX (B)	Biogeography and Ecosystem	(0408)	100
6	X	Agricultural Geography	(0409)	100
		प्रायोगिक कार्य Quantitative Techniques, Remote Sensing and GIS		100
			कुल योग	**600**

The M.A./M.Sc. Final examination in Geography shall consist of 600 marks. There shall be five theory papers and one practical, each of 100 marks as follows.

Paper VI Economic Geography and Natural Resource Management,
Paper VII Settlement Geography
Paper VIII Regional Development and Planning
Paper IX (A) Remote Sensing Techniques and Geographical Information System
OR
Paper IX (B) Biogeography and Ecosystem
Paper X Agricultural Geography
Practical: Quantitative Techniques, Remote Sensing and GIS

1. The Theory papers shall be of three hours duration.
2. Candidates will be required to pass separately in theory and practical exam.
3. Each theory paper in M.A./M.Sc. Final Geography has been divided into four units.
4. (a) In the Practical examination the following shall be the allotment of time and marks.

(i)	Practical Record	20%
(ii)	Lab. Work (up to 4 hours)	70%
(iii)	Viva on (i) & (ii) above	10%

(b) the external and internal examiners shall jointly submit marks.
(c) All the candidates shall present at the time of the practical examination their practical record, regularly signed by the teachers concerned.

PAPER VI
ECONOMIC GEOGRAPHY AND NATURAL RESOURCE MANAGEMENT
(Paper Code - 0404)

UNIT-I Nature and scope of Economic Geography ; fundamental concepts in economic geography ; concept and classification of resources ; classification of economies, sectors of economy (primary, secondary and tertiary)
World distribution of population : Appraisal of quality and quantity of human resources, relation between population and resource, population resource regions of the world, natural resources and economic development, resource adequacy and scarcity, limits to growth.

UNIT-II World pattern of major natural resources : land and soils, biotic resources, water resources, mineral and energy resources, oceanic resources.

UNIT-III Concept and techniques of delimitation of agricultural regions and their features, Von Thunen's model of agricultural location and its modifications.
Classification of Industries, Theories of industrial location ; case studies of selected industries ; Iron & Steel ; Aluminium, Chemical, Textile.
Means of transport, International trade, trade blocks, globalisation and Indian economy.

UNIT-IV Conservation and management of resources ; evolution of the concept, principles, philosophy and approaches to conservation, resource conservation and management methods.
Resource appraisal and policy making ; Use of GIS and remote sensing in resource appraisal ; policy making and resource management ; sustainable development of resources.

SUGGESTED READINGS :

1. Berry, J.I., Geography of Market Centres and Retail Distribution, Prentice Hall, New York, 1967.
2. Chatterjee, S.P. : Economic Geography of Asia, Allied Book Agency, Calcutta, 1984.
3. Chorley, R.J. and Haggett, P. (ed.) : Network Analysis in Geography, Arnold, 1969.
4. Dreze, J. and Sen, A. : India : Economic Development and Social Opportunity ; Oxford University Press, New Delhi, 1996.
5. Eckarsley, R. (ed.) : Markets, the state and the environment, McMillan, London, 1995.
6. Garnier, B.J. and Deiobez, A.: Geography of Marketing, Longman, London, 1979.
7. Hamitton, F.E.I. : Spatial Perspectives on Industrial Organisation and Decision Making John Wiley, New York 1974.
8. Hamitton, I. (ed.) : Resources and Industry, Oxford University Press, New York, 1992.
9. Hurst E. : Transport Geography : Comments and Readings : McGraw Hill, New York, 1974.
10. Morgan, WB and Munton R.J.C. : Agricultural Geography, Methuen, London, 1977.
11. Pachuri, R.K. Energy and Economic Development in India, Praeger, New York, 1977.
12. Robertson, D. (ed.) : Globalization and Environment, E. Elgar Co., U.K. 2001.

13. Roslow, W.E. : The stages of economic growth : Cambridge University Press, London 1960.
14. Singh J. and Dhillon S.S. Agricultural Geography, McGraw Hill, India, New Delhi, 1984
15. Symons, L. : Agricultural Geography, Bell and Sons, London, 1972.
16. Wheeler, J.O. et.al. : Economic Geography, John Wiley, New York, 1995.
17. Adams, W.M. : Green Development : Environment and Sustainability in the third world, Routledge & Chapman Hall, New York, 1990.
18. Granfelt, T.R. : Managing the globalized environment : J. & L. Composition Ltd., New York, 1999.
19. Holechek, J.L. et.al. : Natural Resources : Eulogy Economics & Policy, Prentice Hall, New Jersey, 2000.
20. Hooja, R. & Roshi, R. : Desert, Drought and Development, studies in Resource Management and sustainability ; Rawat Publication, Jaipur, 1994.
21. Howard, M.C. (ed.) : Asia's environmental crisis, Westview Press, Prouldar, 1993.
22. Kates, R.W. & Burton, I. (eds.) : Geography, Resources and Environment, Vol. I & II, University of Chicago Press, Chicago, 1986.
23. Mc. Laren, D.J. and Skinnet, B.J. (eds.) : Resources and World Development, John Wiley & Sons, New York, 1986.
24. Newson, M.D. : land, water & development, River, Basin systems & Management, Routledge, London, 1991.
25. Owen, S. & Owens, P.L. : Environment Resources & Conservation, Cambridge University Press, New York, 1991.
26. Peckford, John et.al. (ed.) 1994 : Water, sanitation, environment & development, IT Publication, London, 1994.
27. Rees, J. : Natural Resources : Allocation, Economics and Policy, Methuen, London, 1988.
28. Redclift, M. : Sustainable Development : Exploring the Contradiction : Methuen, London, 1987.
29. Simmons, I.G. : Earth, Air & Water : Resources and Environment in Late 20th Century Edward Arnold, New York, 1991.
30. Thoman, Alan et.al. : Environmental Politics & NGO Influence, Routledge, London 2001.
31. Zimmerman, E.W. : World Resources and Industries.
32. सिंह काशीनाथ एवं जगदीश सिंह : आर्थिक भूगोल के मूल तत्व
33. करन, एम.पी. : संसाधन भूगोल
34. शर्मा, राजीव लोचन : संसाधन संरक्षण
35. सिंह, अमर : संसाधन तथा संरक्षण
36. कुमार प्रमिला एवं श्रीकमल शर्मा : कृषि भूगोल

PAPER - VII
SETTLEMENT GEOGRAPHY
(Paper Code - 0405)

UNIT-I

1. Meaning, Objectives and Scope of Settlement Geography
2. Evolution, Distribution, Types and Patterns of Rural Settlements.
3. Rural House Types

4. Rural Service Centres

UNIT-II

1. Evolution and growth of urban settlements
2. The Geographical setting of Urban Centres : Site, Situation and Location
3. Rank-size-relationship
4. Cities as Central Places, Central Place Theory, Growth Centre Theory.
5. City-Country Relationship : Umland, Rural-Urban Fringe.

UNIT-III

1. General Nature of City Structure :
   (i) Internal structure : Morphology and landuse.
   (ii) Theories of Urban Structure : The Concentric Zone Theory, The Sector Theory, The Multiple Nuclei Theory.
2. The Central Business District (CBD)
3. Centrifugal and Centripetal forces in Urban Geography.
4. Economic Base of Towns : Basic/non-basic concept.

UNIT-IV

1. Urban Functions
2. Functional Classification of Towns.
3. Urban Planning (i) Types and Elements (ii) Urban Problems, Blight and renewal.
4. Urban Planning in India.

SUGGESTED READINGS :

1. Abercrombee, Sir P. : Town and Country planning 1961.
2. Alam, Shah Manzoor : Hyderabad Secundrabad (Twin Cities) A study in urban geography)
3. Alam, S.M. & V.V. : Urbanization in developing countries Pokshishevesky
4. Berry Brain J.L. : Geographic Prospectives on Urban Systems
5. Bresse, C. & D.F. : An approach to Urban Planning Whiteman
6. Dickinson, R.E. : City, Religion and Regionalism
7. Gallion and Fisher : The Urban Pattern
8. Grifitth, J.P. : A study of Urban constructions in India
9. Gibbs : Urban Research Methods
10. Mayor, H.M. & C.F. Kohn : Readings in Urban Geography
11. Morgan, F.W. : Ports and Harbours
12. Mumford L. : Culture of cities
13. Robson, W.A. : Great cities of world
14. Robson, B.T. : Urban Growth : An approach, methuen, London
15. Carter, Harold : Study of Urban Geography, London, Edward Arnold, 197(
16. Singh R.L. & K.N. Singh : Readings in Rural Settlement Geography, NGSI Varana 1975.
17. सिंह, उजागिर : नगरीय भूगोल
18. करन, एम.पी. : नगरीय भूगोल
19. बंसल, सुरेश चन्द्र : नगरीय भूगोल
20. सिंह, ओमप्रकाश : नगरीय भूगोल
21. तिवारी आर.सी. : आधिवास भूगोल, प्रयाग पुस्तक भवन, इलाहाबाद, 1997
22. करण एवं यादव : आधिवास भूगोल

PAPER - VIII
REGIONAL DEVELOPMENT AND PLANNING
(Paper Code - 0406)

UNIT-I Regional Planning : Definition, Scope, Evolution and Objectives. Region and Regionalism, Planning Regions : Concept and Delineation. Spatial organisation : Central Place Theory, Concept of core and periphery Friedmann's Model of Spatial Organisation and Economic Growth.

UNIT-II Regional Development Theories : Development Theories of Myrdal and Hirschman, Economic and Export Base model, Frank's Theory of Underdevelopment.

UNIT-III Approaches and Strategies of Regional Development. Growth Pole Theory. Agropolitan Development, Community Development, River Basin Planning, Metropolitan Planning (with reference to India).

UNIT-IV Regional Planning in India. Regional Imbalances and Inequalities, Indicators of Regional Development ; Regional Policies in Five Year Plans, Centre State Relations and Multilevel Planning, Planning for special problem Regions : Hill areas, Tribal areas, Drought prone areas, Command areas and River basins.

RECOMMENDED READING :

1. Daysch, C.H.J. & others : Studies in Regional Planning.
2. Deckinsonm R.E. : City Region and Regionalism
3. Freeman, E.W. : Geography and Planning
4. Golksin A. : Regional Planning and Development
5. Keeble, L. : Principle and Practice of Town and Country Planning.
6. Stamp L.D. : The Land of Britain : Its use and Misure.
7. Sdasyuk. Galina and Dengupta, P. : Economic Regionalization of India problems and Approches.
8. Desai, P.B. & others : Regional Perspective of Industrial and Urban Growth - the case of Kanpur, Bombay, 1969.
9. Prakash, Rao V.L., S.P. : Regional Planning
10. Censuts of India : Economic and Socic Cultural Dimensions of regionalisation (An Indo-USSR Colaborative Study)
11. Friedmann J. & Alonsow : Regional Development and Planning, M,I.T. Press
12. Misra R.P. (Ed.) : Regional Planning : Concept; Techniques, Policies and cade studies Mysore 1969.
13. Misra, R.P. & others : Regional Development and Planning in India.
14. Timbergen : Essays on World Regional Planning.
15. Isard, W. : Methods of Regional Analysis, M.I.T. 1960.
16. Zimmerman, E.W. : World Resources and Industries.
17. Burton & Kates : Reading in Resource Management Conservation.
18. Bhatt, L.S. : Regional Planning in India.
19. Ahamed, Enayet : Regional Planning with particular Reference to India. Vol. I and II New Delhi.
20. Bhatt L.S. and Others : Micro level planning - A Case Study of Karnal Area, Haryana (K.B. Publishing, New Delhi)

21. Chandna, R.C. : Regional Planning : A Comprehensive Texl-Kalyani Publishers.
22. श्रीवास्तव, व्ही. के. एवं अन्य : प्रादेशिक नियोजन एवं संतुलित विकास
23. ओझा, रघुनाथ : प्रादेशिक नियोजन का भूगोल
24. शर्मा, राजीवलोचन : प्रादेशिक एवं नगरीय नियोजन

PAPER - IX (A)

REMOTE SENSING AND GEOGRAPHICAL INFORMATION SYSTEM

(Paper Code - 0407)

UNIT-I Historical development of remote sensing as a technology - Relevance of remote sensing in Geography - Concepts and basics : Energy source, energy and radiation priciples, energy interactions in the atmosphere and earth surface features, remote sensing systems : platforms, sensors and radiation records.

Applications : Air photo and image interpretations and mapping landuse and land cover, land evaluation, urban landuse, landform and its processes, weather studies and studies of water resources : integration of Remote Sensing and GIS, remote sensing and hazard management, remote sensing and environmental management.

UNIT-IL Image Processing : types of imagery, techniques of visual interpretation, ground verification, transfer of interpreted thematic information to base maps-digital processing : rectification and restoration, image enhancement - contrast manipulation, classification : supervised and unsupervised, post-classification analysis and accuracy assessment, microwave sensing : interprecation of SLAR imageries, elements of passive microwave sensing.

UNIT-III Spatial Science : Geography as a spatial science, maps and spatial information. dynamics of spatial information, elements of information technology, geographic objects and their relations-definition and development of GIS, computer environment for GIS.

Spatial Data : Elements of spatial data : data sources : primary and secondary, census and sample-data; quality and error variations-raster and vector data structures, data conversion-comparison of raster and vector databases - methods of spatial interpolation-GIS data formats for the computer enviornment.

UNIT-IV GIS Techlology : Coordinate system - basic principles of cartography and computer assisted cartography for GIS-remote sensing data as a data source for GIS and integration of GIS and Remote Sensing-GPS and GIS : technology, data generation and limitations - visualization in GIS-Digital Elevation Models (DEM and TINS).

GIS Application : GIS as a Decision Support System-expert system for GIS-basic flow chart for GIS application - GIS standards, legal system and national GIS policy application of GIS in Land Information System, Urban Management, Environment Management and Emergency Response System.

SUGGESTED READINGS :

1. American Society of Photogrammetry : Manual of Remote Sensing. ASP, Falls Church, V.A., 1983.
2. Barrett E.C. and L.F. Curtis : Fundamentals of Remote Sensing and Air Photo Interpretat on, Mcmillan, New York, 1992.

3. Compbell J. : Introduction to Remote Sension, Guilford, New York, 1989.
4. Curran, Paul J. : Principles of Remote Sensing. Longman, London 1985.
5. Hord R.M. : Digital Image Processing of Remotely Sensed Data, Academic, New York, 1983.
6. Luder D, Aerial Photography Interpretation : Principles and Application, CcGraw Hill, New York, 1959.
7. Pratt W.K. Digital Image Processing. Wiley, New York, 1978.
8. Rao D.P. (eds.) : Remote Sensing for Earth Resources, Association of Exploration Geophysicisl, Hyderabad, 1998.
9. Thomas M.Lollesand and Ralph w. Kefer, Remote Sensing and Image Intepretation, John Wiley & sons, New York, 1994.
10. Aronoff S, Geograghic Information Systems : A Management Perspective, DDL Publication Offawa, 1989.
11. Burrough P.A. Principles of Geographic Information Systems for Land Resource, Assessment Oxford University Press, New York, 1986.
12. Fraser Taylor D.R. Geographic information Systems. Pergamor Press, Oxford 1991.
13. Maquire D.J.M.F. Goodchild and D.W. Rhind (eds.). Geographic information Systems : Principles and Application. Taylor & Francis, Washington. 1991.
14. Mark S. Monmonier. Computer-assisted Cartography. Prentice-Hall, Englewood Cliff, New Jersey, 1982.
15. Peuquet D.J. and D.F. Marble, Introductory Reading in Geographic Information Systems. Taylor & Francis, Washington. 1990.
16. Star J. and J. Estes, Geographic Information Systems : An Introduction, Prentice Hall, Englewood Cliff, New Jersey, 1994.
17. दत्त, नियाल देव : सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली

PAPER - IX (B)
BIOGEOGRAPHY AND ECOSYSTEM
(Paper Code - 0408)

UNIT-I Definition and scope of Biogeography. Environment, Habitat and Plant-animal association, Biome types.

UNIT-II Elements of plant geography, distribution of forests and major communities. Plant successions in newly formed land forms.

Zoogeography and its Environmental Relationship.

Paleobotanical and Palaeo climatological records of environmental change.

UNIT-III Ecosystems : concept and components, Ecosystem-form and function : trophic level, ecological pyramids, ecological niche, energy and nutrients in the ecosystem, hydrological cycle, foodchains and foodwebs.

Major terrestrial ecosystems of the world : agriculture, forests, grassland and desert. Population growth and environment.

UNIT-IV Biodiversity and its conservation. Preservation and conservation of the ecosystem through resource management. Environmental legislation.

The Stockholm conference, the Earth summit, Environmental laws in India (the Wild Life Act, Water Act, Forest Act, Environment Protection Act and National Environment Tribunal Act).

SUGGESTED READINGS :

1. Agrawal D.P. : Man and Enviroment in India Through Ages, Book & Books, 1992.
2. Bradshaw, M.J. : Earth and Living Planet, ELBS. London, 1979.
3. Cox, C.D. and Moore, P.D. : Biogeography : An Ecological and Evolutionary Approach 5th edn. Blackwell, 1993.
4. Gaur, R. : Environment and Ecology of Early Man in Northern India R.b. Publication Corporation 1987.
5. Hoyt, J.B. : Man and the Earth, Prentice Hall, U.S.A. 1992.
6. Huggett. R.J. : Fundamentals of Biogeography., Routledge, U.S.A. 1998.
7. Illies, J. : Introduction to Zoogeography, Mcmillan, London, 1974.
8. Khoshoo, T.N. and Sharma, M. (eds.) : Indian Geosphere-Biosphere Har-Anand Publication, Delhi 1991.
9. Lapedes, D.N. (ed.) : Encyclopedia of Environmental Science, McGraw Hill, 1974.
10. Mathur H.S. : Essentials of Biogeography, Anuj Printers, Jaipur, 1998.
11. Pears, N. : Basic Biogeography, 2nd edn. Longman, London, 1985.
12. Simmon, I.G. : Biogeography, Natural and Cultural, Longman, London 1974.
13. Tivy J. : Biogeography : A study of Plants in Ecosphere 3rd edn. Oliver and Boyd, U.S.A., 1992.
14. Ackerman, E.A. : Geography as a Fundamental Research Discipline, University of Chicago Research Papers, 1958.
15. Agarwal, A. and Narain, S. : The Citizens Fifth Report. Centre for Science and Environmental New Delhi 1999.
16. Bertalanffy, L. : General Systems Theory, George Bragiller New York, 1958.
17. Bodkin, E. : Environmental Studies, Charles E. Merril Pub. Co., Columbus, Ohio, 1982.
18. Chandna, R.C. : Environmental Awareness, Kalyani Publishers, New Delhi, 1998.
19. Chorley, R.J. : Geomorphology and General Systems Theory, U.S.G.S. Professional Paper, 500B, 1962.
20. Eyre, S.R. and Jones, G.R.J. (eds.) Geography as Human Ecology, Edward Arnold, London, 1966.
21. Kormondy, E.J. : Concepts of Ecology, Prentice Hall, 1989.
22. Manners, I.R. and Mikesell, M.W. (eds.) Perspectives on Environment, Commission on College Geography, Publ. No. 13, Washington, D.C., 1974.
23. Nobel and Wright : Environmental Science, Prentice Hall, New York 1996.
24. Odum, E.P. : Fundamentals of Ecology, W.B. Saunders, Philadelphia, 1971.
25. Russwurm, L.H. and Sommerville, E. (eds.) : Man's Natural Environment-A systems Approach, Duxbury, Massachuselts, 1985.
26. Sharma, H.S. : Ranthambhore Sanctuary - Dilemma of Eco-development, Concept, New Delhi, 2000.
27. Simmons, I.G. : Ecology of Natural Resources, Edward Arnold, London, 1981.
28. Singh S. : Environmental Geography, Prayag Publications, Allahabad, 1991.
29. Smith, R.L. : Man and his Environment : An Ecosystem Approach, Harper & Row, London, 1992.
30. U.N.E.P. : Global Environmental Outlook, U.N. Pub., New York, 1998.
31. World Resources Institute : World Resources, (Latest Report) Washington.
32. कुल श्रेष्ठ, कामता प्रसाद : जैव भूगोल

PAPER X
AGRICULTURAL GEOGRAPHY
(Paper Code - 0409)

Unit I: Nature, scope, significance arid development of agricultural geography. Approaches to the study of agricultural geography: Commodity, systematic and regional systems. Origin and dispersal of agriculture. Sources of agricultural data.

Unit II: Determinants of agricultural land use - Physical, economic, social, and technological Land holding and land tenure systems, Land reforms, land use Agriculture policy and planning. Selected agricultural concepts and their measurements; cropping pattern, crop concentration, intensity of cropping, degree of commercialization, diversification and specialization, efficiency and productivity, crop combination regions and agricultural development.

Unit III: Theories of agricultural location based on several multi-dimensioned factors:- Von Thunen's theory of agricultural location and its recent modifications; Whittlesey's classification of agricultural regions; land use and land capability.

Unit IV: Agricultural in India- Land use and shifting cropping pattern. Regional pattern of productivity in India. Green Revolution, White Revolution, Food deficit and food surplus regions; nutritional index. Specific problems in Indian agriculture and their management and planning. Agricultural Policy in India. Contemporary Issues: Food, nutrition and hunger, food security, drought and food-security, .food aid Programmes; role of irrigation, fertilizers, insecticides and pesticides, technological know-how. Employment in the agricultural sector: landless labourers, woman, children: occupational and agricultural activities.

SUGGESTED READINGS:

1. Bayliss Smith, IP.: The Ecology of Agricultural Systems. Cambridge University London, 1987.
2. Berry, BJ.L et. al. : The Geography of economic Systems. Prentice Hall, New York, 1976.
3. Brown, L.R. : The Changing World Food Prospects - The Nineties and Beyond, World Watch Institute, Washington D.C., 1990.
4. Dyson, T. : Population and Food - Global Trends and Furure Prospects. Routledgle. London, 1996.
5 Gregor, H.P. : Geography of Agriculture. Prentice Hall, New York, 1970.
6. Grigg, D.B. : The Agricultural Systems of the World. Cambridge University Press, New York 1974.
7. Hartshorn, T.N. and Alexander, J.W. : Economic Geography. Prentice Hall, New Delhi, 1988
8. Mannion, A.M. : Agriculture and Environment Change, John Wiley, London, 1995.
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PRACTICAL

QUANTITATIVE TECHNIQUES, REMOTE SENSING AND GIS

Section (A) : Quantitative Techniques **Marks 35**

(i) Product Moment and Rank Correlation Coefficients, Linear Regression.

(ii) Hypothesis Testing ; Chi-square and 't' tests, Analysis of variance and test; Sampling

(iii) Running mean, Mean centre, Nearest Neighbour Analysis ; Lorenz Curve,

(iv) Normal distribution curve, probability.

Section (B) : Remote Sensing and GIS **Marks 35**

(i) Air Photos and Photogrammetry : Elements of photographic system : types, scales and ground coverage resolution, films, filters, aerial Cameras vertical photographs, relief displacement, airphoto interpertation.

(ii) Image Processing : types of imagery, techniques of visual interpretation, ground verification, transfer of interpreted thematic information to base maps-digital processing rectification & Restoration image enhancement. Application : Air photo and image interputations and mapping landuse and studies of water resources.

(iii) Spatial Data : Elements of spatial data : quality and error variations raster and vector data structures data conversion.

(iv) Elements of GIS : Data capute-verification and preprocessing-data storage and maintenance of database-Database Management Systems : types and merits and demerits-data manipulation, analysis intergrated analysis of spatial and attribute data.

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पं. रविशंकर शुक्ल विश्वविद्यालय

रायपुर (छत्तीसगढ़)

पाठ्यक्रम

एम. ए. पूर्व हिन्दी

CODE -111

एम. ए. अंतिम हिन्दी

CODE-112

परीक्षा 2016–17

सेमेस्टर परीक्षा प्रणाली

एवं

वार्षिक परीक्षा प्रणाली

सत्र 2016–17 एम.ए. हिन्दी अंक विभाजन सेमेस्टर प्रणाली

प्रथम सेमेस्टर
अंक विभाजन

प्रश्न पत्र	बाह्य परीक्षा	आंतरिक मूल्यांकन	कुल अंक
iFke % ¼vkfndky ,oa iwoZ e/; dky½	80	20	100
f}rh; %ikphu ,oa e/; dkyhu dk0;	80	20	100
r`rh; %Nk;kokn ,oa iwoorhZ dk0;	80	20	100
prqFkZ %ukVd] ,dkadh ,oa pfjrkRed dfr	80	20	100
		dqy	400 vad

द्वितीय सेमेस्टर
अंक विभाजन

प्रश्न पत्र	बाह्य परीक्षा	आंतरिक मूल्यांकन	कुल अंक
iape %¼mRrj e/; dky ,oa vk/kqfud dky½	80	20	100
“k”B % e/; dkyhu dk0;	80	20	100
lIre % iz;ksxoknh ,oa izxfroknh dk0;	80	20	100
v”Ve % miU;kl] fuca/k ,oa dgkuh	80	20	100
		dqy	400 vad

तृतीय सेमेस्टर
अंक विभाजन

प्रश्न पत्र	बाह्य परीक्षा	आंतरिक मूल्यांकन	कुल अंक
iFke % lkfgR; dh fl)kr rFkk vyadpuk ‘kkL=	80	20	100
f}rh;% Hkk”kk foKku	80	20	100
r`rh;% dkedkth fgUnh ,oa i=dkfjrk	80	20	100
prqFkZ % Hkkjrh; lkfgR;	80	20	100
		dqy	400 vad

चतुर्थ सेमेस्टर
अंक विभाजन

प्रश्न पत्र	बाह्य परीक्षा	आंतरिक मूल्यांकन	कुल अंक
iape % fgUnh vkykspuk rFkk leh{kk ‘kkL=	80	20	100
“k”B % fgUnh Hkk”kk	80	20	100
lIre % ehfM;k y[ku ,oa vuqokn	80	20	100
v”Ve % tuinh; Hkk”kk vkj lkfgR; ¼NRrhlx<h½	80	20	100
		dqy	400 vad

Vhi%& iR;sd i’u Ik= esa 20 vadksa dk vkrfjd eY;kadu dk vrxZr nks vkrfjd eY;kadu dk vk;kstu vfuok;Z gksxk ,oa bldk eY;kadu foHkkx dh f’k{kdksa dh }kjk fd;k tkosxk rFkk ikIrkad fo’ofo|ky; dk izf”kr fd;k tkosxk A

एम.ए. – हिन्दी – 2016–17
प्रथम सेमेस्टर
प्रश्न पत्र – प्रथम
आदिकाल एवं पूर्व मध्यकाल

;kx % 80

ikB~; fo"k;%&

bdkbZ&1 vkfndky &bfrgkl n'kZu vkSj lkfgR;sfrgkl
fgUnh lkfgR; ds bfrgkl ys[ku dh ijEijk] lkfgR;sfrgkl ds iquys[ku dh leL;k,¡ A
fgUnh lkfgR; ds bfrgkl dk dky&foHkktu vkSj ukedj.k] ukedj.k dh leL;k,¡ A

bdkbZ &2 fgUnh lkfgR; ds vkfndky dh i"BHkwfe] ohjxkFkkdky rFkk jklks dkO;] fl) ukFk ,oa tSu lkfgR;] lkfgfR;d izof̀Rr;k¡] dkO; /kkjk,¡] izfrfuf/k jpukdkj A

bdkbZ &3 iwoZ e/;dky ¼HkfDr dky½]
lkaLd`frd psruk ,oa HkfDr&vkanksyu] HkfDr dky dh izeq[k izòfRr;k¡] dkO;&/kkjk,¡ & fuxZq.k] lxq.k HkfDr /kkjk] lar dkO; lkekU; izòfRr;k¡ A

bdkbZ&4 lwQh izses[;kud dkO; & izòfRr;k¡] izse[;kud ijEijk vkSj fgUnh esa mldk fodkl A
jkeHkfDr dkO;] d".k HkfDr dkO;] lkekU; izòfRR;k¡ vkSj nk'kZfud fopkj /kkjk,¡] mi yfC/k;k¡ A

bdkbZ& 5 y?kqRrjh; iz'u ¼lEiw.kZ ikB~;Øe ls½

bdkbZ &6 oLrqfu"B ,oa vfry?kqmRrjh;iz'u ¼lEiw.kZ ikB~;;Øe ls½

vad foHkktu

bdkbZ 1 &	1X 15	=	15 vad
bdkbZ 2 &	1X 15	=	15 vad
bdkbZ 3 &	1X 15	=	15 vad
bdkbZ 4 &	1X 15	=	15 vad
bdkbZ 5 & y?kqRrjh;	5X 2	=	10 vad
bdkbZ 6 & oLrqfu"B	10X 1	=	10 vad
	;ksx	¾	80 vad
vkarfjd eqY;kadu			20

fu/kkZfjr iqLrdsa %&

1- fgUnh lkfgR; dk bfrgkl ¼lEiknd & vkpk;Z jkepUnz 'kqDy½
2- fgUnh lkfgR; dk vkfndky & gtkjh izlkn f}osnh
3- fgUnh lkfgR; dk bfrgkl ¼uxsUnz ifCyf'kax gkÅl] fnYyh½ & MkW- uxsUnz

4- vkfndkyhu fgUnh lkfgR; ¼okjk.klh fo'ofo|ky; idk'ku½ & Mk- 'kEHkukFk ik.Mk;
5- vkfndkyhu fgUnh lkfgR; lkLdfrd ihfBdk ¼fgUnh xkFk vdkneh½ &
Mk- jkeefr f=ikBh
6- fgUnh lkfgR; dk bfrgkl & Mk- cPpu flag

एम.ए. (हिन्दी) – 2016–17
प्रथम सेमेस्टर
प्रश्न पत्र – द्वितीय
प्राचीन एवं मध्यकालीन काव्य

;kx % 80

ikB; fo"k;%&

0;k[;k ,oa foospu dk fy, fuEukfdr rhu dfo;ks dk v/;;u visf{kr gS A

1- pUncjnkbZ % IkFoh jkt jklks] laiknd vkpk;Z gtkjh f}osnh] MkW- ukeoj flag ¼inekorh le;½

2- dchj xzFkkoyh% laiknd MkW- ';ke lqnj nkl ¼100 lkf[k;ka rFkk 25 in½ in Øekad& 11] 16] 24] 26] 27] 40] 45] 49] 60] 64] 70] 72] 75] 79] 89] 93] 99] 100] 101] 103] 110] 111] 135] 268
lkf[k;ka& xq:nso dks vax 1 ls 20] lqfje.k dks vax 1 ls 10] fojg dks vax 1 ls 10] X;ku fojg dks vax 1 ls 10] fprko.kh dks vax 1 ls 10] ek;k dks vax 1 ls 5] ijpk dks vax 1 ls 10 A

3- efyd eksgEen tk;lh % inekor laiknd vk- jkepUnz 'kqDy ¼ukxefr fojg [k.M ,oa flagy nhi [k.M½

Vhi%& nqr ikB gsrq fuEukfdr 5 dfo;ks dk ,oa mudh jpukvksa dk v/;;u vfuok;Z gS] bu dfo;ks ij y?kqÙkjh iz'u iwNs tk;saxs& vehj [kqljks] fo|kifr] ehjkckbZ] jghe] jlnku] jl[kku A

इकाई विभाजन		अंक विभाजन
bdkbZ 1 0;k[;k	3 0;k[;k	3X10 = 30 vad
bdkbZ 2 pUncjnkbZ ,oa bfrgkl	3 vkykspukRed	3X10 = 30 vad
bdkbZ 3 dchj ,oa tk;lh		
bdkbZ 4 nqr ikB ds dfo	5 y?kqÙkjh ¼lEiw.kZ ikB;Øe ls½	5X2 = 10 vad
10 oLrqfu"B ¼lEiw.kZ ikB;Øe ls½		10X1 = 10 vad
	;ksx ¾	80 vad
	vkarfjd eY;kadu	20 vad

निर्धारित पुस्तकेंः–

1- MkW- fofiu fcgkjh f}osnh & pUncjnkbZ
2- dchj dh fopkj/kkjk & MkW- xksfoUn f=xq.kk;u
3- iqe[k ikphu dfo & MkW- }kfjdk izlkn lDlsuk
4- dchj lkfgR; dh ij[k & ij'kqjke prqosZnh
5- tk;lh dh fof'k"V 'kCnkoyh & MkW- bfnjk dqekjh flag dk fo'ys"k.kkRed v/;;u

6- efyd ekgEen tk;lh vkj mudk dk0; & Mk- f'kolgk; ikBd
7- vehj [kljk vkj mudk lkfgR; & Mk- HkkykukFk frokjh
8- dchj & l- gtkjh iilkn f}onh

एम.ए.पूर्व (हिन्दी) 2016–17
प्रथम सेमेस्टर
प्रश्न पत्र – तृतीय
छायावाद एवं पूर्ववर्ती काव्य

dqy % 80

ikB~; fo"k;%& O;k[;k ,oa foospu ds fy, fuEukafdr rhu dfo;ksa dk v/;;u visf{kr gS A

1- eSfFkyh'kj.k xqIr & lkdsr uoe lxZ

2- t;'kadj izlkn & dkek;uh ¼fpUrk] J)k] bM+k lxZ½

3- lw;ZdkUr f=ikBh fujkyk & jke dh 'kfDr iwtk] rqylhnkl ¼izFke 10 Nan½

nzqr ikB gsrq fuEukafdr 6 dfo;ksa dk v/;;u fd;k tk,xk A

v;ks/;k flag mik/;k;& **gfjvkS/k^^] gfjoa'kjk; cPpu] eqdqV/kj ikaMs;] txUukFk nkl jRukdj] iar] egknsoh ¼y?kqRrjh; iz'u nzqr ikB ,oa ikB~;Øe ls iwNs tk,xsA½

bdkbZ foHkktu

bdkbZ 1 O;k[;k

bdkbZ 2 eSfFkyh'kj.k xqIr

bdkbZ 3 t;'kadj izlkn] lw;ZdkUr f=ikBh fujkyk

bdkbZ 4 nzqr ikB ds dfo A

vad foHkktu

1&	3 O;k[;k &	3X10	=	30 vad
2&	3 vkykspukRed &	3X10	=	30 vad
3&	5 y?kqRrjh; &	5X2	=	10 vad
4&	oLrqfu"B vfry?kqRrjh; &	10X1	=	10 vad
		;ksx	¾	80 vad
		vkarfjd ewY;kadu		20 vad

fu/kkZfjr iqLrdsa%&

1- lkdsr ,d v/;;u& MkW- uxsUnz
2- dfo fujkyk & vkpk;Z unnqykjs oktis;h
3- fujkyk dh lkfgR; lk/kuk & MkW- jkefoykl 'kekZ
4- u;k lkfgR; u;s lk/kuk & vkpk;Z unnqykjs oktis;h
5- dkek;uh ,d iqufoZpkj & eqfDrcks/k
6- izlkn dk dkO; & izse'kadj

7- fgUnh lkfgR; vk/kfud ifjn'; & vKk;
8- fgUnh lkfgR; dk bfrgkl & uxUn
9- cPpu dh dforkvk dk 'kyhoKkfud v/;;u & Mk- 'khyk 'kekk

एम.ए. – (हिन्दी) – 2016–17
प्रथम सेमेस्टर
प्रश्न पत्र – चतुर्थ
आधुनिक गद्य साहित्य
(नाटक, एकांकी एवं चरितात्मक कृति)

i.kkd % 80

ikB; fo"k; %&

ukVd	1	pUnzxqIr	&	t;'kadj izlkn
	2	gkuw'k	&	Hkh"e lkguh
,dkadh	1	nhinku	&	jkedqekj oekZ
	2-	,d fnu	&	y{ehukjk;.k feJ
	3-	rkcs dh dhMs	&	Hkqous'oj
	4-	rkfy,	&	mis'UnzukFk v'd
	5-	eEeh Bdqjkbu	&	y{ehukjk;.k yky
pfjrkRed dfr&	IkFk dk lkFkh		1	fujkyk Hkkbl
	¼dfoy nk½		2	lqHknk

bdkbZ foHkktu

bdkbZ& 1	&	0;k[;k
bdkbZ& 2	&	ukVd
bdkbZ& 3	&	,dkadh
bdkbZ&4	&	pfjrkRed dfr
bdkbZ&5	&	y?kqmRrjh; ,oa oLrqfu"B iz'u

अंक विभाजन

1&	3 0;k[;k	&	3x10 =	30 vad
2&	3 vkykspukRd	&	3x10 =	30 vad
3&	5 y?kRrjh	&	5x2 =	10 vad
4&	oLrqfu"B vfry?kqmRrjh;	&	10 x1 =	10 vad
			;ksx ¾	80 vad
			vkarfjd eY;kadu	20 vad

fu/kkZfjr iqLrdsa%&

1- fgUnh ukVd mn~Hko vkSj fodkl & MkW- n'kjFk vks>k
2- fgUnh ukVd fl)kar vkSj foospu & MkW- fxjh'k jLrksxh
3- fgUnh ukVd iquewY;kadu & MkW- lR;sUnz rustk
4- lelkef;d fgUnh ukVdksa esa pfj= l`f"V & MkW- t;nso rusTk
5- izlkn ds ukVdksa dk 'kkL=h; v/;;u & txUukFk izlkn 'kekZ
6- vk/kqfud fgUnh ukVd & uxsUnz
7- ukVd jaxeap vkSj ekgu jkds'k & MkW- lqjsUnz ;kno

8- i|lkn ;|xhu fgUnh ukVd & Mk- Hkxorh i|lkn ‘kDy
9- i|lkn d| ukVd ,o| ukV; f’kYi & Mk- ‘kkfr Lo:Ik xIr
10- ukVddkj ekgu jkd|’k & Mk- l|Unj yky dFkfj;k
11- fgUnh ,dkdh % mnHko vkj fodkl & jkepj.k egUn
12- fgUnh j|xe|p % n’kk vkj fn’kk & t;n|o ru|tk
13- Hk"e lkguh d| mi|U;kl vkj ukVd & Mk- jkd|'k d|ekj frokjh

एम.ए. (हिन्दी) – 2016–17
द्वितीय सेमेस्टर
प्रश्न पत्र – पंचम
(उत्तर मध्यकाल से आधुनिक काल तक)

le; 3 ?kaVs i.kkZad % 80

ikB~; fo"k;%&

bdkbZ 1& mRrj e/;dky ¼jhfrdky½
dky lhek] ukedj.k] izo`fRr;k¡] jhfrdkyhu lkfgR; dh fofHkUu /kkjk;sa ¼jhfrcn/k] jhfrfln/k] jhfreqDr½ izo`fRr;k¡ ,oa fo'ks"krk,¡A jhfrdky ds izfrfuf/k jpukdkj ,oa jpuk,¡A

bdkbZ 2 vk/kqfud dky & vk/kqfud dky dh lkekftd] jktuhfrd] vkfFkZd ,oa lkaLd`frd Ik`"BHkwfe A lu~ 1857 dh jkT; Økafr ,oa iqutkZxj.k] Hkkjrsanq ;qx& izeq[k lkfgR;dkj] lkfgR; ,oa lkfgfR;d fo'ks"krk,¡A

bdkbZ 3 f}onh ;qx & izeq[k lkfgR;dkj ,oa lkfgfR;d fo'ks"krk,¡] Nk;kokn& ukedj.k vkSj izo`fRr;k¡] izeq[k lkfgR;dkj] lkfgfR;d fo'ks"krk,¡ A Nk;koknksRrj dky ¼fofHkUu izo`fRr;k¡½ izxfrokn] ubZ dfork] uoxhrokn rFkk ledkyhu dfork] LoPNUnrkokn lkekU; ifjp; A

bdkbZ 4 fgUnh xn~; dk fodkl &
vk/kqfud dky] xn~; lkfgR; dh fofHkUu :Ikksa dk mnHko vkSj fodkl] miU;kl o dgkuh dk fodkl vkSj lkekU; izo`fRr;k¡] fuca/k dk fodkl vkSj izo`fRr;k¡] ukVd dk mnHko vkSj fodkl& lkekU; izo`fRr;k¡] xhfr& ukVdksa dk ifjp;kRed foospu A

bdkbZ 5 y?kqRrjh; iz'u ¼lEiw.kZ ikB~;Øe ls ikap iz'u½

bdkbZ 6 oLrqfu"B ,oa vfry?kqRrjh; iz'u ¼lEiw.kZ ikB~;Øe ls½

vad foHkktu

bdkbZ 1	&	1X 15	=	15 vad
bdkbZ 2	&	1X 15	=	15 vad
bdkbZ 3	&	1X 15	=	15 vad
bdkbZ 4	&	1X 15	=	15 vad
bdkbZ 5	& y?kqRrjh;	5X 2	=	10 vad
bdkbZ 6	& oLrqfu"B	10X 1	=	10 vad
		;ksx	¾	80 vad
	vkarfjd eY;kadu			20 vad

fu/kkZfjr iqLrdsa %&

1- vk/kqfud lkfgR; dh izo`fRr;k¡ & MkW- ukeoj flag
2- fgUnh lkfgR; chloha 'krkCnh & uUnnqykjs oktis;h
3- vk/kqfud fgUnh lkfgR; dk bfrgkl & d".k 'kadj 'kqDy

4- xn; dh fofo/k fo/kk,a & Mk- ckiqjko nqlkbZ
5- fgUnh dgkuh & mnHko vkj fodkl & Mk- ljs'k flUgk
6- fgUnh miU;kl dh iofRr;k & Mk- 'kf'k Hkw"k.k fljg
7- fgUnh ukVd mnHko vkj fodkl & Mk- n'kjFk vk>k
8- fgUnh lkfgR; dk bfrgkl & vkpk;a jkepUnq 'kqDy
9- fgUnh lkfgR; dk mnHko vkj fodkl & vkpk;a gtkjh izlkn f}osnh
10- fgUnh lkfgR; dh Hkfedk & vkpk;a gtkjh izlkn f}osnh

एम.ए. (हिन्दी) – 2016–17

द्वितीय सेमेस्टर

प्रश्न पत्र – षष्ठ

मध्यकालीन काव्य

le; 3 ?kaVs iw.kkZad % 80

ikB~; fo"k;%& O;k[;k ,oa foopu dss fy, fuEukafdr rhu dfo;ksa dk v/;;u fd;k tk,xk

1 lwjnkl & Hkzejxhr lkj & lEiknd vkpk;Z jkepUnz 'kqDy ¼50 in½

in la[;k & 1 ls 10] 21 ls 30] 51 ls 60] 61 ls 70] 81 ls 90 rd ¼50 in½

2 rqylhnkl & jkepfjr ekul ¼lqUnjdk.M½ xhrkizsl xksj[kiqj

3 fcgkjh & fcgkjh jRukdj lEiknd txUukFk nkl jRukdj ¼ikfjf.Hkd 100 nksgs½

nzqr ikB gsrq fuEukafdr 5 dfo;ksa ,oa mudh jpukvksa dk ¼fo"k; ,oa f'kYixr½ Kku vis{kr gS A

ds'ko] Hkw"k.k] inekdj] nso] ?kukuan] jk/kk foukn & [kkaMjko Hkksalys

bu dfo;ksa ij y?kqRrjh; iz'u iwNs tk,xsa A

bdkbZ foHkktu vad foHkktu

bdkbZ 1 O;k[;k 3 O;k[;k 3X10 = 30 vad

bdkbZ 2 lwjnkl] rqylhnkl 3 vkykspukRed 3X10 = 30 vad

bdkbZ 3 fcgkjh ,oa bfrgkl fo"k;d iz'u

bdkbZ 4 nzqr ikB ds dfo 5 y?kqRrjh 5X2 = 10 vad

bdkbZ 5 oLrqfu"B iz'u 10 oLrqfu"B vfry?kqRrjh; 10X1 = 10 vad

¼lEiw.kZ ikB~;Øe ls½

;ksx ¾ 80 vad

vkarfjd ewY;kadu 20 vad

fu/kkZfjr iqLrdsa %&

1- fcgkjh& MkW- fo'oukFk izlkn feJ
2- rqylhnkl vkSj mudk ;qx lEiknd & MkW- HkxhjFk feJ
3- lwjnkl dk dkO; dk ewY;kadu & MkW- jkejru HkVukxj
4- rqylh lkfgR; ds u;s lUnHkZ & MkW- ,y-,u-nqcs

5- l|jnkl & Mk- gjc|l yky oek
6- r|y lhnkl & ik- lrh'k d|ekj v'kkd i|dk'ku ub| fnYyh
7- l|jnkl & e|u|tj ik.M|;

एम.ए. – (हिन्दी) 2016–17
द्वितीय सेमेस्टर
प्रश्न पत्र – सप्तम
(प्रयोगवादी एवं प्रगतिवादी काव्य)

d|y v|d % 80

पाठ्य विषय–

l-gh-okRL;k;u vK|;& unh d| }hi] v lk/;oh.kk] ckojk vgjh] dyxh ck t j| dh] ;g nhi vd|yk] m/kkj] ng oYyh] lku eNyh

x-ek- efDrck/k & dfork & v|/kj| e| A

ukxk t|u & clUr dh vxokuh] dkb| vk, r|e l| lh[k] f'kf'kj fo"k dU;k] rk fQj D;k g|vk] ;g r|e Fkh] dk;y vkt ck|yh g] 'kklu dh cn|d] flUnj fryfdr Hkky] vdky vkj ml d| ckn] ck|ny dk f?kjr| n|[kk A

n|r ikB g|r| fuEukfdr 5 dfo;k dk v/;;u fd;k tk;|xk A

d|nkjukFk vx|oky] f=ykpu 'kkL=h] Hkokuh i|lkn feJ] fouk|n d|ekj 'kDy] /kfey

¼y?kqRrjh i'u n|r ikB ,o lEi.k ikB;Øe l| i|N tk;|x½

इकाई विभाजन

bdkb|&1 & 0;k[;k
bdkb|&2 & l-gh- okRL;k;u vK|;
bdkb|&3 & efDrck/k ,o ukxk t|u
bdkb|&4 & n|r ikB d| dfo
bdkb|&5 & oLr|fu"B vfry?kRrjh; i'u

अंक विभाजन

1- 3 0;k[;k	&	3X10 =	30 v|d
2- 3 vkyk|pukRed	&	3X10 =	30 v|d
3- 5 y?kqRrjh;	&	5X2 =	10 v|d
4- 10 oLr|fu"B vfry?kqRrjh;	&	10X1 =	10 v|d
	;k|x	¾	80 v|d
	vk|rfjd e|Y;k|du		20 v|d

निर्धारित पुस्तकें :–

1- efDrck/k dh dk0; i|fØ;k & v'kk|d pØ/kj
2- vK|; dk jpuk l|lkj & Mk- jkeLo:Ik pr|o|nh
3- dfork dh rhljh vk|k & Mk- i|Hkkdj Jk|f=;

4- dfork l lk{kkRdkj & ey; t
5- fgUnh lkfgR; dk bfrgkl & Mk- jkepUn “kDy
6- dfork dh lxr & fot ; dekj
7- dfork dk vFkkr & ijekun JhokLro
8- ukxkt u dk jpuk lkj & fot ; cgknj flg
9- Nk;kokndkRrj ic/k dk0;k e ,frgkfld] lkLdfrd ,o nk'kfud rRok dk vu'khyu & Mk- T;kfr ik.M;
10- Nk;kokndkRrj dk0;k dh fofHkUu ioRr;k ,o mudk pUrfud i{k & Mk- T;kfr ik.M;

एम.ए. – (हिन्दी) – 2016–17
द्वितीय सेमेस्टर
प्रश्न पत्र – अष्टम
आधुनिक गद्य साहित्य
(उपन्यास, निबंध एवं कहानी)

ikB~; fo"k;%& i.kkd % 80

miU;kl&	1 xksnku	&	iszepan
	2 ck.kHkVV dh vkRedFkk &		gtkjh izlkn f}osnh
fuca/k &	1 p<rh mej	&	ckyd".k HkVV
	2 dfork D;k g\	&	jkepanz 'kqDy
	3 ekVh dh ejrs	&	jkeo{k csuhiqjh
	4 pUnek eulks tkr%	&	fo|kfuokl feJ
	5 o".ko dh fQlyu	&	gfj'kadj ijlkbZ
dgkuh &	1 mlus dgk Fkk	&	pUn/kj 'kekZ xqysjh
	2 iqjLdkj	&	t;'kadj izlkn
	3- bZnxkg	&	iszepan
	4- okilh	&	m"kk fiz;Eonk
	5- cknyks ds ?kjs	&	d".kk lkscrh

bdkbZ&1 & 0;k[;k
bdkbZ&2& miU;kl
bdkbZ&3 & fuca/k
bdkbZ&4 & dgkuh
bdkbZ&5 & y?kqRrjh; ,oa oLrqfu"B

अंक विभाजन

3 0;k[;k &	3X10 =	30 vad
3 vkykspukRed &	3X10 =	30 vad
5 y?kqRrjh; &	5X2 =	30 vad
10 oLrqfu"B &	10X1 =	10 vad
	;ksx ¾	80 vad
	vkarfjd ewY;kadu	20 vad

fu/kkZfjr iqLrd%&

1- iszepan vkSj mudk ;qx & jkefoykl 'kekZ
2- xksnku ds v/;;u dh leL;k,a & MkW- xksiky jk;
3- dFkkdkj Q.kh'ojukFk js.kq & pUnHkkuq lksuoBh
4- fgUnh miU;kl dh f'kYifof/k dk fodkl & fl)ukFk rusrk
5- fgUnh miU;kl mn~Hko vkSj fodkl & lqjs'k flUgk
6- iszepan % ,d v/;;u & jkt s'oj xq:
7- egknsoh ifrfuf/k x| jpuk,a & l- jketh ik.Ms;

8- fgUnh fuc/k d vk/kkj LrEHk & Mk- gfjekgu
9- fgUnh dgkuh % mnHko vkj fodkl & lj'k flUgk
10- dgkuh % Lo:Ik vkj lonuk & jkt Un ;kno
11- dgkuh % u;h dgkuh & ukeoj flg
12- gtkjh ilkn f}onh & l- fo'oukFk frokjh
13- iepn dk thoun'ku ,o jxHkfe & Mk- 'kdj cUnyi

एम.ए. – (हिन्दी) 2016–17
तृतीय सेमेस्टर
प्रश्न पत्र – प्रथम
साहित्य के सिद्धांत तथा आलोचना शास्त्र

i.kkad % 80

ikB; fo"k;%&

bdkbZ&1 Hkkjrh; dk0; 'kkL=
& dk0; y{k.k] dk0; gsrq] dk0; i;kstu vkj dk0; d idkj
& jl fl)kar] jl dk Lo:Ik] jl fu"ifRr vkj lk/kkj.kh dj.k] jl d vax A

bdkbZ&2 vyadkj fl)kar jhfr fl)kar] oØkfDr fl)kar] /ofu fl)kar vkj vkfpR; fl)kar

bdkbZ&3 Ikk'pkR; dk0; 'kkL=
IyVk & dk0; fl)kar
vjLrq& vuqdj.k dk fl)kar] fojpu fl)kar] ykstkbul&mnkRr dh vo/kkj.kk

bdkbZ 4 eF;q vkuYM& dyk dh vo/kkj.kk
Vh-,l- bfy;V & dyk dh fuo;fDrdrk] dkyfjt&dYiuk fl)kar
LoPNnrkokn & ekDlokn

bdkbZ 5 ikB;Øe esa lq dkbZ ikp y?kqRrjh; iz'u

bdkbZ 6 ikB;Øe esa lq oLrqfu"B iz'u ;k vfry?kqRrjh; iz'u iNh tk;sxh A

vad foHkktu

bdkbZ 1	&		1X 15 =	15 vad
bdkbZ 2	&		1X 15 =	15 vad
bdkbZ 3	&		1X 15 =	15 vad
bdkbZ 4	&		1X 15 =	15 vad
bdkbZ 5	&	y?kqRrjh;	5X 2 =	10 vad
bdkbZ 6	&	oLrqfu"B	10X 1=	10 vad
		;kx	¾	80 vad
		vkarfjd eY;kadu		20 vad

1- Mk- x.kifr pUnzxIr & Hkkjrh; ,oa ik'pkR; dk0; fl)kar
2- Mk- HkxhjFk feJ & Ikk'pkR; dk0; 'kkL=] bfrgkl] fl)kar ,oa okn
3- Mk- jkeefr f=ikBh& Hkkjrh; dk0; 'kkL= dk u;k f{kfr t
4- Mk- f'kodqekj feJ& ekDlokneh lkfgR; dk fl)kar

5- Mk- uxUn & Hkkjrh; dk0; ‘kkL= dh Hkfedk
6- Mk- fuelyk tlu & Ikk’pkR; lkfgR; fplru
7- ely th Hkkbl& Hkkjrh; vkj ik’pkR; dk0; ‘kkL=
8- Mk- xxk ilkn foey & vk/kfudrk] lkfgR; dl lnHkk es A

एम.ए. – (हिन्दी) 2016–17
तृतीय सेमेस्टर
प्रश्न पत्र – द्वितीय
(भाषा विज्ञान)

i.kad % 80

ikB; fo"k;%&

bdkbZ&1 Hkk"kk vkj Hkk"kk foKku] Hkk"kk dh ifjHkk"kk vkj vfHky{k.k] Hkk"kk 0;oLFkk vkj Hkk"kk 0;ogkj] Hkk"kk lajpuk] Hkk"kk foKku Lo:Ik ,oa 0;kfIr] v/;;u dh fn'kk,a&o.kukRed] ,frgkfld vkj rqyukRed A

bdkbZ&2 Lou ifØ;k % Lou foKku dk Lo:Ik vkj 'kk[kk,a] okxo;o vkj mudk dk;Z] Lou dh vo/kkj.kk vkj Louksa dk oxhZdj.k] Lou xq.k] Lofud ifjorZu A Lofue foKku dk Lo:Ik] Lofue dh vo/kkj.kk] Lofue dk Hkn A

bdkbZ 3 0;kdj.k % :Ik foKku dk Lo:Ik vkj 'kk[kk,a] :fie dh vo/kkj.kk vkj Hkn] eDr & vkc) vFkZn'kh vkj lac/kn'kh :fie vkj 'kk[kk,a] :fie dk Hkn vkj idk;Z A okD; dk Hkn] okD;&fo'ys"k.k] fudVLFk vo;o fo'ys"k.k A

bdkbZ 4 vFkZ foKku % vFkZ dh vo/kkj.kk] 'kCn vkj vFkZ dk lac/k] Ik;kZ;rk] vudkFkZrk] foykerk vFkZ ifjorZu A

bdkbZ 5 ikB;Øe esa lk ikp y?kqRrjh; i'u

bdkbZ 6 ikB;Øe esa oLrqfu"B i'u vfry?kqRrjh; i'u iNk tk;sxk A

vad foHkktu

bdkbZ 1 &	1X 15 = 15 vad
bdkbZ 2 &	1X 15 = 15 vad
bdkbZ 3 &	1X 15 = 15 vad
bdkbZ 4 &	1X 15 = 15 vad
bdkbZ 5 &	5X 2 = 10 vad
bdkbZ 6 &	10X 1 = 10 vad
	;kx ¾ 80 vad

vkarfjd eY;kadu 20 vad

fu/kkfjr iqLrd%&

1- lkekU; Hkk"kk foKku& Mk- ckcqjke lDlsuk
2- Hkk"kk foKku & Mk- HkksykukFk frokjh
3- Hkkjr dh Hkk"kk ifjokj & Mk- jkefuokl 'kekZ
4- Hkk"kk'kkL= dh :Ikjs[kk & mn;ukjk;.k frokjh

5- fgUnh ‘kCnkuqkklu & fd’kkjh nkl ckt iq;h
6- Hkk”kk foKku vkj Hkk”kk ‘kkL= & dfiyneo f}osnh
7- lkekU; Hkk”kkfoKku & ckcjke lDlqu
8- fgUnh vkj mldk lf{kIr bfrgkl & Hkkyukkth frokjh
9- fgUnh vkj mldh fofo/k ckfy;k & iq- nhipan tqu
10- Hkk”kk foKku dq fl)kr vkj fgUnh Hkk”kk & }kfjdk iqlkn feJ

एम.ए. – (हिन्दी) 2016–17
तृतीय सेमेस्टर
प्रश्न पत्र – तृतीय
(कामकाजी हिन्दी एवं पत्रकारिता)

ikB~; fo"k;%& i.kkad % 80

bdkbZ&1 fgUnh d s fofHkUu :Ik & l tZukRed Hkk"kk] lapkj Hkk"kk] jktHkk"kk] ek/;e Hkk"kk] dk;kZy;hu fgUnh ¼jktHkk"kk½ d s iz e q[k iz dk;Z & iz k:i.k] Ik= ys[ku] la{ksi.k] iYyou] fVIi.kh A

bdkbZ&2 ikfjHkkf"kd 'kCnkoyh] Lo:Ik ,o a egRo] ikfjHkkf"kd 'kCnkoyh fuekZ.k d s fl)kar] Kku&foKku d s fofHkUu {ks=ks a dh ikfjHkkf"kd 'kCnkoyh A fgUnh dEI;wVj& dEI;wVj ifjp;] mi;ksfxrk {ks=] oc iz t ifCyf'kax ifjp; A

bdkbZ&3 baVjusV lsok iznkrk midj.kk s dk ifjp;] iz dk;kZRed j[k&j[kko ,o a baVjusV le; fer0;rrk d s lw= A baVjusV ,DlIyksjbV vFkok usV Ld si A fgUnh lk¶Vo s;j iz d s t A

bdkbZ&4 i=dkfjrk dk Lo:Ik ,o a iz dkj] fgUnh i=dkfjrk dk laf{kIr bfrgkl A lekpkj ys[ku dyk] laiknu d s vk/kkjHkwr rRo] 0;ogkfjd iwQ'kk s/ku] 'kh"kZd lajpuk] yhM] baVªks ,o a 'kh"kZd] laikndh; ys[ku] Ik"B lTtk] lk{kkRdkj] Ik=dkjokrkZ ,o a iz sl iz c a/ku] iz e q[k iz sl dkuwu ,o a vkpkj lafgrk A

bdkbZ&5 lai w.kZ ikB~;Øe ls ikap y?kqRrjh; iz'u

bdkbZ&6 lai w.kZ ikB~;Øe e sa ls oLrqfu"B iz'u vfry?kqRrjh; iz'u A

vad foHkktu

bdkbZ 1	& 1X 15	=	15 vad
bdkbZ 2	& 1X 15	=	15 vad
bdkbZ 3	& 1X 15	=	15 vad
bdkbZ 4	& 1X 15	=	15 vad
bdkbZ 5	& 5X 2	=	10 vad
bdkbZ 6	& 10X 1	=	10 vad
	;ksx	¾	80 vad
vkarfjd eY;kadu			20 vad

fu/kkZfjr iqLrd%&

1- iz;kstu ijd fgUnh & ika- lq;ksX; nhf{kr
2- iz'kklfud fgUnh & iq"ik d qekjh] Dykfld ifCyd dEiuh
3- Ik=dkfjrk d s Ng n'kd & txnh'k iz lkn prqosZnh

4-	fgUnh i=dkfjrk dk ifrfuf/k lidyu	& r:f'k[kk ljtu] jktdey idk'ku] ubZ fnYyh
5-	fgUnh i=dkfjrk	& d".k fcgkjh feJ
6-	Hkkjrh; lekpkj Ik=kj dk lxBu ,oa icU/ku	& Mk- ldekj tu
7-	Ik=dkfjrk dk bfrgkl ,oa tullpkj ek/;e	& Mk- lthoo Hkukor
8-	dEI;wVj dh Hkkf"kd vuiz;kx	& fot ; eYgk=k
9-	dEI;wVj ,Iyhdi'ku	& xkjo vxzoky

एम.ए. – (हिन्दी साहित्य) – 2016–17
तृतीय सेमेस्टर
प्रश्न पत्र – चतुर्थ
भारतीय साहित्य

i.kkad % 80

ikB; fo"k; %&

bdkbZ&1 Hkkjrh; lkfgR; dk Lo:Ik] Hkkjrh; lkfgR; d v/;;u dh leL;k,a] Hkkjrh; lkfgR; e vkt d Hkkjr dk fcEc] fgUnh lkfgR; e Hkkjrh; eY;k dh vfHk0;fDr A

bdkbZ &2 fgUnhrj lkfgR; dk bfrgkl tk rhu oxk e foHkDr g &
1- nf{k.kkR; Hkk"kk ox l ey;kye
2- iokipy Hkk"kk ox e cxyk
3- if'pekRrj Hkk"kk ox e ejkBh
iR;d fo|kFkh bu rhuk fodYik e l ,d Hkk"kk p;u djx c'kr og Hkk"kk viuh {k=h; Hkk"kk l fHkUu Hkk"kk oky ox l lcf/kr gkA
fo|kFkh ,d Hkk"kk ox ¼ey;kye] cxyk] ejkBh½ e l fdlh ,d d bfrgkl dk v/;;u djxA

bdkbZ &3 fgUnh Hkk"kk lkfgR; ,o cxyk Hkk"kk lkfgR; dk r;ukRed v/;;u A

bdkbZ& 4 miU;kl& vfXuxHk ¼cxyk& egk'osrk nsoh½
ukVd & g;onu ¼dUuM&fxjh'k dukM½
dfork lxg& dkfPp d nj[r ¼ey;kye& d-th- 'kdj fiYy½
bdkbZ pkj d vrxr doy vkykpukRed i'u iN tk,xa A

bdkbZ& 5 li.k ikB;Øe l ikp y?kqRrjh; i'u

bdkbZ &6 li.k ikB;Øe l oLrfu"B ,o vfry?kqRrjh; i'u A

vad foHkktu

bdkbZ 1 &	1X 15	=	15 vad
bdkbZ 2 &	1X 15	=	15 vad
bdkbZ 3 &	1X 15	=	15 vad
bdkbZ 4 &	1X 15	=	15 vad
bdkbZ 5 &	5X 2	=	10 vad
bdkbZ 6 &	10X 1	=	10 vad
	;kx	¾	80 vad
	vkarfjd eY;kdu		20 vad

fu/kkfjr iLrd %&

1- ey;kye lkfgR; & ij[k vkj igpku & ik- vkj- lqUnu A
2- jk"Vªh; pruk vkj ey;kye lkfgR; & ik- vkj- lqUnu A
3- ejkBh Hkk"kk vkj lkfgR; & jktey okjk
4- ey;kye lkfgR;dkjksa l lk{kkRdkj & ik- vkj- lqUnu A
5- cxyk Hkk"kk vkj lkfgR; dk bfrgkl & Hkkjrh; Hkk"kk lLFkku] bykgkckn
6- Hkkjrh; lkfgR; & Mk- uxUn
7- Hkkjrh; lkfgR; jRuekyk & l-d".kn;ky Hkkxo
8- Hkkjrh; lkfgR; d bfrgkl dh leL;k, & Mk- jkefoykl 'kekZ
9- Hkkjrh; Hkk"kkvksa d lkfgR; dk bfrgkl & dUnh; fgUnh funh'kky;] fnYyh A
10- Hkkjrh; lkfgR; % vo/kkj.kk] leUo; ,o lkn';rk& txnh'k xIr

एम.ए. – (हिन्दी) 2016–17
चतुर्थ सेमेस्टर
प्रश्न पत्र – पंचम
(हिन्दी आलोचना तथा समीक्षा शास्त्र)

i.kkZd % 80

ikB~; fo"k;%&

bdkbZ 1 eukfo'ys"k.k okn] vfLrRookn] vfHkO;atukokn] LoPNUnrkokn] vfHkO;tukokn] ekDlZokn] vk/kqfud leh{kk dh fof'k"V iof.Rr;kWa] lajpukokn] 'kSyhfoKku] mRrj vk/kqfudrk

bdkbZ 2 fgUnh dfo vkpk;ksZa dk dk0; 'kkL=h; fpUru& y{k.k dk0; ijEijk

& vkpk;Z jkepUnz 'kqDy] vkpk;Z uUnnqykjs okt is;h] MkW- jkefoykl 'kekZ] dsa'ko] nso

bdkbZ 3 vk/kqfud fgUnh vkykspuk dh izeq[k izo.Rr;kWa& 'kkL=h;] ,frgkfld] eukfo'ys"k.kokknh] lkSan;Z 'kkL=h;] 'kSyh oSKkfud

bdkbZ 4 0;ogkfjd leh{kk % dk0;ks'k dh Lofood ds vuqlkj 0;k[;k

bdkbZ 5 lEiw.kZ ikB~;Øe esa ls dkbZ ikp y?kqRrjh; iz'u

bdkbZ 6 lEiw.kZ ikB~;Øe esa ls oLrqfu"B iz'u ;k vfry?kqRrjh; iz'u iNs tk;saxs A

vad foHkktu

bdkbZ 1 &		1X 15	=	15 vad
bdkbZ 2 &		1X 15	=	15 vad
bdkbZ 3 &		1X 15	=	15 vad
bdkbZ 4 &		1X 15	=	15 vad
bdkbZ 5 &	y?kqRrjh;	5X 2	=	10 vad
bdkbZ 6 &	oLrqfu"B	10X 1	=	10 vad
	;ksx		¾	80 vad
	vkarfjd ewY;kadu			20 vad

fu/kkZfjr iqLrdsa %&

1- MkW- xksfoan f=xq.kk;r & 'kkL=h; leh{kk ds fl)kar Hkkx 1 ,oa 2
2- MkW- Hkxor Lo:Ik feJ & fgUnh vkykspuk % mnHko vkSj fodkl
3- MkW- jkes'oj [k.Msyoky & fgUnh vkykspuk ds vk/kkj LrEHk
4- MkW- f'kodj.k flag & vkykspuk ds cnyrs ekun.M vkSj fgUnh lkfgR;
5- MkW- unfd'kksj uoy & fgUnh vkykspuk dk fodkl

6- ;kxUn ‘kkgh & vfLrRookn fddxkn l dke rd
7- j.k/khj flUgk & vkykpukRed jkefoykl ‘kek

एम.ए. – (हिन्दी) 2016–17
चतुर्थ सेमेस्टर
प्रश्न पत्र – षष्ठ
(हिन्दी भाषा)

i.kkd % 80

ikB; fo"k;%&

bdkbZ&1 fgUnh dh ,frgkfld Ik"BHkfe % ikphu Hkkjrh; vk; Hkk"kk, & ofnd rFkk ykfdd lLdr vkj mudh fo'k"krk, A e/;dkyhu Hkkjrh; vk;Hkk"kk, & ikfy] ikdr] 'kkjluh] v/kekx/kh] ekx/kh] viHk'k vkj mudh fo'k"krk, A vk/kfud Hkkjrh; Hkk"kk, vkj mudk oxhdj.k A

bdkbZ&2 fgUnh dk Hkkxkfyd foLrkj & fgUnh dh miHkk"kk,] if'peh fgUnh] iohZ fgUnh] jktLFkkuh] fcgkjh rFkk igkMh vkj mudh ckfy;k A [kMh ckyh] czt vkj vo/kh dh fo'k"krk, A

bdkbZ&3 fgUnh ds fofo/k :Ik& lidZ Hkk"kk] jk"VHkk"kk] jktHkk"kk ds :Ik esa fgUnh] ek/;e Hkk"kk] lapkj Hkk"kk] fgUnh dh laoS/kkfud fLFkfr A

bdkbZ&4 fgUnh esa dEI;Vj lfo/kk, & vkdMk lalk/ku vkj 'kCn lalk/ku] orZuh 'kk/kd] e'khuh vuokn] fgUnh Hkk"kk f'k{k.k A noukxjh fyfi % fo'k"krk, vkj ekudhdj.k A

bdkbZ&5 lai.kZ ikB;Øe ls ikp y?kRrjh; iz'u A

bdkbZ&6 lai.kZ ikB;Øe ls oLrfu"B vfry?kRrjh; iz'u A

vad foHkktu

bdkbZ 1 &		1X 15	=	15 vad
bdkbZ 2 &		1X 15	=	15 vad
bdkbZ 3 &		1X 15	=	15 vad
bdkbZ 4 &		1X 15	=	15 vad
bdkbZ 5 &	y?kRrjh;	5X 2	=	10 vad
bdkbZ 6 &	oLrfu"B	10X 1	=	10 vad
	;kx		¾	80 vad
	vkrfjd eY;kdu			20 vad

fu/kkfjr iLrd%&

1- fgUnh Hkk"kk dk lf{kIr bfrgkl & Hkkykukfk frokjh
2- fgUnh vkj mldh fofo/k ckfy;k & iks- nhipUn tSu
3- Hkk"kk Hkkxky & dyk'kpUn HkkfV;k fgUnh lfefr m-iz- 'kklu y[kuÅ

4- fgUnh Hkk"kk dh :Ik lajpuk & Hkkykukfk frokjh
5- jk"VªHkk"kk fgUnh leL;k,a vkj lek/kku & nsoUnukFk 'kekZ
6- ukxjh fyfi vkj fgUnh & vuqr pk/kjh
7- lkekU; Hkk"kk foKku & Mk- ckcjke lDlsuk
8- Hkk"kk foKku & Mk- Hkkykukfk frokjh

एम.ए. – (हिन्दी) 2016–17

चतुर्थ सेमेस्टर

प्रश्न पत्र – सप्तम

(मीडिया–लेखन एवं अनुवाद)

i.kkad % 80

ikB~; fo"k;%&

bdkbZ&1 ehfM;k ys[ku

tulapkj % ik'|kfxd ,oa pqukSfr;kW] fofHkUu tulapkj&ek/;eksa dk Lo:Ik& eqnz.k] Jo.k] n`';&J0;] bUVjusV] Jo.k&ek/;e ¼jsfM;ks½] ekSf[kd Hkk"kk dh izd`fr A lekpkj ys[ku ,oa okpu] jsfM;ks ukVd] mn~?kks"k.kk ys[ku] foKkiu&ys[ku] Qhpj rFkk fjiksrkZt A

bdkbZ&2 n`';&J0; ek/;e ¼fQYe] Vsyhfotu ,oa jsfM;ks½] n`';&ek/;eksa esa Hkk"kk dh izd`fr] n`'; ,oa J0; lkexzh dk lkeatL;] ik'oZ okpu ¼okW;l vkoj½ iVdFkk&ys[ku] Vsyh&MªkekZ] laokn&ys[ku] lkfgR; dh fo/kkvksa dk n`'; ek/;eksa esa :ikUrj.k] foKkiu dh Hkk"kk A

bdkbZ&3 vuqokn & fl)kar ,oa 0;ogkj
vuqokn dk Lo:Ik] {ks=] izfØ;k ,oa izfof/k A fgUnh dh iz;kstuh;rk esa vuqokn dh Hkwfedk A dk;kZy;hu fgUnh vkSj vuqokn] tulapkj ek/;eksa dk vuqokn] foKkiu esa vuqokn] okf.kfT;d vuqokn] oSKkfud rduhdh rFkk ik'|kfxdh {ks=ksa esa vuqokn] fof/k lkfgR; dh fgUnh vkSj vuqokn A

bdkbZ&4 0;kogkfjd vuqokn vH;kl] dk;kZy;hu vuqokn] dk;kZy;hu ,oa iz'kklfud 'kCnkoyh] iz'kklfud iz;qfDr;kW] inuke] foHkkx] vkfn Ik=ksa ds vuqokn] inukeksa&vuqHkkxksa&nLrkostksa&izfrosnuksa ds vuqokn] lkfgfR;d vuqokn ds fl)kar ,oa 0;ogkj&dforka] dgkuh] ukVd] lkjkuqokn] nqHkkf"k;k&izfof/k A

vad foHkktu

bdkbZ 1 & 1X 15	=	15 vad	
bdkbZ 2 & 1X 15	=	15 vad	
bdkbZ 3 & 1X 15	=	15 vad	
bdkbZ 4 & 1X 15	=	15 vad	
bdkbZ 5 & 5X 2	=	10 vad	¼ikap y?kqRrjh;½
bdkbZ 6 & 10X 1	=	10 ¼nl oLrqfu"B½	
;ksx	¾	80 vad	
vkarfjd eWY;kadu		20 vad	

fu/kkZfjr iqLrdsa%&

1- tulapkj ek/;eksa esa fgUnh & MkW- pUnzdqekj ¼Dykfldy ifCyd daiuh½
2- tuek/;e ,oa i=dkfjrk & izoh.k nhf{kr ¼lg;ksxh lkfgR; laLFkku½
3- i=dkfjrk dk bfrgkl ,oa tulapkj ek/;e& MkW- lathoHkkxoUr ¼m-iz- t;iqj½
4- i=dkfjrk ds fofo/k vk;ke & osnizrki oSfnd
5- njn'kZu % fgUnh ds iz;kstuewyd fofo/k iz;ksx % MkW- d".kdqekj jRrw ¼ehuk{kh izdk'ku] t;iqj½

6- tuek/;e ,oa i=dkfjrk & iqoh.k nhf{kr ¼lg;ksxh lkfgR; laLFkku½
7- vuqokn dk fl)kar & ljs’k dqekj
8- vuqokn fl)kar dh :Ikjs[kk & ljs’k dqekj
9- vuqokn & cks/k & Mk- xkxh xIr ¼Hkkjrh; vuqokn ifj”kn fnYyh½

एम.ए. – (हिन्दी) – 2016–17
चतुर्थ सेमेस्टर
प्रश्न पत्र – अष्टम
जनपदीय भाषा और साहित्य (छत्तीसगढ़ी)

i.kkd % 80

ikB; fo"k; %&

bdkb&1 NRrhlx<h Hkk"kk&Hkkxkfyd lhek] ukedj.k] Hkkf"kd Lo:Ik ,o 0;kdjf.kd fo'ks"krk,¡ A

bdkb&2 NRrhlx<h lkfgR; dh ;qx iof`Rr;k ,o bfrgkl A

bdkb&3 NRrhlx<h dfork ,o dfo &
¼1½ lqnjyky 'kek
¼2½ eqdqV/kj ik.Ms;
¼3½ gfj Bkdqj
¼4½ Mk- ujsUn nso oek

bdkb&4 NRrhlx<h ukVd ,o miU;kl
1- djeNMgk ¼ukVd½ & Mk- [kcpn c?ksy
2- vkok ¼miU;kl½ & ijn'kjke oek

bdkb&5 nqrikB gsrq fuEufyf[kr jpukdkj dk v/;;u ¼ikp y?kqRrjh; iz'u iwNs tk;sxs½
¼1½ y[ku yky xqIr ¼2½ y{e.k eLrqfjgk ¼3½ dq;qj Hk"k.k
¼4½ eqdqUn dkS'ky ¼5½ ykpu iqlkn ik.Ms; ¼6½ ykyk txnyiqjh
¼7½ iou nhoku ¼8½ dknjkse nfyr

bdkb&6 lEiw.k ikB;Øe ls nl oLrqfu"B vfry?kqRrjh; iz'u A

vd foHkktu

bdkb 1	&	1X 15	=	15 vd
bdkb 2	&	1X 15	=	15 vd
bdkb 3	&	1X 15	=	15 vd
bdkb 4	&	1X 15	=	15 vd
bdkb 5	&	5X 2	=	10 vd
bdkb 6	&	10X 1	=	10 vd
		;ksx	¾	80 vd
		vkrfjd eY;kdu		20 vd

fu/kkfjr iLrd%&

1- NRrhlx<h Hkk"kk dk mnfodkl & Mk- ujsUn nso oek
2- NRrhlx<h] gychl Hkrjh Hkk"kkvks dk Hkk"kk oKkfud v/;;u & Hkkypn jko rsyx
3- NRrhlx<h ifjp;& Mk- cynso feJ
4- NRrhlx<h ykdlkfgR; dk v/;;u & n;k'kdj 'kDy
5- NRrhlx<h ykd thou vkj ykdlkfgR; dk v/;;u & Mk- 'kdqUryk oek
6- NRrhlx<h Hkk"kk dk 'kkL=h; v/;;u& Mk- 'kdj 'k"k

7- ikphu NRrhlx<h ckyh & l;kjyky xIr
8- NRrhlx<h ykd lkfgR; vkj Hkk"kk & Mk- fcgkjhyky lkg
9- NRrhlx<h Hkk"kk vkj lkfgR; & Mk- lR;Hkkek vkfMy
10- NRrhlx< d lkfgR;dkj & nohilkn oek
11- ekud NRrhlx<h 0;kdj.k & pnd|ekj pnkdj

2016–17

एम.ए. पूर्व (हिन्दी)

,e-,- iwoZ esa dqy ikap iz'u Ik= gksaxs A iR;sd iz'u Ik= rhu ?k.Vs dk rFkk 100 vadksa dk gksxk A blls ijh{kk esa Hkk"kk vkSj lkfgR; dk O;kid Kku visf{kr gS A fu/kkZfjr iqLrd vkSj mlds fufnZ"V va'k dksy O;k[;kijd[k iz'uksa ds fy, gS A lehf{kkRed iz'u d`frdkj ds lEiw.kZ d`frRo ls lacaf/kr jgsaxs A nh?kZ ikB ds fy, jpukdkj ds d`frRo ls ifjfpr gksuk vko';d gS A fgUnh Hkk"kk vkSj lkfgR; ds lEiw.kZ okM-xe; dk Kku visf{kr gS A fgUnh ds ledkyhu Hkkjrh; lkfgR;] tuinh; Hkk"kk dk lkfgR; ,oa jkstxkjksUeq[k O;kolkf;d fgUnh dk ikB;Øe cnyrs ;qx dh ekax gS A vr% fo|kfFkZ;ksa dks ;qxkuq:Ik fgUnh ds fofo/k O;kolkf;d :iksa dk Hkh v/;;u djuk gksxk A

iR;sd iz'u Ik= esa lacaf/kr dky ds bfrgkl ,oa laLd`fr dh tkudkjh Hkh visf{kr gS A vius {ks= ls lacaf/kr vkapfyd cksyh@Hkk"kk dk visf{kr Kku ,oa {ks=h; 'kCnksa dk loZ{k.k dk;Z vko';d gS A

,e,- iwoZ fgUnh ds fuEufyf[kr ikap iz'u Ik= gksaxs%&

Ø-	iz'u Ik=	iz'u Ik= dk uke	vad	isij dksM
1-	iFke	fgUnh lkfgR; dk bfrgkl	100	0313
2-	f}rh;	ikphu ,oa e/;dkyhu dkO;	100	0314
3-	r`rh;	vk/kqfud fgUnh dkO;	100	0315
4-	prqFkZ	vk/kqfud x| dkO;	100	0316
5-	iape	tuinh; Hkk"kk vkSj lkfgR; ¼NRrhlx<h½	100	0317

एम.ए. पूर्व (हिन्दी)

प्रथम प्रश्न पत्र

हिन्दी साहित्य का इतिहास

(पेपर कोड 0313)

iLrkouk&

fdlh Hkh ns'k ds tuekul dh euksof`Rr] n'kk ,oa lkonuk ds fofo/k Lo:iksa dk lfpr :Ik ogka ds lkfgR; esa ifjyf{kr gksrk gS A lkekftd] jktuhfrd] lkaLd`frd vkfn fofHkUu ifjfLFkfr;ksa ds dkj.k fpRrof`Rr;ksa esa ifjorZu gksrk gS] Qyr% lkfgfR;d :iksa esa Hkh cnyko vk tkrk gS A bl cnyh gqbZ fodkl izfØ;k dks lkfgR; ds bfrgkl ds ek/;e ls gh ns[kk ij[kk tk ldrk gS A

fgUnh {ks= dh ifjfLFkfr;ksa ls dekcs'k iwjk Hkkjr izHkkfor gksrk jgk gS ftldh xwat fgUnh lkfgRr esa izfr/ofur gS A vkBoha uoha 'krkCnh ls ysdj vkt rd

d; fodkl ifjn'; d; lkFk lkfgfR;d l'tu'khyrk d; fofo/k :Ikksa] iz ofRr;ksa vkj Hkk"kk&'kfy;ksa dk Kku fgUnh lkfgR; d; bfrgkl d; ek/;e l; gh fd;k tk ldrk g A vr% bldk v/;;u lo Fkk lkFkd ,o; lehphu g A

ikB; fo"k;

bdkbZ&1 **इतिहास–दर्शन और साहित्येतिहास** A

& fgUnh lkfgR; d bfrgkl y[ku dh ijEijk] vk/kkjHkwr lkexzh vkj lkfgR;frgkl d iquy[ku dh leL;k,a A

& fgUnh lkfgR; dk bfrgkl % dky foHkktu] lhek&fu/kkj.k vkj ukedj.k A

& fgUnh lkfgR; % vkfndky dh i"BHkwfe] fl) vkj ukFk&lkfgR;] jklk&dk0;] tu&lkfgR; A

& fgUnh lkfgR; d vkfndky dk ,frgkfld ifjn'';] lkfgfR;d iofRr;k] dk0;/kkjk,a] x| lkfgR;] ifrfuf/k jpukdkj vkj mudh jpuk,a A

bdkbZ&2 **पूर्व–मध्यकाल (भक्तिकाल) की ऐतिहासिक पृष्ठभूमि, सांस्कृतिक–चेतना एवं भक्ति–आंदोलन, विभिन्न–काव्यधाराएँ तथा उनका वैशिष्ट्य ।**

& iwoZ[k fux.k lar dfo vkj mudk vonku A

& Hkkjr esa lQh er dk fodkl rFkk iwoZ[k lQh dfo vkj dk0;xzFk] lQh dk0; esa Hkkjrh; lLdfr ,oa ykd thou d rRo A

& jke vkj d".k dk0;] jkd".kRrj dk0;] HkDrhrj dk0;] iwoZ[k dfo vkj mudk jpukxr of'k"V;] HkfDrdkyhu x|& lkfgR; A

bdkbZ&3 **उत्तरमध्यकाल (रीतिकाल) की ऐतिहासिक पृष्ठभूमि,** dky&lhek vkj ukedj.k] njckjh lajf{kr y{k.k xzFkk dh ijEijk] jhfrdkyhu lkfgR; dh fofHkUu /kkjk,a ¼jhfrc)] jhfrfl) vkj jhfreDr½ iofRr;k vkj fo'k"krk,a] ifrfuf/k jpukdkj vkj jpuk,a A jhfrdkyhu x|&lkfgR; A vk/kqfud dky dh lkekftd] jktuhfrd] vkfFkd ,oa lkLdfrd Ik"BHkwfe] lu 1857 dh jkt Økafr vkj iquutkxj.k A

Hkkjrsanq ;qx % iwoZ[k lkfgR;dkj] jpuk,a vkkj lkfgfR;d fo'k"krk,a A

f}osnh ;qx % iwoZ[k lkfgR;dkj] jpuk,a vkj lkfgfR;d fo'k"krk,a A

& fgUnh LoPNn;kokn p:ruk dk ijorh fodkl&Nk;kokn dk0; % iwoZ[k lkfgR;dkj] jpuk,a vkj lkfgR;d fo'k"krk,a A

bdkbZ&4 **उत्तरछायावादी काव्य की विविध प्रवृत्तियाँ–** iwxfrokn] iq;kxokn] u;h dfork] uoxhr] ledkyhu dfork A

iwoZ[k lkfgR;dkj] jpuk,a vkj lkfgR;d fo'k"krk,a A

& fgUnh x| dh iwoZ[k fo/kkvksa ¼dgkuh] miU;kl] ukVd] fucU/k] lLej.k] j[kkfp=] thouh] vkRedFkk fjikrkt] vkfn½ dk fodkl A

& fgUnh vkykpuk dk mnHko vkj fodkl A

& nfD[kuh fgUnh lkfgR; dk lf{kIr ifjp; A

& mnw lkfgR; dk lf{kIr ifjp; A

& fgUnhRrj {ks=ksa rFkk n'kkUrj esa fgUnh Hkk"kk vkj lkfgR; A

vkd foHkkt u &

04 vkykpukRed i'u	4 X 15	60 vkd
05 y?kqRrjh; i'u	5 X 4	20 vkd
20 oLrqfu"B i'u;	20X 1	20 vkd
	dqy	100 vkd

lqnHk&xzUFk &

1- fgUnh lkfgR; dk bfrgkl& vkpk;l jkepUnz 'kqDy
2- fgUnh lkfgR; dk bfrgkl& Mk- uxUnz
3- fgUnh lkfgR; dk bfrgkl & ckcw xqykcjk;
4- fgUnh lkfgR; dk bfrgkl & Mk- jkedqekj oekZ
5- fgUnh lkfgR; dk bfrgkl& jek'kdj 'kqDy jlky A
6- fgUnh lkfgR; dk vkfndky & Mk- gtkjh izlkn f}osnh
7- fgUnh lkfgR; % ;qx vkj iqufoZRr;k & Mk- f'kodqekj 'kekZ
8- vk/kqfud fgUnh lkfgR; dk bfrgkl& d".k 'kdj 'kqDy A
9- fgUnh Hkk"kk vkj lkfgR; dk bfrgkl& prqjlu 'kkL=h
10- fgUnh lkfgR; dk fooqpukRed bfrgkl & nsoh'kj.k jLrkxh A
11- fgUnh lkfgR; vkj mldk fodkl & izeyrk vxzoky
12- fgUnh lkfgR; dk lafkIr bfrgkl & ';kelqUnj nkl ,oa unn nqykjs okt iz;h
13- fgUnh lkfgR; dk fooqpukRed bfrgkl & Mk- lj;qdkUr 'kkL=h
14- fgUnh lkfgR; dk bfrgkl & gn;s'k feJ
15- fgUnh lkfgR; ;qx vkj /kkj & d".k ukjk;.k izlkn *ekx/k^ izlkn *ekx/k^
16- lLdfr dh pkj v/;k;& fnudj
17- fgUnh lkfgR; dk ogn bfrgkl & ukxjh iqpkfj.kh lHkk ¼18 Hkkx½
18- fgUnh lkfgR;& gtkjh izlkn f}osnh
19- fgUnh lkfgR; dh Hkfedk & gtkjh izlkn f}osnh
20- fgUnh lkfgR; dk oSKkfud bfrgkl & Mk- x.kifr pUnz xqIr Hkkx 1 ,oa 2

द्वितीय प्रश्न पत्र
प्राचीन एवं मध्यकालीन काव्य
(पेपर कोड–0314)

प्रस्तावना–

fgUnh d vkfndkyhu dk0; viuh Ik"BHkfe e vi Hk'k d vkonu dk i jh rjg le V g, g A ic/k] e Drd vkfn dk0; :ik e jfpr vkj vi Hk'k ,o n'kh Hkk"kk e vfHk0;ft r vkfndkyhu lkfgR; dh ijorh dkyk dk i Hkkfor dju e lfØ; ,o l{ke Hkfedk jgh g A budk v/;;u lekt] l Ldfr vkj x.k dh /kM duk dk le xrk e le>u d fy, vfuok;l g A

पाठ्य विषय–

0;k[;k ,o foopu d fy, fuEukfdr 6 dfo;k dk v/;;u fd;k tk,xk

1- p njcjnkb% i Fohjkt jklk l ik] vkpk;l gtkjh i lkn f}onh ,o Mk- ukoj fl g ¼'kf'ko'rk fookg [k.M½

2- fo|kifr % fo|kifr inkoyh&l ik- jkeo{k cuhi jh ¼ikjfHkd

3- dchj x Fkkoyh% l ik- Mk- ';kel nj nkl ¼100 lkf[k;k ,o 25 in½

lkf[k;k % x :no dh vx 1 l 20] l fej.k dh vx 1 l 10] fojg dh vx 1 l 10] X;ku fcjg dh vx 1 l 10] ijpk dh vx 1 l 10] j l dh vx] 1 l 5 fugdeh ifro rk & 1 l 10] fprko.kh 1 l 10] ek;k 1 l 5] dky dh vx 1 l 10 rd A

in l [;k % 11] 16] 24] 26] 27] 40] 47] 49] 60] 64] 70] 72] 75] 89] 93] 98] 99] 100] 101] 103] 110] 111] 135] 268 ¾ ¼25 in½

4- l jnkl % Hkej xhr lkj&l ik] vkpk;l jkep n 'kDy ¼50 in½

5- r yl hnkl % jkepfjr ekul ¼xhrk i l½ ¼l njdkM½

6- fcgkjh % fcgkjh jRukdj] & l ik] tx UukFk i lkn jRukdj ¼ikjfHkd 100 nkg½

7- [k.Mjko Hkk l y% jk/kk fouk n & mRrjk/k&v/;k; NCch l ¼:fDe.kh&d".k fookg½

n r ikB g r fuEukfdr 10 dfo;k dh jpukvk dk Kku] Hkkoxr] f'kYixr fo'k"krk,] dkyxr io fRr;k ,o dfo dk ifjp; tkuuk vko';d g A bu 10 dfo;k ij 5 y?kRrjh; i'u iN tk;x A

1-	uUnnkl]	2-	nkn	3-	ehjk ckbZ	4-	j nkl]
5-	jghe	6-	j l[kku	7-	d'ko	8-	n o
9-	Hk"k.k	10-	in ekdj				

vad foHkktu &

3 O;k[;k	3X 10 =	30 vad
2 vkykspukRed iz'u	2X 15 =	30 vad
5 y?kqRrjh; iz'u	5X 4 =	20 vad
20 oLrqfu"B@vfr y?kqRrjh; iz'u	20X 1 =	20 vad

bdkbZ foHkktu &

bdkbZ&1 O;k[;k
bdkbZ&2 pUnjcjnkbZ] fo|kifr ,oa dchj
bdkbZ&3 lwjnkl] rqylhnkl] fcgkjhyky ,oa [k.Mjko Hkkoa l ys
bdkbZ&4 nqrikB ds 10 dfo
bdkbZ&5 lgk;d ikB~; iqLrdksa ls & oLrqfu"B@vfry?kqRrjh

lgk;d iqLrdsa%&

1- fgUnh lkfgR; dk bfrgkl vkpk;Z jkepUnz 'kqDy
2- fgUnh lkfgR; dk vkfndky & MkW- gtkjh izlkn f}osnh
3- pUncjnkbZ & MkW- fofiu fcgkjh f}osnh
4- fo|kifr & t;ukFk ufyu
5- egkdfo fo|kifr & MkW- d".kkuUn ih;w"k
6- dchj dk jgL;okn & MkW- jkedqekj oekZ
7- dchj lkfgR; dh ij[k & ij'kqjke prqosZnh
8- lar /kekZnkl % dchj iaFk ds izorZd & MkW- lR;Hkkke vkfMy
9- d".k dkO; vkSj lwj & MkW- izse'kadj
10- lwjnkl dkO; dk eSY;kadu & MkW- jkejru HkVukxj
11- lwj lkfgR; & MkW- gtkjh izlkn f}osnh
12- lwjnkl & MkW- gjoa'kyky oekZ
13- egkdfo rqylhnkl vkSj mudk ;qx lnHkkZ & MkW- HkkxhjFk feJ
14- rqylh n'kZu & MkW- cynso izlkn feJ
15- fcgkjh dk eSY;kadu & MkW- cPpu flag
16- eqDrd dkO; ijaijk vkSj fcgkjh & MkW- jkelkxj f=ikBh
17- jhfr LoNUn dkO; /kkjk & MkW- d".kpUnz oekZ
18- e/;dkyhu fgUnh dkO;/kkjk & MkW- jkeLo:Ik feJ
19- HkfDrdky vkSj ykSd thou & MkW- f'kodqekj feJ
20- ?kukuUn vkSj LoPNUn dkO;/kkjk & MkW- ekSgu ykSy xkSM+
21- dchj & MkW- egkohj vxzoky] Jh izdk'ku] nqxZ
22- dchj & MkW- gtkjh izlkn f}osnh
23- izseq[k ikphu dfo & MkW- }kfjdk izlkn lDlsuk

तृतीय प्रश्न पत्र
आधुनिक हिन्दी काव्य
(पेपर कोड 0315)

iLrkouk &

vk/kfud fgUnh dk0; i|uuok d: Ik e uohu HkkoHkfe ,o o|pkfjd xfr'khyrk y|dj vorfjr gvk A vk/kfudrk] bgykfddrk] fo'otuhurk ,o oKkfud nf"Vdk.k bldh i|e[k fo'k"krk,| g| A mif{kr fo"k; Hkh ;gk lkFkd ,o ikl|fxd gk x, A mUuhloh lnh d: mRrjk)| l: v|kof/k rd dh l|onuk,] Hkkouk,| ,o uru fopkj ljf.k;k| ble vfHk0;fDr g, g| A e|dEey eu"; ble vfHk0;fDr gvk g| A fofo/k /kkjkvk e i|okgeku vk/kfud fgUnh dk0; i|j.kk vkj Åtk dk vtl: L=kr g| A bl i'u Ik= e 0;k[;k ,o foo|puk d: fy, fuEukfdr 7 dfo;k dk v/;;u fd;k tk,xk A

ikB; fo"k;&

1-	efFkyh'kj.k x|Irk	%	lkdr ¼uoe lx½
2-	t;'kdj i|lkn	%	dkek;uh ¼fpUrk] J)k] bMk lx½
3-	l;|dkr f=ikBh fujkyk	%	jke dh 'kfDr i|tk] ljkt Lefr ,o d|dje|Rrk A
4-	i|r	%	¼1½ ifjor|u ¼2½ uk|dk fogkj
5-	egkn|oh oek|	%	¼1½ fi|; lk/; xxu ¼2½ e| uhjHkjh n%[k dh cnyh ¼3½ i|r gku| nk vifjfpr ik.k jgu| nk vd|yk ¼4½ nj x;k og fue|e ni|.k ¼5½ ;g efnj dk nhi bl: uhjo tyu| nk ¼6½ :Ikl h r|jk /ku d:'k ik'k A
6-	vK|;	%	¼1½ unh d: }hi ¼2½ vlk/; oh.kk ¼3½ ckojk vgjh ¼4½ lku eNyh ¼5½ vkxu d: pkj ¼6½ fdruh ukok e fdruh ckj ¼7½ lR; rk cgr fey: ¼8½ ,d lUukVk c|urk g| ¼9½ geu| ik/kk l: dgk ¼10½ lkxj e|nk A
7-	efDrck/k	%	v|kj| e A
8-	ukxkt|u	%	¼1½ ckny dk f?kjr| n|kk g| ¼2½ flUn|j fryfdr Hkky ¼3½ clUr dh vkxokuh ¼4½ dkb| vk, r|el: lh[k ¼5½ f'kf'kj fo"kdU;k ¼6½ rk fQj D;k gvk ¼7½ ;g r|e Fkh ¼8½ dk;y vkt ck|yh g| ¼9½ vdky vkj ml d: ckn ¼10½ 'kklu dh cUnd A

n|rikB g|r| fuEukfdr 12 dfo;k dk v/;;u fd;k tk,xk A ble l: fdUgh 5 dfo;k ij y?kRrjh; i'u iN| tk,|x &

1- v;k/;k flg mik/;k; gfjvk/k	2- gfjo'kjk; cPpu	3- dnkjukFk vxoky
4- Hkokuh iz lkn feJ	5- 'ke'kj cgknj flg	6- f=ykspu
7- j?kqohj lgk;	8- /kfey	9- lo'oj n;ky lDlsuk
10- n";ur dekj	11-bUnq cgknj [kjs	12- ek[kuyky prqosZnh

vad foHkktu &

3 0;k[;k	3X 10 =	30 vad
2 vkykspukRed iz'u	2X 15 =	30 vad
5 y?kqRrjh; iz'u	5X 4 =	20 vad
20 oLrqfu"B@vfr y?kqRrjh; iz'u	20X 1 =	20 vad
	dqy ¾	100 vad

bdkbZ foHkktu &

bdkbZ&1 0;k[;k
bdkbZ&2 xhr] izlkn o fujkyk A
bdkbZ&3 egknsoh oekZ] vK;] eqfDrcks/k ,oa ukxktZqu A
bdkbZ&4 nqr ikB ds 12 dfo
bdkbZ&5 oLrqfu"B ¼lHkh ikB;iqLrdksa ls½

lgk;d iqLrdsa&

1- lkdsr ,d v/;;u & Mk- uxsUnz
2- izlkn dk dkO; & Mk- izse'kadj
3- dkek;uh dk iqueZY;kadu & Mk- jkeLo:Ik prqosZnh
4- dkek;uh ,d iqufoZpkj & eqfDrcks/k
5- dkek;uh ds v/;;u dh leL;k,Wa & Mk- uxsUnz
6- dfo fujkyk & vkpk;Z unn nqykjs oktis;h
7- fujkyk dh lkfgR; lk/kuk & Mk- jkefoykl 'kekZ
8- dfo nf"V & jkeLo:Ik prqosZnh
9- u;h dfork dh igpku & Mk- jktsUnz feJ
10- fgUnh lkfgR; % vk/kqfud ifjn`'; & vK;
11- u;k lkfgR; % u;s iz'u & vkpk;Z unnnqykjs oktis;h
12- fgUnh lkfgR; lEesyu dk bfrgkl & foojf.kdk
13- Lefr ys[kk & l- gh- okRL;k;u
14- dkek;uh feFkd vkSj LoIu & jes'k dqry es?k
15- fQygky & Mk- v'kksd oktis;h
16- vK; dk jpuk lalkj & Mk- jkeLo:Ik prqosZnh
17- dfork dh rhlj vka[k & Mk- iHkkdj Jksf=;
18- dfork ls lk{kkRdkj & ey;t
19- dfork dk xYi & Mk- v'kksd oktis;h
20- 'ke'kj cgknqj flag & Mk- iHkkdj Jksf=;
21- fgUnh lkfgR; dk bfrgkl & vkpk;Z jkepUnz 'kqDy
22- fujkyk dkO; iqueZY;kadu & Mk- /kuat; oekZ
23- ledkyhu fgUnh dfork & jes'k vuqie

24- ledkyhu fgUnh dk0; & Mk }kfjdk i:lkn lDluk
25- ije vfHk0;fDr dh [kkst & Mk- /ku:t ; oek
¼efDrck/k d: dk0; dk i:ue;Y;kdu½
26- Hkkj d: xhr & bUncgknj [kj:
27- vk/kfud dk0; l:dyu & lR;Hkkek vkfMy
28- lkd:'k dk 'kyh oKkfud v/;;u & l:Hknk jkBkj
29- dfo dFkkdkj foukn d:ekj 'kDy dk lkfgR; & Mk- vkLFkk frokjh ¼'krk{kh i:dk'u pkc:
dkykuh] jk;i:j½
30- i:xfr'kh y dfork vkj dnkj & fxfjtk'kdj xkre ¼'krk{kh i:dk'ku pkc: dkykuh] jk;i:j½
31- e:dekVh & Jh fo|klkxj th
32- Nk;koknkRrj dk0; dh fofHkUu i:ofRr;k ,o mudk p:Urfud i{k & Mk- T;kfr ik.M:;

चतुर्थ प्रश्न पत्र
आधुनिक गद्य–साहित्य
(पेपर कोड–0316)

mnns'; vkSj iSLrkouk&

vk/kqfud dky esa x|&lkfgR; dks vHkwriwoZ lQyrk feyh gS A ;g ekuo&eu vkSj efLr"d dh vfHkO;fDr dk l'kDr ,oa vfuok;Z ek/;e cu x;k gS A eu"; dk jkx&fojkx] rdZ&forZd rFkk fparu&euu ftl jkxkRedrk ds lkFk dk'kyiwoZ <ax ls x| esa vfHkO;fDr gksrk gS] oSlk vU; lkfgR;kx esa ugha A vk/kqfud dky esa x| dh fofo/k :Ikksa dk fodkl bl rF; dk lk{kh gS fd ikBd&eu efLr"d dh iw.kZ vfHkO;fDr x| esa gh lEHko gS A fuca/k x| dk ikBd 'kfDr'kkyh ifr:Ik] mldh oS;fDrd ,oa Lokra«; psruk dk fo'oluh; ifrfuf/k gS A ukVd] miU;kl] dgkuh rFkk vU; fofo/k fo/kkvksa dk :Ik esa x| lkfgR; okeu ls fojkV cu x;k gS A vkt eu"; dk mldh iz d`fr] ifjos'k ifjfLFkfr rFkk fparu dh fodkl izfØ;k ds lkFk lgt ikekf.kd :Ik esa x| ds ek/;e ls gh tkuk tk ldrk gS A vr% blds v/;;u vfuok;Z gS A bl i'u i= esa 2 ukVd] 2 miU;kl] 7 fuca/k] 7 dgkfu;k¡ ,oa 1 pfjrkRed d`fr iBuh; gS A

ikB~; fo"k;&

O;k[;k ,oa foopu ds fy, fu/kkZfjr &

1- pUnzxqIr ¼t;'kadj iz lkn½
2- gkuw'k ¼Hkh"e lkguh½
3- xksnku ¼izepUn½
4- ck.kHkV~V dh vkRedFkk ¼gtkjh izlkn f}osnh½

5- fuca/k&

1-	ckyd".k HkV~V %	p<+rh mej
2-	vkpk;Z jkepUnz 'kqDy %	dfork D;k gS\
3-	vkpk;Z gtkjh izlkn f}osnh %	Hkkjrh; lkfgR; dh izk.k'kfDr
4-	jkeo`{k csuhiqjh %	ekVh dh ewjrs
5-	dqcsjukFk jk; %	gjh gjh nwc vkSj ykpkj Økfr
6-	fo|kfuokl feJ %	pUnzek eulks tkr%
7-	gfj'kadj ijlkbZ %	o".ko dh fQlyu

6- dgkuh&

1-	pUnz/kj 'kekZ xqysjh %	mlus dgk Fkk
2-	t;'kadj izlkn %	iqjLdkj
3-	izepUn %	lqtku Hkxr
4-	jktsUnz ;kno %	NksVs&NksVs rktegy
5-	d".kk lkscrh %	cknyksa ds ?ksjs
6-	m"kk fiz;aonk %	okilh
7-	;'kiky %	eØhy

7- pfjrkRed d`Fkk &

fo".kq izHkkdj % vkokjk elhgk A

nr ikB gr 5 ukVddkj] 5 miU;kldkj] 5 fuc/kdkj] 5 dgkuhdkj vkj 2 LQV x| fo/kkvk d jpukdkj j[k x, g A bue l iR;d fo/kk l lcf/kr 1&1 y?kRrjh; i'u iNk tk,xk A

ukVddkj& 1- Hkkjr Un gfj'p Un 2- Mk- jked ekj oek 3- Hkou'oj
4- txnh'kp Un ekFkj 5- mi UnukFk v'd

miU;kldkj& 1- jkgy lkLdR;k;u 2- ;'kiky 3- ve ryky ukxj
4- Hkh"e lgkuh 5- eUu Hk.Mkjh

fuc/kdkj& 1- irkiukjk;.k feJ 2- ljnkj i.kflg 3- ckye d Un x Ir
4- f'koi tu lgk;d 5- pUn/kj 'kekZ xy jh

dgkuhdkj& 1- ikM; cpu 'kekZ mx 2- jkx; jk/ko 3- Q.kh'ojukFk j.k
4- f'ko ilkn flg 5- vejdkr

LQV xFk& 1- gfjo'kjk; cPpu ¼D;k Hkyk D;k ;kn d :½ 2- egkno oek ¼lLej.k½

vad foHkktu

3 0;k[;k	3X 10 =	30 vad
2 vkykpukRed i'u	2X 15 =	30 vad
5 y?kRrjh; i'u	5X 4 =	20 vad
20 oLrfu"B@vfr y?kRrjh; i'u	20X 1 =	20 vad
	dy ¾	100 vad

bdkbZ foHkktu &

bdkbZ&1 0;k[;k
bdkbZ&2 pUnxIr] vk"kk<+ dk ,d fnu] xknku ,o ck.kHkV dh vkRedFkk
bdkbZ&3 fuc/k] dgkuh ,o pfjrkRed dFkk vkokjk elhgk
bdkbZ&4 nrikB d jpukdkj
bdkbZ&5 oLrfu"B ¼lHkh ikB;Øe l½

lgk;d iLrd&

1- fgUnh ukVd mnHko vkj fodkl & Mk- n'kjFk vk>k
2- fgUnh ukVd fl)kr vkj foopu & Mk- fxjh'k jLrkxh
3- fgUnh ukVd iuY;kdu & Mk- lR;Un ru tk
4- lelkef;d fgUnh ukVdk e pfj= lf"V & Mk- t;no ru tk
5- fgUnh ,dkdh dh f'kYifof/k dk fodkl & Mk- fl)ukFk dekj
6- iepn vkj mldk ;x & Mk- jkefoykl 'kekZ
7- xknku d v/;;u dh leL;k,a & Mk- xkiky jk;
8- dgkuh ubZ dgkuh & Mk- ukeoj flg
9- ubZ dgkuh dh Hkfedk & deY'oj
10- 'kkfr fud ru e f'kokfyd & Mk- f'koilkn flg
11- gtkjh ilkn f}onh & l- fo'oukFk frokjh
12- dgkuh] lonuk vkj /kjkry & jkt Un ;kno

13- dFkkdkj Q.kh'oj ukFk j;.k & pnHkku lkuo.k
14- fgUnh d; vkpfyd miU;klk e; thou lR; & Mk- bnq i;dk'k ik.M;
15- fgUnh miU;klk e; vkpfydrk dh i;ofRr & Mk- d;o;Md;
16- fgUnh dgkuh dk jpuk 'kkL= & Mk- /ku;t ; oek
17- fgUnh dgkuh dk lQjukek & Mk- /ku;t ; oek
18- i;lkn d; ukVdk dk 'kkL=h; v/;;u & txUukFk i;lkn 'kek
19- j;x&n'ku & ufepn t;u
20- l;Lej.k & egkn;oh oek
21- i;epn lkfgR; e; lfDr&lk"Bo & jkt dqekj ik.M;
22- gtkjh i;lkn f}onh dk lkfgR; fp;ru & 'kf'k ik.M; ¼'krk{kh i;dk'ku] pkSc dkykuh] jk;i;j½
23- fgUnh y?kqdFkk dk fodkl & Mk- v;tyh 'kek ¼'krk{kh i;dk'ku] pkSc dkykuh] jk;i;j½
24- Hkh"e lkguh d; miU;kl vkj ukVd & Mk- jkd;'k dqekj frokjh ¼vfHk"kd i;dk'ku] jk;i;j½
25- ub dgkuh vkj Hkh"e lkguh & Mk- jkd;'k dqekj frokjh ¼'krk{kh i;dk'ku] pkSc dkykuh] jk;i;j½

पंचम प्रश्न पत्र
जनपदीय भाषा और साहित्य
(पेपर कोड–0317)

mn~n~'; ,oa iLrkouk&

fgUnh lkfgR; ek= [kMh cksyh rd lhfer ugha gS A mlds vusd foHkk"kkvksa esa vkt Hkh Js"B lkfgR; l`tu fd;k tk jgk gS A ikphu lkfgR; rks eq[;r% foHkk"kkvksa esa gh ikIr gS A budk IkFkd v/;;u djkus ls bu foHkk"kkvksa dk mRrjksRrj fodkl gksxk A bl iz'u i= esa {ks=h;@tuinh; Hkk"kk esa jfpr vokZphu lkfgR; dk v/;;u vko';d gS A

ikB~; fo"k;&

1. अ. छत्तीसगढ़ी भाषा एवं व्याकरण–

¼HkkSxksfyd lhek] ukedj.k] Hkk"kk dk bfrgkl] O;kdj.k ds vax&mikax½

ब. छत्तीसगढ़ी साहित्य की युग प्रवृत्तियॉ एवं इतिहास

2. छत्तीसगढ़ी कविता एवं कवि : (व्याख्या एवं विवेचना)

¼1½ lqnj yky 'kekZ ¼2½ eqdV/kj ik.Ms; ¼3½ }kfjdk iz lkn feJ

¼4½ dqat fcgkjh pkScs ¼5½ dfiy ukFk d';Ik ¼6½ ';ke yky prqosZnh

¼7½ fxfjoj nkl oS".ko ¼8½ gfj Bkdqj ¼9½ ukjk;.k yky ijekj

¼10½ Mk- ujsUnz nso oekZ

3. छत्तीसगढ़ी गद्य एवं गद्यकार – (व्याख्या एवं विवेचना)

¼1½ lrofru lqdokjk ¼';ke yky prqosZnh½

¼2½ lqok gej lxokjh ¼y[ku yky xqIr½

¼3½ xkjlh ds xkaB ¼Mk- ikyss'oj iz lkn 'kekZ½

¼4½ vkWal esa fQys vpjk ¼dsz;qj Hkk"k.k½

¼5½ dmok] dcrj vÅ eu[ks ¼ijekuan oekZ½

¼6½ xk; u x;] lq[k gks; g: ¼y{e.k eLrqfjgk½

¼7½ fQjfru ¼ekslh nkbZ½ & ¼f'ko'kadj 'kqDy½

4. छत्तीसगढ़ी नाटक एवं एकांकी – (व्याख्या एवं विवेचना)

¼1½ djeNMgk ¼ukVd½ & Mk- [kcpn c?ky

¼2½ ijek ¼,dkdh½ & uUnfd'kkj frokjh

¼3½ lmr ds Mj ¼,dkdh½ & fVdsUnz fVdfjgk

5. उपन्यास– (व्याख्या एवं विवेचना)

vkok& ijns'kh jke oekZ

nqr ikB ds fy, fuEukfdr dfo;ksa dk v/;;u fd;k tk,xk A buesa ls fdUgha ikp ij y?kqRrjh; iz'u iwNs tk,xs A

¼1½ ujflag nkl	¼2½ 'kqdyky izlkn ik.Ms;	¼3½ ykspu izlkn ik.Ms;
¼4½ dfiyukFk feJ	¼5½ I;kjsyky xqIrk	¼6½ yky txnyiqjh
¼7½ y[kuyky oekZ	¼8½ dksnkjke nfyr	¼9½ Mk- cYnso
¼10½ nkus'oj oekZ	¼11½ iou nhoku	¼12½ thou ;nq
¼13½ Å/kkjke >[kekj	¼14½ cnhfo'kky ijekuUn	

अंक विभाजन –

3 O;k[;k	3X 10	=	30 vad
2 vkykspukRed iz'u	2X 15	=	30 vad
5 y?kqRrjh; iz'u	5X 4	=	20 vad
20 oLrqfu"B@vfr y?kqRrjh; iz'u	20X 1	=	20 vad
	dqy	¾	100 vad

bdkbZ foHkktu &

bdkbZ&1 O;k[;k ¼01 dfork] 01 x|dFkk] 01 ukVd ,oa miU;kl½

bdkbZ&2 NRrhlx<+h dfork ,oa dfo

NRrhlx<+h x| ,oa x|dkj

bdkbZ&3 NRrhlx<+h ukVd] ,dkdh ,oa vkok ¼miU;kl½

bdkbZ&4 nqrikB ds jpukdkj o NRrhlx<+h lkfgR; dh ;qx izofRr;ka ,oa bfrgkl ¼vkeq[k½

bdkbl&5   Hkk"kk ,oa 0;kdj.k ¼oLrqfu"B½

ikB~;iqLrd NRrhlx<h Hkk"kk vkSj lkfgR;& lEiknd& Mk- lR;Hkkek vkfMy A

lgk;d iqLrd%&

1-	NRrhlx<h dk mn~fodkl &	Mk- ujsUnz nso oekZ
2-	NRrhlx<h ckyh 0;kdj.k vkSj dks'k &	Mk- dkfrdqekj
3-	NRrhlx<h gyoh] Hkrjh Hkk"kkvksa dk Hkk"kkoSKkfud v/;;u &	Hkkykpanz jko rSyax
4-	NRrhlx<h ifjp;&	Mk- cynso izlkn feJ
5-	[kkc rek'k &	xkSiky izlkn feJ
6-	NRrhlx<h ykSdlkfgR; dk v/;;u &	n;k'kadj 'kqDy
7-	, xzkej vkWQ NRrhlx<+ Mk;yDV & vuqoknd fxz;lZu	ghjkyky dkO;ksik/;k;
8-	Lo- ykspu izlkn ik.Ms; &	I;kjsyky xqIr
9-	NRrhlx<h ykSd thou vkSj ykSdlkfgR; dk v/;;u&	Mk- 'kdqryk oekZ
10-	NRrhlx<h dk Hkk"kk 'kkL=h; v/;;u &	Mk- 'kdqryk oekZ
11-	izkphu NRrhlx<h ckyh &	I;kjsyky xqIr
12-	NRrhlx<h lkfgR; dk ,frgkfld v/;;u &	unfd'kkj frokjh
13-	>kaih &	teuk izlkn dlkj
14-	NRrhlx<h ykSdlkfgR; vkSj Hkk"kk &	Mk- fcgkjh yky lkgw
15-	NRrhlx<+ dk uo jRu &	jes'k uS;j ¼'krk{kh izdk'ku] pkSck dkykuh] jk;iqj½
16-	NRrhlx<h ykSd lkfgR;% vFkZ vkSj 0;kfIr &	Mk-vuqlq;k vxzoky ¼'krk{kh izdk'ku] pkSck dkykuh] jk;iqj½
17-	NRrhlx<+ ds lkfgR;dkj &	nsohizlkn oekZ ¼'krk{kh izdk'ku] pkSck dkykuh] jk;iqj ½
18-	ekud NRrhlx<h 0;kdj.k &	pUnzdqekj pUnzkdj ¼'krk{kh izdk'ku] pkSck dkykuh] jk;iqj ½
19-	iSny ftUnxh dk dfo &	Mk- Mqeu yky /kzqo
20-	iqjkk&iqjkh ds fcgko &	ijnslhjke oekZ
21-	vius &	Mk- ujsUnz nso oekZ
22-	iqjkk&iqjkh ds fcgko &	ijnslhjke oekZ

23-	nokjh &	inhi dekj oek
24-	jRuk &	ikjlukFk nokxu
25-	NRrhlx< dh ljkth &	l’khy ;n
26-	lr /keinkl &	Mk- lR;Hkkek vkfMy
27-	fiojh fy[k rkj Hkkx &	cnhfo’kky ijekun
28-	ykdjx 1] 2 &	liknd l’khy ;n
29-	lku fpjb;k &	geukFk ;n
30-	gekj NRrhlx< &	l- egkohj vxoky
31-	dk’kY;kunu ¼NRrhlx<h vuokn½ &	iHktu ‘kkL=h
32-	_ rlgkj ¼NRrhlx<h vuokn½ &	jfld fcgkjh vof/k;k
33-	j:gk liuk; nkjHkkr &	Å/kkjke >[kekj
34-	NRrhlx<h xty &	edUn dk’ky
35-	[kkjckgjk rkyk xk/kh cukck &	Mk- jktUn lkuh
36-	pkj y tknk ekVjk vyokbu &	Mk- jktUn lkuh
37-	NRrhlx< gkbd &	Mk- jktUn lkuh
38-	NRrhlx<h ykdkfDr;k vkj tuthou &	Mk- vul;k vxoky
39-	NRrhlx< d ;x i:”k R;kxefr Bkdj l;kjyky&	je’k u;j ¼’krk{kh idk’ku pkc dkykuh] jk;ij½
40-	NRrhlx< dh ykd dFkk,&	t;idk’k ekul ¼’krk{kh idk-pkc dkykuh] jk;ij½

NRrhlx<h ‘kCndk’k&

1-	NRrhlx<h ‘kCndk’k &	Mk- iky’oj oek
2-	NRrhlx<h ‘kCndk’k &	Mk- pUnd[ekj pUnkdj
3-	NRrhlx<h Hkk”kk] fo;kdj.k vm dkl &	exr johUn
4-	NRrhlx<h ‘kCndk’k &	je’k pUn egjk=k ,o vU;
5-	NRrhlx<h 0;ogkfjd ‘kCn dk’k &	Mk- lR;Hkkek vkfMy
6-	NRrhlx<h egkojk dk’k &	Mk- je’kpUn egjk=k ,o vU;

Ik=&Ikf=dk, &

1-	ykdk{kj&	NRrhlx<h =ekfld if=dk] fcyklij
2-	NRrhlx<h lod &	lkIrkfgd NRrhlx<h Ik=] l- tkx’oj ilkn

3- n’kc/k dk lkIrkfgd eMb vd& l- l/kk oek

4- dkg j ufyuh r dEgykuh & okf”kd if=dk] l- ijn’khjke oek

5- /kjkgj ¼ekfld if=dk½ & l- nxk ilkn ikjdj A

2016–17

एम.ए. (हिन्दी) अंतिम

,e-,- vfre fgUnh e fuEufyf[kr vfuok;l i'u Ik= gkx A

Ø-	i'u Ik=	i'u Ik= dk uke	vad	iij dkM
1-	"k"B	dk0;'kkL= ,o lkfgR;ykpu	100	0318
2-	lIre	Hkk"kkfoKku ,o fgUnh Hkk"kk	100	0319
3-	v"Ve	Ik;kstuey d fgUnh	100	0320
4-	uoe	Hkkjrh; lkfgR;	100	0321
5-	n'ke	Ik=dkfjrk if'k{k.k	100	0322

षष्ठ प्रश्न पत्र
काव्यशास्त्र एवं साहित्यलोचन
(पेपर कोड–0318)

iLrkouk&

jpuk d oSf'k"V; vkj eYy;ck/k d mn?kkVu d fy, dk0;'kkL= vkj lkfgR;ykpu dk Kku vifjgk;l g A bul lkfgfR;d le> fodflr gkrh g A ;g nf"V feyrh g ftld vk/kkj ij lkfgR; d ee vkj eY;oRrk dh okLrfod ij[k dh tk ld A lkekftd&lkLdfrd ifjo'k d lkFk jpuk dk vkLokn ikIr dju] jpuk dk mldh lexrk e le>u vkj tkpu&ij[ku d fy, Hkkjrh; vkj Ikk'pkR; dk0; 'kkL= rFkk fgUnh d futh lkfgR;ykpu dk v/;;u lehphu g A

ikB;fo"k;

bdkbZ&1 lSLdr dk0;'kkL= % dk0;&y{k.k] dk0; gsrq] dk0; i;kstu] dk0; d idkj A

jl&fl)kUr% jl dk Lo:Ik] jl fu"ifRr] jl d vax] lk/kkj.khdj.k] lgn; dh vo/kkj.kk

vyadkj fl)kUr % eYy LFkkiuk,a] vyadkjk dk oxhdj.k A

jhfr dk fl)kUr% jhfr dh vo/kkj.k] dk0;&x.k] jhfr ,o 'kSyh] jhfr fl)kUr dh iEk[k LFkkiuk,a A

oØkfDr&fl)kUr% oØkfDr dh vo/kkj.k] oØkfDr d Hkn] oØkfDr ,o vfHk0;tukokn A

/ofu&fl}kUr % /ofu dk Lo:Ik] /ofu& fl)kUr dh iEk[k LFkkiuk,a]

/ofu& dk0; d i e[k in A Hkn] x.khHkr] 0;X;] fp=&dk0; A

vkfpR; fl)kr % ije[k LFkkiuk,] vkfpR; d Hkn

bdkb&2 & ik'pkR; dk0;'kkL=

IyVk % dk0; fl)kr

vjLr % vudj.k& fl)kr] =klnh& foopu

ykt kbu l % mnkRr dh vo/kkj.kk A

eF;; vkuYM % vkykpuk dk Lo:Ik vkj idk; A

vkb-,-fjpM l % jkxkRed vFk] loxk dk lr yu] 0;ogkfjd vkykpuk A

dkyfj t

Mh-, l- bfy ;V

bdkb&3 ¼d½ fgUnh dfo&vkpk;k dk dk0;'kkL=h;] fpru] y{k.k] dk0; ijijk ,o dk0; f'k{kk&

¼1½ d'konk l ¼2½ nio ¼3½ jkepUn 'kDy ¼4½ unnyykj okt i;h ¼5½ Mk- jkefoykl 'kek A

¼[k½ fgUnh vkykpuk dh ie[k iofRr;k %

'kkL=h;] 0;fDrokn h] ,frgkfl d ryukRed] iHkkookn h] eukfo'y"k.koknh] lkn;'kkL=h;] 'kyh oKkfud vkj lekt'kkL=h; A

¼x½ 0;kogkfjd leh{kk] dk0;k'k dh Lofood d vu lkj 0;k[;k A

bdkb&4 fl)kr vkj okn&vfHkt kR;okn] LoPNnnkokn] vfHk0;tukokn] ekDlokn] eukfo'y"k.k rFkk vfLrRo okn A

bdkb foHkkt u		vd foHkkt u
1-	lLd r dk0; 'kkL=	15 vd
2-	ik'pkR; dk0;'kkL=	15 vd
3-	¼d½ fgUnh dfo vkpk;k dk dk0;'kkL=h; fpru	15 vd
	¼[k½ fgUnh vkykpuk dh ie[k iofRr;k	
	¼x½ 0;kogkfjd leh{kk	

4-	fl)kar vkj okn		15 vad
5-	5 y?kqRrjh; iz'u	5X4	20 vad
6-	20 oLrqfu"B@vfr y?kqRrjh; iz'u	20X1	20 vad
		dqy	100 vad

lanHkZ xzUFk%&

1- lkfgR; ds izeq[k Ik{k & Mk- jkeewfrZ f=ikBh
2- jl fl)kar & Mk- uxsUnz
3- jhfr dk0; dh Hkwfedk & Mk- uxsUnz
4- Hkkjrh; dk0;'kkL=h & Mk- mn;Hkkuq flag
5- fgUnh dh lkekftd leh{kk & Mk- jkek/kkj 'kekZ
6- fgUnh vkykspuk ds vk/kkj LrEHk
7- leh{kk ds izfreku & Mk- fueZyk tSu
8- Ikk'pkR; dk0; 'kkL= & Mk- fot; cgknqj flag
9- Ikk'pkR; leh{kk ds ekunaM & izk- izeksn oekZ
10- Hkkjrh; vkSj ik'pkR; leh{kk & Mk- x.ks'k [kjs
11- ekDlZoknh lkfgR; fparu & Mk- f'ko dqekj feJ
12- vkykspuk ds u;s eku & d.kZ flag pkSgku
13- dyk dh dlkSVh & fueZyk oekZ
14- ;FkkFkZokn & Mk- f'kodqekj feJk
15- nsljh ijEijk dh [kkst & Mk- ukeoj flag
16- leh{kk ds izfreku & Mk- xaxkpj.k f=ikBh
17- u;k lkfgR; u;s iz'u & vkpk;Z uUn nqykjs okt isbZ;h

सप्तम प्रश्न पत्र
भाषा विज्ञान एवं हिन्दी भाषा
(पेपर कोड–0319)

iLrkouk&

lkfgR; vk|r ,d Hkkf"kd fufer g A lkfgR; d xHkhj v/;;u d fy, Hkkf"kd 0;oLFkk dk l|Li"V lokfx.k Kku vifjgk;| g A

Hkk"kk foKku Hkk"kk dh oLrfu"V v/;;u i.kkyh d :Ik e Hkkf"kd bdkb;k rFkk Hkk"kk l|jpuk d fofHkUu Lrjk ij bud v|r% l|c/kk d foU;kl dk vkykfdr dj u doy v/;rk dk Hkkf"kd v|rnf"V nrk g vfir| Hkk"kk fo"k;d foopu d fy, ,d fu:Ikd Hkk"kk Hkh i|nku djrk g A e|y Hkk"kk 0;oLFkk ij vkjkfir f}rh; lkfgR;d 0;oLFkk dh Hkkf"kd i|dfr dh Lohdfr ikphu Hkkjrh; ,o v/kqukru ik'pkR; lkfgR; fp|ru e leku :Ik l y{k.kh; g A dgu dh vko';drk ugh fd Hkk"kk d lkfgR;|Rrj] i;kstue|yd :ik d v/;;u e Hkh Hkk"kk o|Kkfud fp|ru dk ykHk mruk gh egRoi.k g A

Hkk"kk o|Kkfud vk/kkj ij fgUnh Hkk"kk dk ,frgkfld fodkl Øe] Hkkxkfyd foLrkj] Lo:Ik] fofo/k:Ikrk rFkk fgUnh e dEI;Vj l|fo/kkvk fo"k;d tkudkjh ,o noukxjh d o|f'k"V; fodkl vkj ekuohdj.k dk fooj.k fgUnh d v/;|rk d fy, vR;|r mi;kxh g A

ikB; fo"k;&

¼d½ Hkk"kk foKku

1- Hkk"kk vkj Hkk"kk foKku] Hkk"kk dh ifjHkk"kk vkj vfHky{k.k] Hkk"kk&0;oLFkk vkj Hkk"kk 0;ogkj] Hkk"kk&l|jpuk vkj Hkkf"kd&i|dk;] Hkk"kk foKku&Lo:Ik ,o 0;kfIr] v/;;u dh fn'kk,&o.kkRed] ,frgkfld vkj r|yukRed A

2- Loui fØ;k&LoufoKku dk Lo:Ik vkj 'kk[kk, okxo;o vkj mud dk;] Louk dk oxhdj.k] Lofud ifjor|u A

3- 0;kdj.k&:Ik&ifØ;k dk Lo:Ik vkj ‘kk[kk,a] :fie dh vo/kkj.kk vkj Hkn] eDr&vkc) vFkn’kh vkj lc/kh n’kh] lc/kn’kh :fie d Hkn vkj idk;a A okD; dh vo/kkj.kk] okD; d Hkn] okD; fo’y”k.k A

4- vFkkfoKku& vFk dh vo/kkj.k] ‘kCn vkj vFk dk lc/k] vFk&ifjorlu A

5- lkfgR; vkj Hkk”kkfoKku&lkfgR; d v/;;u e Hkk”kkfoKku d vxk dh mi;kfxrk A

¼[k½ fgUnh Hkk”kk

1- fgUnh dh ,frgkfld Ik”BHkfe] ikphu Hkkjrh; vk;Hkk”kk,a&ofnd rFkk ykfdd lLdr vkj mldh fo’k”krk,a A e/;dkfyu Hkkjrh; vk;Hkk”kk,a&ikfy] ikd r&’kkjluh] v/kekx/kh] ekx/kh] viHk’k vkj mudh fo’k”krk,a A vk/kfud Hkkjrh; vk;Hkk”kk&leg vkj mudk oxhdj.k A

2- fgUnh dk Hkkxkfyd foLrkj] fgUnh dh miHkk”kk,a] if’peh fgUnh] iohl fgUnh] jktLFkkuh] fcgkjh rFkk igkMh vkj mudh ckfy;k A [kMh cyh] ct vkj vo/kh dh fo’k”krk,a A

3- fgUnh dk Hkkf”kd Lo:Ik&fgUnh ‘kCn jpuk&milx] iR;;] lekl A :ijpuk fylx] opu vkj dkjd 0;oLFkk d lnHk e fgUnh dh lKk] loluke] fo’k”k.k vkj fØ;k:Ik A fgUnh dk0;] jpuk&inØe vkj vfUofr A

4- fgUnh d fofo/k :Ik&lid Hkk”kk] jk”VHkk”kk] jkt Hkk”kk d :Ik e fgUnh] ek/;e&Hkk”kk] lpkj Hkk”kk] fgUnh dh lo/kkfud fLFkfr A

5- fgUnh e dEI;Vj lfo/kk,a & vkdMk&llk/ku vkj ‘kCn&llk/ku] oruh&’kk/kd] e’khuh vuokn] fgUnh Hkk”kk f’k{k.k A

6- noukxjh fyfi&fo’k”krk,a vkj ekuohdj.k A

bdkb foHkkt u&

bdkb&1 Hkk”kk vkj foKku] Lou&ifØ;k

bdkb&2 0;kdj.k

bdkb&3 vFk foKku] lkfgR; vkj Hkk”kkfoKku A

bdkbZ&4 fgUnh dh ,sfrgkfld Ik`"BHkwfe] fgUnh dk HkkSxksfyd foLrkj] fgUnh dk Hkkf"kd Lo:Ik A

bdkbZ&5 fgUnh ds fofo/k :i] nsoukxjh fyfi] fgUnh esa dEI;wVj dh lqfo/kk,¡ A

vad foHkktu &

Hkk"kk foKku	¼2 vkykspukRed iz'u½	2X15 =	30 vad
fgUnh Hkk"kk	¼2 vkykspukRed iz'u½	2X15 =	30 vad
5 y?kqRrjh; iz'u		5X4 =	20 vad
20 oLrqfu"B@vfr y?kqRrjh iz'u		20X1 =	20 vad
		dqy	100 vad

lUnHkZ xzUFk&

1- Hkkjrh; vk;Z Hkk"kk vkSj fgUnh & lquhfr dqekj pVthZ
2- Hkkjrh; Hkk"kk,¡ vkSj Hkk"kk leL;k,¡ & lqcks/kh leL;k,¡ &
3- fgUnh Hkk"kk dk bfrgkl & /khjsUnz oekZ
4- ukxjh vad vkSj v{kj & /khjsUnz oekZ
5- lkekU; Hkk"kk foKku & ckcqjke lDlsuk
6- Hkk"kkfoKku vkSj fgUnh Hkk"kk & HkksykukFk frokjh
7- fgUnh Hkk"kkfoKku & euekSgu xkSre ¼lk;k iz dk'ku½
8- Hkk"kkfoKku ds fl)kar vkSj fgUnh Hkk"kk & }kfjdk izlkn lDlsuk ¼Hkhe'kk iz dk'ku½
9- Hkk"kkfoKku vkSj Hkk"kk & MkW- dfiyno f}osnh
10- Hkk"kkfoKku & nsosUnzukFk 'kekZ
11- Hkk"kk 'kkL= & mn;ukjk;.k frokjh
12- fgUnh Hkk"kk vkSj ckfy;ksa dk vUrj lEc/k & lh-MkW- ljkst feJk ¼'kkfr iz dk'ku] bykgkckn½
13- fgUnh dk uohure cht&0;kdj.k & je'kpUnz egjks=k ,oa fprjat tudj
14- iz;kstu ewyd fgUnh & ckyssUnq 'ks[kj frokjh
15- fgUnh Hkk"kk dh lajpuk ds vH;kl & johUnzukFk JhokLro

अष्टम प्रश्न पत्र
प्रयोजनमूलक हिन्दी
(पेपर कोड– 0320)

iLrkouk&

Hkk"kk ekuo thou dh vfuok;Z lkekftd oLrq vkSj 0;kogkfjd pruk gS A ftlds nks eq[; vk;ke ;k i{k gS A lkfgR;ijd vkSj iz;kstuijd Hkk"kk ds iz;kstuijd vkokl dk lEc/k gekjh lkekftd vko';drkvksa vkSj thou 0;ogkj ls gS vkSj 0;fDrijd gksdj Hkh tks lekt&lkis{k lksp ek/;e ¼lfoZl&VwYl½ ds :Ik esa iz;qDr gksrh gS A mRrj vk/kqfud dky esa thou vkSj lekt dh fofHkUu vko';drkvksa vkSj nkf;Roksa dh iwfrZ ds fy, fofHkUu 0;ogkj {ks= esa mi;ksx dh tkus okyh iz;kstuijd fgUnh dk v/;;u vfr vko{;d gS A blds fofo/k vk;keksa ls u doy jkstxkj ;k thfodk dh leL;k,a gy gksxh vfirq jk"Vª Hkk"kk rFkk jktHkk"kk dk LFkku Hkh n`<+ gksxk A

ikB~; fo"k;%&

इकाई–1 खंड–क : कामकाजी हिन्दी

& fgUnh ds fofHkUu :Ik&lEidZ Hkk"kk] lapkj&Hkk"kk] jktHkk"kk] ek/;e&Hkk"kk] ekrHkk"kk A

& dk;kZy;h fgUnh ¼jktHkk"kk½ ds izeq[k iz;qfDr;k¡ % ik:i.k] fVIi.k] ys[ku] la{ksi.k] iYyou] fVIi.kh A

& ikfjHkkf"kd 'kCnkoyh& Lo:Ik ,oa egRo] ikfjHkkf"kd 'kCnkoyh&fuekZ.k ds fl)kar A

& Kku&foKku ds fofHkUu {ks=ksa dh ikfjHkkf"kd 'kCnkoyh ¼fu/kkZfjr 'kCn½

हिन्दी कंप्यूटिंग

& dEI;wVj% ifjp;] :ijs[kk] mi;ksx rFkk {ks= oc&ifCyf'kax dk ifjp; A

& bUVjusV lsok& miHkksDrk dk ifjp;] iz;ksDrk j[k&j[kko ,oa bUVjusV le; fer0;f;rk ds lw= A

& oc&ifCyf'kax

& bVj ,DlIyksjj vFkok usVLdsi A

& fyd] cmftx] b&ey Hktuk@ikIr djuk] fgUnh d ie[k bVjuV ikVy] Mkmuykfdx o viykfdx fgUnh lk¶Vo;j] idt A

इकाई–2 खंड – ख– पत्रकारिता : स्वरूप एवं विभिन्न प्रकार ।

fgUnh i=dkfjrk dk lf{kIr bfrgkl

& lekpkj& y[ku & dyk

& liknu d vk/kkj Hkr rRo A

& 0;ogkfjd iQ & 'kk/ku

& 'kh"kd dh ljpuk] yhM] bVk ,o 'kh"kd&liknu] likndh; y[ku

& Ik"B lTtk

lk{kkRdkj] Ik=dkj&okrk ,o isl&icd/ku

ie[k isl & dkuu ,o vkpkj&lfgrk A

इकाई 3 खंड– गः मीडिया – लेखन

& tulpkj % ik|kfxd ,o pukf;k

& fofHkUu tulpkj&ek/;ek dk Lo:Ik&em.k] J0;] n';&J0;] bVjuV A

& J0; ek/;e ¼jfM;k½

& ekf[kd Hkk"kk dh idfr A lekpkj y[ku ,o okpu A jfM;k ukVd A mn?kk"k.kk y[ku A foKkiu y[ku A

& Qhpj ,o fjikrkt A

& n'; & J0; ek/;e ¼fQye] Vyhfotu ,o fofM;k½

& n'; ek/;ek e Hkk"kk dh idfr A

& n'; ,o J0; lkekxh dk lkeltL; A ik'o okpu ¼ok;l vkoj½

& iVdFkk y[ku & Vyh Mkek@MkD;eUVh Mkek A

& lokn& y[ku A lkfgR; dh fo/kkvk dk n'; ek/;ek e :ikrj.k A foKkiu dh Hkk"kk A

& bVjuV % lkexh & l'tu (Contect Creation½

इकाई 4 खंड – घ : अनुवाद : सिद्धांत एवं व्यवहार

& vuqokn dk Lo:Ik] {k= ifØ;k ,oa ifof/k

& fgUnh dh i;ktuh;rk esa vuqokn dh Hkfedk

& dk;kZy;hu fgUnh vkj vuqokn

& tu lapkj ek/;eksa dk vuqokn

& foKkiu esa vuqokn

& oSpkfjd % lkfgR; dk vuqokn

& okf.kfT;d vuqokn

& oSKkfud] rduhdh rFkk iz|kfxdh {k=ksa esa vuqokn

& fof/k&lkfgR; dh fgUnh vkj vuqokn] 0;ogkfjd vuqokn vH;kl A

dk;kZy;h vuqokn % dk;kZy;hu ,oa i’kklfud ‘kCnkoyh] i’kklfud i;kZDr;k] inuke] foHkkx vkfn

& Ikzksa dk vuqokn

& inukeksa] vuqHkkxksa] nLrkoStksa] ifronuksa dk vuqokn

& cksd & lkfgR; dk vuqokn dk vH;kl

& fof/k & lkfgR; dk vuqokn dk vH;kl

& lkfgfR;d & vuqokn dk fl)kar ,oa 0;ogkj % dfork] dgkuh ukVd A

& lkjkuqokn

& nqHkkf”k;k ifof/k

& vuqokn iqujh{k.k ,oa eY;kadu

bdkbZ foHkktu		vad foHkktu
bdkbZ&1&d& dkedkth fgUnh o fgUnh dEI;wVj		15 vad
bdkbZ&2&[k& i=dkfjrk		15 vad
bdkbZ&3&x& ehfM;k y[ku		15 vad
bdkbZ&4& vuqokn		15 vad
bdkbZ&5&y?kqRrjh; iz’u	5X4 =	20 vad

bdkbl&6& 20 oLrfu"B i'u@vfry?kRrjh; i'u 20X1 = 20 vad

संदर्भ ग्रन्थ –

1- i;kstukRed fgUnh & ik- l;lilkn nhf{kr ,oa flg ¼lyHk idk'ku½

2- okf.kT;d fgUnh & vkj-ch-ukjk;.k ¼Kkukan; idk'ku½

3- 0;kogkfjd fgUnh & ,u-Mh-ikyhoky ¼ekuh"kk idk'ku] fnYyh½

4- i'kklfud fgUnh & i"ik dekjh ¼Dykfldy ifCyd dEiuh½

5- vPNh fgUnh & jkepUnz oekZ

6- tulipkj ek/;eksa esa fgUnh & Mk- pUnzdekj ¼Dykfldy ifCyd diuh½

7- cfdx fgUnh Ik=kpkj] Lo:Ik ,oa lEi"k.k & Mk- fu'py ,oa flg ¼fdrkc ?kj] ubl fnYyh½

8- i=dkfjrk dh N% n'kd & txnh'k ilkn prioinh ¼lkfgR; lxe] bykgkckn½

9- fgUnh i=dkfjrk dk o'gn bfrgkl & vt;u frokjh ¼ok.kh idk'ku½

10- if=dk likanu dyk & Mk- jkepUnz frokjh ¼vkyz[k idk'ku½

11- fgUnh i=dkfjrk & d".k fcgkjh feJ ¼Hkkjrh; KkuihB idk'ku½

12- Hkkjrh; lekpkj Ik=ksa dk lxBu vkj icU/k& Mk- lideky tu] e-i-fg-x-v-

13- tuek/;e vkj i=dkfjrk & ioh.k nhf{kr ¼lg;kxh lkfgR; lLFkku½

14- i=dkfjrk dk bfrgkl ,oa tulipkj ek/;e& Mk- litho Hkkukur ¼;-i- jk;ipj½

15- o'gn fgUnh i=&if=dk dk'k & l;l ilkn nhf{kr

16- i=dkfjrk lanHkZ dk'k & Mk- lq/khUnz] Mk- jkeidk'k ¼ok.kh idk'ku½

17- i=dkfjrk dh fofo/k vk;ke & on iirki ofnd

18- tuek/;e vkj i=dkfjrk & Mk- ioh.k nhf{kr ¼lg;kxh lkfgR; lLFkku½

19- dEI;wVj v/;;u % ,d ifjp; & ujUnz flg iVy ¼'krk{kh idk'ku] pkcl dykuh] jk;ipj½

20- bVjusV % ,d tkudkjh & ,l-eDdM ¼'krk{kh idk'ku] pkcl dykuh] jk;ipj½

21- njn'ku% fgUnh dh i;ksxeyd fofo/k i;ksx& Mk- d".k dekj jRrz ¼ehuk{kh idk'ku] t;ipj½

22- dEI;wVj dh Hkkf"kd vuqi;ksx & fot; eYgksk ¼ok.kh idk'ku½

23- dEI;wVj ,Iyhds'ku & xkjo vxzoky ¼f'kok idk'ku½

24- dEI;wVj D;k] D;ksa vkj dSls & jkec'ky fo'ofo|kpk;l ¼ok.kh idk'ku½

25- vuqokn dh fl)kar & ljh'k dekj

26- vuqokn fl)kar dh :ijs[kk & ljh'k dekj

27- vuqokn ck/k & Mk- xkxhxIr ¼Hkkjrh; vuqokn ifj"kn] fnYyh½

28- lkfgR;kuqokn & lqokn vkj lqonuk & Mk- vkjl ¼ok.kh iqdk'ku½

29- fgUnh esa 0;kogkfjd vuqokn & vkykd jLrkxh ¼lqeir iqdk'ku½

30- iq;kstueyd fgUnh & ¼l-½ Mk- fprjtu dj ,oa Mk- lq/khj 'kekZ

नवम् प्रश्न पत्र
भारतीय साहित्य
(पेपर कोड– 0321)

प्रस्तावना –

Hkkjrh; Hkk"kkvksa e fgUnh Hkk"kk vkj lkfgR; dk LFkku vU; izkarh; Hkk"kkvksa dh rqyuk e vi{kkdr vf/kd egRoiw.kZ g] blfy, fgUnh lkfgR;k/;;u dk vf/kdkf/kd xHkhj rFkk i'kLr cukuk vR;ar vko';d gS A ,d lefdr Hkkjrh; lkfgR; dh :ijpuk ds fy, fgUnh dk Hkkjrh; lanHkZ loZFkk izklfxd gS A bl n`f"V ls fgUnh ds LukrdksRrj fo|kfFkZ;ksa ds fy, Hkkjrh; Hkk"kkvksa ds lkfgR; dk Kku vfuok;Z gS A rHkh mudk Kku f{kfrt ,oa lkaLdfrd n`f"V dk fodkl gksxk A ;gh ughaa] bllsa fgUnh v/;;u dk vrjax foLrkj Hkh gksxk A bl i'ui= dk pkj [kaM gksxs A iR;sd [kaM ls ,d&,d i'u dk mRrj nsuk vfuok;Z gksxk A

ikB;fo"k;&

प्रथम खंड –

1- Hkkjrh; lkfgR; dk Lo:Ik
2- Hkkjrh; lkfgR; ds v/;;u dh leL;k,a
3- Hkkjrh; lkfgR; e vkt ds Hkkjr dk fcac
4- Hkkjrh;rk dk lekt 'kkL=
5- fgUnh lkfgR; e Hkkjrh; eY;ksa dh vfHk0;fDr A

द्वितीय खंड

bl ds vrxZr fgUnhrj lkfgR; dk v/;;u vif{kr gS] tks rhu oxksZ e foHkkftr gS&
1- nkf{k.kkR; Hkk"kk oxZ e ey;kye
2- iokZpy Hkk"kk oxZ e cxyk
3- if'pekRrj Hkk"kk oxZ e ejkBh

निर्देश–

1- iR;sd fo|kFkhZ bu rhu fodYiksa e ls ,d Hkk"kk dk p;u djsxk] c'krsZ og Hkk"kk mlds viuh {ks=h; Hkk"kk ls fHkUu Hkk"kk oky oxZ ls lacf/kr gksxh A
2- fo|kFkhZ ,d Hkk"k&oxZ ¼ey;kye@cxkyh@ejkBh½ e ls fdlh ,d ds lkfgR; ds bfrgkl dk v/;;u djsxk A

तृतीय खंड –

bl [kaM ds vrxZr rqyukRed v/;;u vif{kr gS A ble f}rh; [kaM e fu/kkfjr fdlh ,d fgUnhrj Hkk"kk lkfgR; ds lkFk fgUnh dk tkMdj v/;;u djuk gksxk A

चतुर्थ खंड–

bldh vrxr ,d miU;kl] ,d dfork lxg] ,d ukVd dk vkykpukRed v/;;u fd;k tk;xk A i'u vkykpukRed iN tk,xs A rhuk fo/kkvk ij ,d&,d i'u iN tk,xs A rhuk i'uk d leku :Ik l 5&5 vad j[k tk,xs A
miU;kl vfXuxHk ¼cxyk eg'ork noh½

dfork lxg dkfPp d nj[r ¼ey;kye d-th-'kdjfiYy½

ukVd g;onu ¼fxjh'k dukM½

bdkbZ&foHkkt u		vad foHkkt u
bdkbZ&1 [kM ,d		15 vad
bdkbZ&2 [kM nks		15 vad
bdkbZ&3 [kM rhu		15 vad
bdkbZ&4 [kM pkj		15 vad
bdkbZ&5 y?kRrjh; i'u	(5X4)	20 vad
bdkbZ&6 oLrfu"B i'u@vfr y?kRrjh; i'u	(20X1)	20 vad

पाठ्य पुस्तक–

उपन्यास–1 vfXu xHk ¼cxyk½ & egk'ork noh ¼idk'kd& fdrkc Dyc] jk/kkd".k idk'ku½

कविता 2. dkfPp d nj[r ¼ey;kye½ d-th- 'kdjfiYy ¼idk'kd ok.kh idk'ku] 21 ,] ubZ fnYyh nfj;kxat½ A

नाटक 3. g;onu ¼dUuM½ fxjh'k dUukM ¼idk'kd] jk/kkd".k idk'ku] 2@38 vlkjh ekxZ] nfj;kxat ubZ fnYyh] 110002½

संदर्भ एवं सूची:–

1- bDdhl cxyk dgkfu;k& u'kuy cqd VªLV] bfM;k ,&5] xhu ikdZ] ubZ fnYyh] 110016]
2- lelkef;d fgUnh dgkfu;k & Mk- /kuat ; oekZ A
3- ey;kye lkfgR; & ij[k vkj igpku] ik- vkj- lqjUnju] fgUnh foHkkx] dkyhdV fo-fo- djy A
4- jk"Vªh; pruk vkj ey;kye lkfgR; ik- vkj- lqjUnju] fgUnh foHkkx] dkyhdV fo-fo- djy
5- ejkBh Hkk"kk vkj lkfgR; &jkt ey ckjk] idk'kd u'kuy ifCyf'kx gkÅl] 2@35 vlkjh jkM] nfj;kxat ubZ fnYyh 110002 A
6- ey;kye lkfgR;dkjksa l lk{kkRdkj & ik- vkj-lqjUnju] fgUnh foHkkx] dkyhdV fo-fo-] djy A
7- cxyk Hkk"kk vkj lkfgR; dk bfrgkl & Hkkjrh; Hkk"kk lLFkku] bykgkckn A
8- Hkkjrh; lkfgR; dk'k & l- Mk- uxUnz] u'kuy ifCyf'kx gkÅl] ubZ fnYyh A

9- Hkkjrh; lkfgR; & l- Mk- uxUnu u'kuy ifCyf'kx gkÅl] ubl fnYyh A
10- Hkkjrh; lkfgR; ,uekyk l- d".kn;ky Hkkxlo] oKkfud rFkk rduhdh 'kCnkoyh vk;kx] f'k{kk rFkk ;tod lsok e=ky; Hkkjr ljdkj] ubl fnYyh A
11- Hkkjrh; lkfgR; dh bfrgkl dh leL;k,l & Mk- jkefoykl 'kekl A
12- Hkkjrh; Hkk"kkvksa dk lkfgR; dk bfrgkl& dUnh; fgUnh funs'kky;] fnYyh A
13- Hkkjrh; lkfgR; vo/kkj.kk leUo; ,oa lkn'L;rk& txnh'k xIr ¼l?koh idk'ku½

पत्रिकाएँ–

1- lnHkkouk nil.k& l- fxjh'k idt] jk;iqj
2- NRrhlx< VMi] jk;iqj
3- v{kj io& n'kc/k idk'ku] jk;iqj
4- jk"Vª lrs & jk;iqj

दशम प्रश्न पत्र
पत्रकारिता–प्रशिक्षण
(पेपर कोड– 0322)

प्रस्तावना–

i=dkfjrk vkt thou&lekt dh /kM+du cu xbZ gS A fleVrs fo'o esa Luk;q&rU=vksa ds leku dke dj jgh gS A lekpkj Ik= ls ydj lkIrkfgd] ikf{kd] =Sekfld] okf"kZd if=dkvksa] fiaV ehfM;k] byssDVªkfud] bUVjusV vkfn esa blds fodflr :o:Ik ns[kk tk ldrk gS A blds fcuk vkt vkneh dk jguk dfBu gS A lkfR; ds lkFk&lkFk jktxkjikjdrk dh vkdka{kk dh iwfrZ Hkh blls gksrh gS A iwutkxj.k] Lora=rk] lerk] cU/kqRo ukjh rFkk nfyr tkxj.k esa blds Økfrdkjh Hkwfedk jgh gS A vr% bldk v/;;u vkt dh vfuok;Zrk cu tkrh gS A

पाठ्यविषयः–

1- i=dkfjrk dk Lo:Ik vkSj iewq[k iwdkj A
2- fo'o i=dkfjrk dk mn;] Hkkjr esa i=dkfjrk dk vkjaHk A
3- fgUnh i=dkfjrk dk mnHko vkSj fodkl A
4- lekpkj Ik=dkfjrk ds ewy rRo& lekpkj ladyu rFkk ys[ku ds eq[; vk;ke A
5- laiknu dyk ds lkekU; fl)kUr& 'kh"kZdhdj.k] Ik"B&foU;kl] vkeq[k vkSj lekpkj Ik= dh iwLrqfr iwfØ;k A
6- lekpkj i=ksa ds fofHkUu LrEHkksa dh ;kstuk A
7- n`'; lkexzh ¼dkVwZu] js[kkfp=] xzkfQDl½ dh 0;oLFkk vkSj QksVks i=dkfjrk A
8- lekpkj ds fofHkUu L=ksr A
9- laoknnkrk dh vgZrk] Js.kh ,oa dk;Z i)fr A
10- i=dkfjrk ls lacaf/kr ys[ku& laikndh;] Qhpj] fjiksrkZt] lk{kkRdkj] [kkstih lekpkj] vuqorZu ¼Qkyksvi½ vkfn dh iwfof/k A
11- byssDVªkfud fefM;k dh i=dkfjrk & jsfM;ks] Vh-oh- ohfM;ks] dscy] eYVh ehfM;k vkSj bUVjusV dh i=dkfjrk A
12- fiaV i=dkfjrk vkSj eqnz.kdyk] isQ 'kks/ku] ys vkmV rFkk Ik"B lTtk A
13- i=dkfjrk dk icU/ku ia'kklfud 0;oLFkk] fcØh rFkk fooj.k 0;oLFkk A
14- Hkkjrh; lafo/kku] lapukf/kdkjh ,oa ekuokf/kdkjh A
15- eqDr izsl dh vo/kkj.kk A
16- yksd&laidZ rFkk foKkiu A
17- izsl&Hkkjrh rFkk lapuk ikS|ksfxdh A
18- izsl&lac/kh iewq[k dkuwu rFkk vkpkj&lafgrk A
19- itkrkaf=d 0;oLFkk esa prqFkZ LrEHk ds :Ik esa i=dkfjrk dk nkf;Ro A

bdkbZ&foHkktu	vad foHkktu
bdkbZ&1 5 rd	15 vad

bdkbl&2	6 l| 10 rd		15 v|d
bdkbl&3	11 l| 15 rd		15 v|d
bdkbl&4	16 l| 19 rd		15 v|d
bdkbl&5	5 y?kRrjh; i|'u	5X4	20 v|d
bdkbl &6	20 oLr|fu"B i|'u@vfr y?kRrjh; i|'u	20X1	20 v|d
		d|y	100 v|d

संदर्भ–सूची

1- i=dkfjrk d| Ng n'kd & txnh'k i|lkn pr|ofnh] lkfgR; l|xe bykgkckn

2- if=dk l|iknu dyk & Mk- jkep|n frokjh] vky|[k i|dk'ku A

3- lekpkj Ik=] e|n|.k vkj lkt&lTtk & ';ke l|nj 'kekl] e-i|-fg-x|Fk vdk- A

4- fgUnh i=dkfjrk dk o|gn| bfrgkl & v t|u frokjh] ok.kh i|dk'ku A

5- lekpkj Ik=@0;oLFkkiu & vu|r xk|iky 'koM+k] e-i|-fg-x|Fk vdk-

6- Hkk"kk;h i=dkfjrk vkj tul|pkj & Mk- fo".k| i|d t] foo|d if(Cy- jk;i|j

7- fgUnh i=dkfjrk & d".k fcgkjh feJ] Hkkjrh; KkuihB i|dk'ku A

8- i=dkfjrk dk ifji{; & txnh'k i|lkn pr|ofnh] lkfgR; l|xe A

9- fgUnh i=dkfjrk d| xkjo & ck|d| fcgkjh HkVukxj] gfjo|'k jk; cPpu] vkRekjke ,M lUl] fnYyh A

10- Hkkjrh; lekpkj Ik=k dk l|xBu vkj i|c/ku & Mk- l|deky t|u

11- tuek/;e vkj i=dkfjrk & i|oh.k nhf{kr] lg;k|xh lkfgR; l|LFkku A

12- fgUnh i=dkfjrk] jk"Vªh; uo mn|ck/ku & Mk- Jh iky 'kekl] ;fu-i|dk- t;i|j

13- i=dkfjrk dk bfrgkl ,o| tul|pkj ek/;e& Mk- l|tho Hkuko|] ;fu- i|dk- t;i|j

14- i=dkfjrk ,o| i|l fof/k & Mk- cl|rh yky ckc] l|fo/kk lk-gk- Hkkiky

15- l|iknu dyk & Mk- l|tho Hkuko|] ;fu-i|dk-t;i|j A

16- fgUnh i=dkfjrk vkj tu l|pkj & Mk- Bkdj nRr 'kekl] vkyk|d ok.kh i|dk'ku A

17- i=dkfjrk bfrgkl vkj i|'u & d".k fcgkjh feJ] ok.kh i|dk'ku A

18- o|gn fgUnh i= if=dk dk'k & l|;|i|lkn nhf{kr] ok.kh i|dk'ku A

19- fgUnh i=dkfjrk Lo:Ik vkj l|nHk & fouk|n xk|nj] ok.kh i|dk'ku A

20- i=dkfjrk l|nHk dk'k & Mk- l|/khUn] Mk- jkei|dk'k ok.kh i|dk'ku A

21- i=dkfjrk d| fofo/k vk;ke o|ni|rki o|fnd

22- i=dkfjrk d| fofo/k vk;ke & o|ni|rki o|fnd

23- tu ek/;e vkj i=dkfjrk & Mk- ih-nhf{kr

24-	NRrhlx<+ ds iap jRu &	jes'k uk;j ¼'krk{kh izdk'ku] pkScs dkyksuh] jk;iqj½
25-	NRrhlx<+ ds uo jRu &	jes'k uk;j ¼'krk{kh izdk'ku] pkScs dkyksuh] jk;iqj½
26-	NRrhlx<+ ds ;qx iq:"k %	ek/ko jko lizs jes'k uk;j ¼'krk{kh izdk'ku] pkScs dkyksuh] jk;iqj½
27-	NRrhlx<+ ds ;qxiq:"k %	ia- lqnjyky 'kekZ & jes'k uk;j ¼'krk{kh izdk'ku] pkScs dkyksuh] jk;iqj½

SYLLABUS

M.Sc. I & II SEMESTER
&
M.Sc. III & IV SEMESTER

BOTANY

ACADEMIC YEAR - 2016-17

SEMESTER EXAMINATION

PANDIT RAVISHANKAR SHUKLA UNIVERSITY

RAIPUR, (C.G.)

SCHEME OF EXAMINATION, 2016-2017

M.Sc. I SEMESTER, BOTANY

THEORY

PAPER	TITLE	MAX. MARKS	Internal Assessment/ seminar	Total marks
I	CYTOLOGY	80	20	100
II	GENETICS	80	20	100
III	MICROBIOLOGY,PHYCOLOGY AND MYCOLOGY	80	20	100
IV	BRYOPHYTA,PTERIDOPHYTA AND GYMNOSPERM	80	20	100

PRACTICAL

LAB COURSE-I	BASED ON PAPER I & III	80	20	100
LAB COURSE-II	BASED ON PAPER II & IV	80	20	100
	TOTAL MARKS (Theory and Practical)			**600**

M.Sc. II SEMESTER, BOTANY

THEORY

PAPER	TITLE	MAX. MARKS	Internal Assessment /Seminar	Total marks
I	TAXONOMY AND DIVERSITY OF PLANTS	80	20	100
II	MOLECULAR BIOLOGY	80	20	100
III	PLANT PHYSIOLOGY	80	20	100
IV	PLANT METABOLISM	80	20	100

Choice Based Credit System: Semester II **Course Forestry seed Technology.**
Marks 100 , Credit Points -03, Total Hours -50

PRACTICAL

LAB COURSE-I	BASED ON PAPER I & II	80	20	100
LAB COURSE-II	BASED ON PAPER III & IV	80	20	100

	TOTAL MARKS (Theory and Practical)	600

TOTAL MARKS OF SEMESTER I &II - 1200

NOTE : Botanical excursion (within or outside Chhattisgarh) is compulsory for the Students of M.Sc.

PRACTICAL SCHEME, LAB COURSE- I
M.Sc. I SEMESTER (BOTANY)

Time-5 Hours **Maximum Marks 100**

1.	Exercise based on Cytology	20 Marks
2.	Exercise based on Phycology	20 Marks
3	Exercise based on Mycology	15 Marks
4.	Spotting	15 Marks
5.	Viva-voce	10 Marks
6.	Sessional (Internal Assessment)	20 Marks

Total- 100 Marks

PRACTICAL SCHEME, LAB COURSE-II
M.Sc. I SEMESTER (BOTANY)

Time-5 Hours **Maximum Marks 100**

1.	Exercise based on Genetics	10 Marks
2.	Exercise based on Bryophyta	15 Marks
3.	Exercise based on Pteridophyta	15 Marks
4.	Exercise based on Gymnosperm	15 Marks
5.	Spotting	15 Marks
6.	Viva-voce	10 Marks
7.	Sessional (Internal Assessment)	20 Marks

Total- 100 Marks

PRACTICAL SCHEME, LAB COURSE- I
M.Sc. II SEMESTER (BOTANY)

Time-5 Hours **Maximum Marks 100**

1.	Exercise based on Molecular biology	20 Marks
2.	Exercise based on plant description (2 plants)	35 Marks
3.	Spotting	15 Marks
4.	Viva-voce	10 Marks
5.	Sessional (Internal Assessment)	20 Marks

Total- 100 Marks

PRACTICAL SCHEME, LAB COURSE-II
M.Sc. II SEMESTER (BOTANY)

Time-5 Hours **Maximum Marks 100**

1.	Exercise based on Paper-III	30 Marks
2.	Exercise based on Paper-IV	25 Marks
3.	Spotting	15 Marks
4.	Viva-voce	10 Marks
5.	Sessional (Internal Assessment)	20 Marks

Total- 100 Marks

M.Sc. SEMESTER - I

PAPER - I
CYTOLOGY

MAX.MARKS-80

UNIT-I

- The dynamic cells, Structural organization of the plant cell, specialized plant cell type chemical foundation, biochemical energetics.
- Cell wall - Structure and functions, biogenesis growth.
- Plasma membrane; structure, models and functions, site for ATPase, ion carriers channels and pumps, receptors.

UNIT-II

- Chloroplast-structure, genome organization, gene expression, RNA editing.
- Mitochondria; structure, genome organization, biogenesis.
- Plant Vacuole - Tonoplast membrane, ATPases transporters as a storage organelle.

UNIT-III

- Nucleus : Structure, nuclear pore, Nucleosome organization.
- Ribosome- Structure and functional significance.
- Cell cycle and Apoptosis; Control mechanisms, role of cyclin dependent kinases.
- Retinoblastoma and E2F proteins, cytokinesis and cell plate formation, mechanisms of programmed cell death.

UNIT-IV

- Other cell organelles: Structure and functions of microbodies, microtubules, microfilaments, Golgi apparatus, lysosome, endoplasmic reticulum.

- Techniques in cell biology: Immuno techniques, in situ hybridization to locate transcripts in cell types FISH, GISH, Confocal microscopy.

*****

LIST OF PRACTICALS

- Identification of different stages of mitosis from suitable plant material. (onion root tips, garlic root tips).
- Identification of meiosis from suitable plant material. (Onion floral buds).
- Isolation of cell organelles : Mitochondria, Chloroplast, Nucleus, Lysosomes and there assay by succinate dehydrogenase activity (Mitochondria), acid phosphatase activity (Lysosome), acetocarmine staining (Nucleus) and microscopic observation (Chloroplast).
- Study of mitotic index from suitable plant material.
- Study of cyclosis in cells of suitable plant material.

Suggested Reading:-

1. De Robertis and De Robertis 2005 (Eight edition) (Indian) Cell and Molecular Biology, Lippincott Williams, Philadelphia. [B.I Publications Pvt. Ltd. New Delhi].
2. Sadova David – 2004 (First Indian Edition). Cell Biology, New Delhi.
3. Albert Etal 2002 (Fourth Edition). Molecular Biology of the cell, Garland Science (Iaylar and Francis) New York Group (wt)
4. Lodish Etal 2004 (Fifth Edition). Molecular Cell Biology, W H Freeman and company, New York.
5. Giese Arthur 1979 (Fifth Edition). Cell Physiology, Toppan company Ltd., Tokyo, Japan.
6. Cooper G.M and Hausman R.E 2007 (Fourth Edition). The Cell molecular approach Sinauer associate, Inc, Suderland (USA).
7. Powar C.B 2005 (Third Edition). Cell Biology, Himalaya Publishing, Mumbai.
8. Roy S.C and KKDe 2005 (Second Edition). Cell Biology, New central Book Agency Private Ltd., Kolkata.
9. Krishnamurthy, K.V 2000. Methods in Cell Wall Cytochemistry. CRC Press, Boca Raton, Florida.
10. Buchanan B.B, Gruissm W. and Jones R.L 2000. Biochemistry and Molecular Biology of Plant. American Society of Plant Physiologist, Maryland, USA.
11.. De D.N 2000. Plant Cell Vacuoles : An Introduction. CISRO Publication, Collingwood, Australia.
12. Kleinsmith L.J and Kish V.M 1995. Principles of Cell and Molecular Biology (Second Edition). Happer Collins College Publishers, New York, USA.
13. Lodish H., Berk A., Zipursky, S.L Matsudaira P., Baltimore D. and Darnell J. 2000. Molecular Cell Biology (Fourth Edition). W.H. Freeman and Company, New USA.
14. David Freifelder 1996. Essentials of Molecular Biology, Panima Publishing Company
15. Gerald Karp 1999 Cell and Molecular Biology- Concept and Expts. John Wiley and Scne Ine., USA.

PAPER - II

GENETICS

MAX.MARKS-80

UNIT-I

- Chromatin Organization **:** Chromosome structure and packaging of DNA, molecular organization of centromere and telomere, nucleolus and ribosomal RNA genes, euchromatin and hetrochromatin, Karyotype, banding pattern specialized types of chromosomes, polytene, lamp brush, B chromosomes and sex chromosomes.

- Molecular basis of chromosome pairing chromosomal aberration and polyploidy.

UNIT-II

- Mapping of Bacteriophage genome, Phage phenotype, recombination in phage, genetic transformation and transduction in bacteria.

UNIT-III

- Genetic recombination & genetic mapping; Mechanism of crossing over, molecular mechanism of recombination, role of Rec-A ,Rec-B, Rec- C and Rec-D enzymes, site specific recombination, linkage, linkage group, genetic marker.

UNIT-IV

- Alien gene transfer through chromosome manipulation; Transfer of whole genome examples from wheat, arachis & brassica. Transfer of individual chromosomes & chromosome segment, methods for detecting alien chromatin, production.

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LIST OF PRACTICALS-

- Staining of salivary gland chromosomes of Chironomas larva or Drosophila.
- Isolation of DNA and its quantification by UV- spectrophotometric method.
- Isolation of RNA and its quantification by UV- spectrophotometric method.
- Isolation of DNA by Agarose gel electrophoresis.
- Transformation in Bacteria
- Transduction in Bacteria.

Suggested Readings:

1. Albert B. Bray, D Lewis, J Raff, M. Robert, K. and Walter 1989, Molecular Biology of the Cell (Second Edition) Garland Publishing Inc, New York.
2. Atherly, A.G., Girton, J.R. and McDonald, J.F 1999. The Science of Genetics Saunders College Publishing, Frot Worth, USA.
3. Burnham, C.R 1962. Discussions in Cytogenetics. Burgess Publishing Co. Minnesota.
4. Busch, H. and Rothblum. L 1982. Volume X. The Cell Nucleus rDNA part A. Academic Press.
5. Hartk D.L and Jones, E.W 1998 Genetics: Principles and Analysis (Fourth Edition). Jones and Bartlett Publishers, Massachusetts, USA.
6. Khush, G.S 1973. Cytogenetics of Aneuploids. Academic Press, New York, London.
7. Karp, G. 1999. Cell and Molecular Biology : Concept and Experiments. John Wiley and Sons, Inc., USA.
8. Lewin, B. 2000. Gene VII. Oxford University Press, New York, USA.
9. Lewis, R. 1997. Human Genetics : Concepts and Application (Second Edition). WCB McGraw Hill, USA.
10. Malacinski, G.M and Freifelder, D. 1998 : Essentials of Molecular Biology (Third Edition). Jones and B. Artlet Publisher, Inc., London.
11. Russel, P.J. 1998. Genetics (Fifth Edition). The Benjamin/Cummings Publishing Company IND., USA.
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13. Gardner and Simmons Snustad 2005 (Eighth Edition). Principles of Genetics, John Wiley and Sons, Singapore.
14. Sariu C 2004 (Sixth Edition) Genetics. TATA McGraw-Hill Publishing Company Ltd., New Delhi.

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17. Pawar C.B 2003 (First Edition). Genetics Vol. I and II. Himalaya Publishing House, Mumbai.
18. Strickberger 2005. (Third Edition). Genetics. Prentice Hall of India Pvt. Ltd., New Delhi.
19. Verma and Agarwal, Genetics, S. Chand Co, New Delhi..
20. Singh B.D 2004. Genetics. Kalyani Publication, Ludhiana.
21. Gupta P.K Genetics and Cytogenetics, Rastogi Publications.

PAPER – III

MICROBIOLOGY, PHYCOLOGY AND MYCOLOGY

MAX.MARKS-80

UNIT-I

- **Archaebacteria and Eubacteria** : General account, ultra structure, nutrition and reproduction, biology and economic importance.

- **Cyanobacteria :** Salient feature and biological importance.

UNIT-II

- **Viruses :** Characteristics and ultra structure of virons, isolation and purification of viruses, chemical nature, replication, transmission of viruses, economic importance.

- **Phytoplasma :** General characteristic and role in causing plant diseases.

UNIT-III

- **Phycology :** Algae in diversified habitats (terrestrial, freshwater, marine), thallus organization, cell ultra structure, reproduction (vegetative, asexual, sexual).

- Criteria for classification of Chlorophyta, Xanthophyta, Bacillariophyta, Phaeophyta and Rhodophyta.

- Economic importance of algae.

UNIT-IV

- **Mycology :** General characters of fungi, substrate relationship in fungi, cell structure unicellular and multicellular organization, cell wall composition, nutrition (saprobic biotrophic, symbiotic) reproduction, (vegetative, asexual, sexual) heterothallism, heterokaryosis, Para sexuality, recent account of Mastigomycotina, Zygomycotina, Ascomycotina, Basidiomycotina, Deuteromycotina, Mycorrhiza, fungi as biocontrol agent.

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LIST OF PRACTICALS

ALGAE: -
a. Cyanophyta: - Range of thallus organization and reproductive structures, types showing unicellular, gonical, conical, filamentous, branched (pseudo and true branched) .

b. Chlorophyta: - Chlamydomonas, Gonium, Pandorina, Eudorina, Volvox, Chlorella, Pediastrum, Hydrodictyon, Scenedesmus, Ulothrix, Cladophora, Draparnaldia, Draparnaldiopsis, Fristschiella, Chara, Nitella, Coleochaete, Ulva,, Caulerpa, Oedogonium, Zygnema, Spirogyra, .
c. Phaeophyta: -Ectocarpus, , Dictyota, Padina, Sargassum.
d. Rhodophyta: -Porphyra, Batrachospermum, Gelidium, Gracillaria, Champia,Polysiphonia.

FUNGI: -
Thallus organization, Spore producing organs, Tissue differentiation and accessory structures of following –
a. Mastigomycotina: - Synchytrium ,Saprolegnia, Achlya, Peronospora, Plasmopora, Albugo, Sclerospora.
b. Zygomycotina: -Mucor, Rhizopus, Pilobolus.
c. Ascomycotina: - Taphrina, Protomyces, Erotium, , Trichoglossum, Erysiphe, Phyllactinia, Uncinula.
d. Basidiomycotina: -Uromyces, Ravenelia, Monosporidium, Melampsora,Ustilago, Agaricus, Pleurotus, Ganoderma,Polyporus, Cyathus, Lycoperdon, Phallus, Geaster.
e. Deuteromycotina: - Aspergillus, Penicillium, Fusarium, Cercospora, Colletotrichum, Alternaria.

Suggested Readings : -

1. Alexopoulus C.J , Mims C.W. and Blackwel M.I 1996. Introductory Mycology. John Wiley and Sons Inc.
2. Kumar H.D. 1988. Introductory Phycology. Affiliated East-West Press Ltd., New Delhi.
3. Mehrotra R.S and Aneja R.S 1998. An introduction to Mycology. New Age Intermediate Press.
4. Rangaswamy G. and Mahadevan A. 1999. Diseases of crop plants in India (Fourth Edition) Prentice Hall of India Pvt. Ltd. New Delhi.
5. Webster J. 1985. Introduction to Fungi. Cambridge University Press.
6. Hawker L.E. 1967. An Introduction to Fungi Cambridge.
7. Kamat M.N 1959. Hand Book of Mycology, Prakash Publication.
8. Vashista B.R & A.K Sinha 2005. Botany for degree students – Fungi, S.Chands

Publication.
9. Vashista B.R & A.K Sinha 2005. Botany for degree students – Bryophta, S.Chands Publication.
10. Ainsnorth G.C 1973. The Fungi Vol IV A, IV B Academic Press.
11. Bessey 1950. Morphology and Taxonomy of fungi. The Blakistan Co.
12. Burnett J.H. 1968. Fundamentals of Mycology. Edwards Arnold Publication.
13. Morries I 1986. An Introduction to the Algae. Cambridge University Press, U.K.

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15. Vashista B.R & A.K Sinha 2005. Botany for degree students – Algae, S.Chands Publication
15. Vijayraghavan M.R and Bela Bhatia (1997), Red Algae : Structure, ultrastructure and Reproduction, APH publishing Corporations, New Delhi.
16. Vijayraghavan M.R and Bela Bhatia (1997), Brown Algae : Structure, ultrastructure and Reproduction, APH publishing Corporations, New Delhi.
17. Fritsch F.E (1945). The structure and reproduction of the algae Volume I and II, Cambridge University Press.
18. Chapman V.J and Chapman D.J (1973). Thje Algae Macmillon and company, New York.
19. Bold H.C and Wynne M.J (1975). Introduction to the Algae structure and reproduction prentice hall Biological Science Series.
20. Pandey S.N. A Text-book of Botany Volume I, Vikas Publications.

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PAPER - IV

BRYOPHYTA, PTERIDOPHYTA AND GYMNOSPERM

MAX.MARKS-80

UNIT-I

- **Bryophyta :** morphology, structure, reproduction, life history, distribution, classification.

- General account of Marchantiales, Jungermanniales, Anthocerotales, Sphagnales, Funariales and Polytrichales. Economic and ecological importance.

UNIT-II

- **Pteridophyta :** morphology, anatomy and reproduction, classification, evolution of stele.
- Heterospory and origin of seed habit, general account of fossil pteridophyta .
- Introduction to Psilopsida, Lycopsida, Sphenopsida and Pteropsida.

UNIT-III

- Gymnosperm : General characters of gymnosperm mentioning diversity.
- Classification of gymnosperm.
- Resemblances and difference amongst gymnosperm, pteridophyta and angiosperm.
- Gymnosperm distribution in India.
- Gymnosperm Biotechnology.
- Economic importance of gymnosperm.
- Origin and evolution of gymnosperm stele.
- Structure and theories regarding origin of Paleozoic ovule.

UNIT-IV

- Extinct gymnosperm : general account of pteridospermales, Glossopteridales, Caytoniales, Pentoxylales.
- Extant gymnosperm : Cycadales, Ginkgoales, Coniferales, Ephidedrales Gnetales, and Welwistschiales.

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LIST OF PRACTICALS

Bryophyta: -

a. Hepaticopsida: - Riccia, Marchantia, Targionia, Astrella, Porella, Cyathodium, Plagiochasma,
b. Anthocerotopsida: -Anthoceros, Notothyllus.
c. Bryopsida: -Sphagnum, Funaria, Polytrichum,

Pteridophyta :-

a. Study of the following members to observe arrangement of Sori on a receptacle : - Isoetes, Osmunda, Angiopteris, Ceratopteris, Achrostichum,Gleichinia
b. Morphology, Anatomy and reproductive structures of : - Psilotum, Selaginella, Lycopodium, Equisetum, Ophioglossum, Lygodium, Pteris, Pteridium, Salvinia, Adiantum, Azolla.

Gymnosperms: -

Morphology, Anatomy and reproductive structures of –Cycas, Zamia, Ginkgo, Pinus, Cryptomeria, Juniperous, Araucaria, Taxus, Cedrus Thuja, Podocarpus, Gnetum, Ephedra.

Suggested readings:

1. Sporne K.R. 1991. The Morphology of Pteridophytes. B.I Publishing Pvt. Ltd. Bombay.
2. Stewart W.N. and Rathwell G.W. 1993. Paleobotany and the Evolution of plants. Cambridge University Press.
3. Bhatnagar S.P and Moitra Alok 1996. Gymnosperms. New Age International Pvt. Ltd. Publishers, New Delhi, 470 pp.
4. Biswas C and Johari B.M 2004. The Gymnosperms Narosa Publishing House, New Delhi. 497 pp.
5. Sporne K.R 1965. The Morphology of Gymnosperms London, pp. 216.
6. Bierhorst D.W. 1971. Morphology of Vascular Plants. New York and London.
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8. Coulter J.M. and Chamberlain C.J. 1917. Morphology of Gymnosperms, Chicago.
9. Foster A.S and Gifford E.M 1959. Comparative Morphology of Vascular Plants. San Francisco.
10. Maheshwari P. and Vasil, Vimla 1961. Gnetum, Delhi.
11. Vashishta P.C., A.R. Sinha, Anil Kumar. 2006. Gymnosperms. S.Chand. Publication
12. Vashishta P.C. 2006. Pteridophytes. S. Chand.
13. Parihar N.S. 1996. Biology and Morphology of Pteridophytes. Central Book Depot, Allahabad
14. Parihar N.S. 1991. Bryophyta. Central Book Depot, Allahabad.
15. Puri P. 1980. Bryophytes. Atma Ram and Sons, Delhi.
16. Vashista B.R & A.K Sinha 2005. Botany for degree students – Bryophta, S.Chands

Publication
17. Sporne. Morphology of Bryophytes, Oxford Publishing House
18. Rashid A (1998). An introduction to Bryophyta. First edition, Vikas Publishing House Pvt. Ltd, New Delhi.

SEMESETR II

PAPER - I

TAXONOMY AND DIVERSITY OF PLANTS

MAX.MARKS-80

UNIT-I

- Plant nomenclature : Binomial Nomenclature, International code of Botanical nomenclature.
- Plant identification : Herbaria, Botanical gardens, Taxonomic literature, Taxonomic-keys.
- Taxonomic hierarchy - Major categories, minor categories ,species concept.
- Taxonomic evidences - Morphology, Anatomy, Palynology, Embryology, Cytology, Photochemistry, Genome analysis and Nucleic acid hybridization.
- Geographical information system (GIS).

UNIT-II

- Pre Darwinian Classification Based on form relationship (Benthem and Hooker)
- Post Darwinian classification Engler and Prantl, Bessey's, Hutchinson, Takhtajan and Cronquist.
- Recent modifications : Dahlgren's system of classification.
- Fossil angiosperm.

UNIT-III

- Study of following families with particular reference to systematic position, phylogeny, evolutionary trends and economic importance. Dicot families; Ranunculaceae, Magnoliaceae, Nymphacaceae, Sterculiaceae, Meliaceae, Fabaceae, Cucurbitaceae, Umbelliferae, Asteraceae, Sapotaceae. Bignoniaceae, Labiatae, Verbenaceae, Euphorbiaceae, Moraceae.

UNIT-IV

- Study of following families with particular reference to systematic position, phylogeny, Evolutionary trends and economic importance, Monocot families-Orchidaceae, Zingiberaceae, Commelinaceae, Cyperaceae, Poaceae study of local available families.

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LIST OF PRACTICALS:-

Angiosperms: -

1. Methods of non-destructive field collection and documentation.
2. Techniques of herbaria preparation.
3. Morphological characterization of selected families of dicots and monocots and identification upto families.
4. Preparation of artificial key based on appropriate character combination.
5. Identification of genus and species from Monocots and Dicots
6. Identification of given plant up to species with the help of modern flora keys.

Suggested readings: -

1. Blatter E and W.S Millard. 1929. Some Beautiful Indian Trees J.Bom. Nat Hist Soc. 33:624-635.
2. Bor N.L 1943. Manual of Indian Forest Botany. London.
3. Cliford H.T and W. Stephenson. 1975. An Introduction to Numerical Taxonomy. Academic Press, N.Y.
4. Cole A.J (Ed.) 1969. Numerical Taxonomy. Academic Press,N.Y.
5. Cronquist, A. 1968. The Evolution and Classification of Flowering Plants. Thomas Nel and Sons, Ltd. London.
6. Davis P.H and V.H Heywood 1963. Principles of Angiosperm Taxonomy. Oliver and Boyd London.
7. Heywood V.H 1967. Plant Taxonomy, London.
8. Lawrence, G.H.M 1951. Taxonomy of Vascular Plants. N.Y.
9. Lawrence G.H.M 1955. An Introduction to Plant Taxonomy N.Y.
10. Rendle A.B. 1925. The Classification of flowering plants. 2 Vols. London.
11. Santapau H. 1953. The Flora of Khandala on the Western Ghats of India.
12. Singh V. and D.K Jain, 1981 Taxonomy of Angiosperms. Rastogi Publication, Meerut.
13. Swingle D.B. 1946. A Text book of Systematic Botany. Mc Graw Hill Book Co. New York.
14. Pande B.P 1997. Taxonomy of Angiosperms. S.Chand Publication.
15. Takhtajan A. 1969. Flowering Plants; Origin and Disposal.

PAPER – II

MOLECULAR BIOLOGY

MAX.MARKS-80

UNIT-I

- RNA and DNA Structure. A, B and Z Forms, replication , damage and repair ,transcription, translation.

UNIT-II

- Molecular Cytogenetics **:** Nuclear DNA content, C-value paradox, Cot curve and its Significance, restriction mapping - concept and techniques, multigene families and their evolution, *in situ* hybridization and techniques, chromosomes micro dissection and micro cloning, flow cytometry and confocal microscopy and karyotype analysis.

UNIT-III

- Gene structure and expression : fine structure of gene, Cis-trans test, fine structure analysis of eukaryotes, introns and their significance. RNA splicing, regulation of gene expression in prokaryotes and eukaryotes.

- Protein sorting: Targeting proteins to organelles.

UNIT-IV

- Mutation: Spontaneous and induced mutation, physical and chemical mutagens molecular basis of gene, transposable elements in prokaryotes and eukaryotes, mutation induced by transposones, site directed mutagenesis, inherited human diseases and defects in DNA repair, translocation, intersect Robertsonian translocation, B-A translocation.

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Suggested Readings:

1. Albert B. Bray, D Lewis, J Raff, M. Robert, K. and Walter 1989, Molecular Biology of the Cell (Second Edition) Garland Publishing Inc, New York.

2. Atherly, A.G., Girton, J.R. and McDonald, J.F 1999. The Science of Genetics Saunders College Publishing, Frot Worth, USA.
3. Burnham, C.R 1962. Discussions in Cytogenetics. Burgess Publishing Co. Minnesota.
4. Busch, H. and Rothblum. L 1982. Volume X. The Cell Nucleus rDNA part A. Academic Press.
5. Hartk D.L and Jones, E.W 1998 Genetics: Principles and Analysis (Fourth Edition). Jones and Bartlett Publishers, Massachusetts, USA.
6. Khush, G.S 1973. Cytogenetics of Aneuploids. Academic Press, New York, London.
7 . Karp, G. 1999. Cell and Molecular Biology : Concept and Experiments. John Wiley and Sons, Inc., USA.
8. Lewin, B. 2000. Gene VII. Oxford University Press, New York, USA.
9. Lewis, R. 1997. Human Genetics : Concepts and Application (Second Edition). WCB McGraw Hill, USA.
10 . Malacinski, G.M and Freifelder, D. 1998 : Essentials of Molecular Biology (Third Edition). Jones and B. Artlet Publisher, Inc., London.
11. Russel, P.J. 1998. Genetics (Fifth Edition). The Benjamin/Cummings Publishing Company IND., USA.
12. Snustad, D.P and Simmons, M.J 2000. Principles of Genetics (Second Edition). John Wiley and Sons Inc., USA.
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19. Verma and Agarwal, Genetics, S. Chand Co, New Delhi..
20. Singh B.D 2004. Genetics. Kalyani Publication, Ludhiana.
21. Gupta P.K Genetics and Cytogenetics, Rastogi Publications.

PAPER - III

PLANT PHYSIOLOGY

MAX.MARKS-80

UNIT-I

- **Membrane transport and translocation of water and solutes:** Plant-water relation, mechanism of water transport through Xylem, root microbe interaction in facilitating nutrient uptake. Comparison of xylem and phloem transport, phloem loading and unloading, passive and active solute transport, membrane transport system.

UNIT-II

- **Signal Transduction :** Overview, receptors and G proteins, Phospholipids signaling, role of cyclic nucleotides, calcium-calmodulin cascade, diversity in protein kinases and phosphatases, specific signaling mechanism- two component sensor regulatory system in bacteria.

UNIT-III

- **Stress physiology :** Plant responses to biotic and abiotic stress, mechanism of biotic and abiotic stress tolerance, HR Fundamental and SAR, water deficit and drought resistance salinity stress, metal toxicity, freezing and heat stress, oxidative stress.

UNIT-IV

- **Fundamentals of enzymology :** General aspects of allosteric mechanism, regulatory & active sites, isozymes, kinetics of enzymatic catalysis, Michaelis-Menton equation and its significance.

- Sensory photobiology, History of discovery of phytochromes and cryptochroms and their photo chemical and biochemical properties, photophysiology of light under responses ,cellular localization, and molecular mechanism of action of enzyme.

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LIST OF PRACTICALS

1 Determination of osmotic pressure of cell sap by plasmolytic method.
2 Determination of Diffusion pressure deficit in potato tuber.
3 Determination of imbibition pressure of seeds of different catagories (protein, lipid, carbohydrate containing seeds).
4 To compare the rate of imbibition of fatty and starchy seeds.
5 Determination of osmotic pressure of cell sap by plasmolytic method.
6 Determination of effect of temperature on the permeability of plasma membrane of beet root.
7 Determination of effect of different organic solvents (alcohol, formaline, benzene) on the permeability of plasma membrane of beet root.
8 Determination of effect of different concentration of organic solvents (alcohol, formaline, benzene) on the permeability of plasma membrane of beet root.
9 Determination of effect of different Phytohormones on the germination of seeds.
10 Determination of effect of different concentration of auxins on the germination of seeds
11 Determination of the rate of respiration by Ganong's Respirometer.
12 Determination of the rate of respiration by Pipette manometer.
13 Determination of R.Q. of carbohydrates by Ganong's Respirometer.
14 Determination of R.Q. of lipids by Ganong's Respirometer.
15 Determination of R.Q. of proteins by Ganong's Respirometer.
16 Separation of chlorophyll pigments by paper chromatography.
17 Separation of chlorophyll pigments by circular paper chromatography.
18 Qualitative analysis of Organic acids by paper chromatography.
19 Qualitative analysis of amino acids by paper chromatography.

20 Qualitative analysis of sugars by paper chromatography.

21 Separation of A.A by thin layer chromatography method.

22 Separation of chlorophyll by thin layer chromatography.

23 Determination of the effect of CO_2 concentration on the rate of photosynthesis by inverted funnel method.

24 Determination of the effect of CO_2 concentration on the rate of photosynthesis by wilmot's bubbler.

25 Determination of the effect of intensity of light on the rate of photosynthesis by wilmot's bubbler.

26 Determination of the effect of intensity of light on the rate of photosynthesis by inverted funnel method.

27 Determination of the effect of quality of light on the rate of photosynthesis by inverted funnel method.

28 Determination of the effect of quality of light on the rate of photosynthesis by wilmot's bubbler.

MINOR EXPERIMENTS

1 Preparation of molar and molal solutions .

2 Preparation of percentage solution.

3 Preparation of normal solution of solute.

4 Preparation of normal solution of acid and base.

5 Demonstration of Brownian movement in the latex of Calotropis.

6 Demonstration of tyndall effect.

7 Demonstration of plasmolysis and deplasmolysis in plant cell.

8 Demonstration of exosmosis and endosmosis in grapes and resins.

9 Demonstration of the rate of respiration of flower buds by pipette mano-meter.

10 Demonstration of evolution of O_2 during photosynthesis by inverted funnel method.

11 Demonstration of the rate of photosynthesis by inverted funnel method.

12 Demonstration of the rate of photosynthesis by wilmot's bubbler.

13 Determination of the effect of temperature on the rate of photosynthesis by inverted funnel method.
14 Demonstrationof the rise of temperature during seed germination.
15 Demonstration of evolution of CO_2 during respiration.
16 Demonstration of fermentation by Kuhns tube.
17 Demonstration of Determination of R.Q. of organic acids by Ganong's Respirometer.
18 Effect of phytohormones on the growth of seedling.

BIOCHEMISTRY PRACTICALS

1. Qualitative estimation of amylase enzyme activity in the germinating seeds of wheat.
2. Qualitative estimation of amylase enzyme activity in potato tuber.
3. Qualitative estimation of catalase enzyme activity in the germinating seeds of wheat.
4. Qualitative estimation of catalase enzyme activity in potato tuber.
5. Effect of enzyme concentration on the rate of catalase enzyme activity in potato tuber.
6. Effect of enzyme concentration on the rate of catalase enzyme activity in the germinating seeds of wheat.
7. Effect of enzyme concentration on the rate of amylase enzyme activity in of potato tuber.
8. Effect of enzyme concentration on the rate of amylase enzyme activity in the germinating seeds of wheat.
9. Effect of substrate concentration on the rate of catalase enzyme activity in the germinating seeds of wheat.
10. Effect of substrate concentration on the rate of catalase enzyme activity in potato tuber.
11. Effect of substrate concentration on the rate of amylase enzyme activity in the germinating seeds of wheat.

Suggested Reading :-

1. Moore T.C. 1989. Biochemistry and Physiology of Plant Hormones Springer – Verlag, New York, USA.
2. Nobel P.S 1999. Physiochemical and Environmental Plant Physiology (Second Edition) Academic Press, San Diego, USA.
3. Salibury F.B and Ross C.W 1992. Plant physiology (Fourth Edition) Wadsworth Publishing Company, California,USA.
4. Singhal G.S., Renger G., Sopory, S.K. Irrgang K.D and Govindjee 1999. Concept in Photobiology; Photosynthesis and Photomorphogenesis.Narosa Publishing House, New Delhi.
5. Taiz L. and Zeiger E. 1998. Plant Physiology (Second Edition). Sinauer Associates, Inc. Publishes, Massachusetts, USA.
6. Thomas B. and Vince-Prue D. 1997. Photoperiodism in Plants (Second Edition) Academic Press, San Diego, USA.
7. Verma S.K. and Verma Mohit 2007. A.T.B of Plant Physiology, Biochemistry and Biotechnology, S.Chand Publications.
8. Lehninger A.C 1987. Principles of Biochmistry, CBS Publishers and Distributers (Indian Reprint)

PAPER - IV

PLANT METABOLISM

MAX.MARKS-80

UNIT-I

- **Photosynthesis :** General concepts and historical background, evolution of photosynthetic apparatus, photosynthetic pigments and light harvesting complexes, photo oxidation of water, mechanism of electron and proton transport, Carbon assimilation ,the Calvin cycle, photorespiration and its significance, the C_4 cycle, the CAM pathway, biosynthesis of starch and sucrose, physiological and ecological considerations.

UNIT-II

- **Respiration and lipid metabolism :** Overview of plant respiration, glycolysis, Kreb cycle (TCA cycle), electron transport and ATP synthesis, Pentose phosphate pathway, alternative oxidase system, structure and function of lipids, fatty acid biosynthesis, synthesis of membrane lipids ,structural lipids and storage lipids and their catabolism Glyoxylate cycle.

UNIT-III

- **Nitrogen and Sulphur metabolism :** Overview, biological nitrogen fixation, nodule formation and nod factors, mechanism of nitrate uptake and reduction ,ammonium assimilation, sulphur uptake, transport and assimilation.

UNIT-IV

- **Plant growth regulators and elicitors :** Physiological effects and mechanism of action of auxins, gibberellins, cytokinins, ethylenes, absicisic acid, brassinosteroid, polymines ,jasmonic acid and salicylic acid, hormone receptors.

- The flowering process:- Photoperiodism and its significance, endogeneous clock and its regulation, floral induction and development, Genetic molecular analysis, role of vernalization.

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LIST OF PRACTICALS:- (Paper III and IV)

1. Determination of osmotic pressure of cell sap by plasmolytic method.
2. Determination of Diffusion pressure deficit in potato tuber.
3. Determination of 25imbibitions pressure of seeds of different catagories (protein, lipid, carbohydrate containing seeds).
4. To compare the rate of imbibition of fatty and starchy seeds.
5. Determination of osmotic pressure of cell sap by plasmolytic method.

29 Determination of effect of temperature on the permeability of plasma membrane of beet root.

30 Determination of effect of different organic solvents (alcohol, formaline, benzene) on the permeability of plasma membrane of beet root.

31 Determination of effect of different concentration of organic solvents (alcohol, formaline, benzene) on the permeability of plasma membrane of beet root.

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33 Determination of effect of different concentration of auxins on the germination of seeds

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37 Determination of R.Q. of lipids by Ganong's Respirometer.

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39 Separation of chlorophyll pigments by paper chromatography.

40 Separation of chlorophyll pigments by circular paper chromatography.

41 Qualitative analysis of Organic acids by paper chromatography.

42 Qualitative analysis of amino acids by paper chromatography.

43 Qualitative analysis of sugars by paper chromatography.

44 Separation of A.A by thin layer chromatography method.

45 Separation of chlorophyll by thin layer chromatography.

46 Determination of the effect of CO_2 concentration on the rate of photosynthesis by inverted funnel method.

47 Determination of the effect of CO_2 concentration on the rate of photosynthesis by wilmot's bubbler.

48 Determination of the effect of intensity of light on the rate of photosynthesis by wilmot's bubbler.

49 Determination of the effect of intensity of light on the rate of photosynthesis by inverted funnel method.

50 Determination of the effect of quality of light on the rate of photosynthesis by inverted funnel method.

51 Determination of the effect of quality of light on the rate of photosynthesis by wilmot's bubbler.

MINOR EXPERIMENTS

19 Preparation of molar and molal solutions .

20 Preparation of percentage solution.

21 Preparation of normal solution of solute.

22 Preparation of normal solution of acid and base.

23 Demonstration of Brownian movement in the latex of Calotropis.

24 Demonstration of tyndall effect.

25 Demonstration of plasmolysis and deplasmolysis in plant cell.

26 Demonstration of exosmosis and endosmosis in grapes and resins.

27 Demonstration of the rate of respiration of flower buds by pipette mano-meter.

28 Demonstration of evolution of O_2 during photosynthesis by inverted funnel method.

29 Demonstration of the rate of photosynthesis by inverted funnel method.

30 Demonstration of the rate of photosynthesis by wilmot's bubbler.

31 Determination of the effect of temperature on the rate of photosynthesis by inverted funnel method.

32 Demonstrationof the rise of temperature during seed germination.

33 Demonstration of evolution of CO_2 during respiration.

34 Demonstration of fermentation by Kuhns tube.

35 Demonstration of Determination of R.Q. of organic acids by Ganong's Respirometer.

36 Effect of phytohormones on the growth of seedling.

BIOCHEMISTRY PRACTICALS

2. Qualitative estimation of amylase enzyme activity in the germinating seeds of wheat.
3. Qualitative estimation of amylase enzyme activity in potato tuber.
4. Qualitative estimation of catalase enzyme activity in the germinating seeds of wheat.
5. Qualitative estimation of catalase enzyme activity in potato tuber.
6. Effect of enzyme concentration on the rate of catalase enzyme activity in potato tuber.
7. Effect of enzyme concentration on the rate of catalase enzyme activity in the germinating seeds of wheat.
8. Effect of enzyme concentration on the rate of amylase enzyme activity in of potato tuber.
9. Effect of enzyme concentration on the rate of amylase enzyme activity in the germinating seeds of wheat.
10. Effect of substrate concentration on the rate of catalase enzyme activity in the germinating seeds of wheat.
11. Effect of substrate concentration on the rate of catalase enzyme activity in potato tuber.
12. Effect of substrate concentration on the rate of amylase enzyme activity in the germinating seeds of wheat.

Sussested readings

1. Moore T.C. 1989. Biochemistry and Physiology of Plant Hormones Springer – Verlag, New York, USA.
2. Nobel P.S 1999. Physiochemical and Environmental Plant Physiology (Second Edition) Academic Press, San Diego, USA.
3. Salibury F.B and Ross C.W 1992. Plant physiology (Fourth Edition) Wadsworth

Publishing Company, California,USA.
4. Singhal G.S., Renger G., Sopory, S.K. Irrgang K.D and Govindjee 1999. Concept in Photobiology; Photosynthesis and Photomorphogenesis.Narosa Publishing House, New Delhi.
5. Taiz L. and Zeiger E. 1998. Plant Physiology (Second Edition). Sinauer Associates, Inc. Publishes, Massachusetts, USA.
6. Thomas B. and Vince-Prue D. 1997. Photoperiodism in Plants (Second Edition) Academic Press, San Diego, USA.
7. Verma S.K. and Verma Mohit 2007. A.T.B of Plant Physiology, Biochemistry and Biotechnology, S.Chand Publications.
8. Leninger A.C 1987. Principles of Biochmistry, CBS Publishers and Distributers (Indian Reprint)

Sussested Readings

1. Alexopoulus C.J , Mims C.W. and Blackwel M.I 1996. Introductory Mycology. John Wiley and Sons Inc.
2. Kumar H.D. 1988. Introductory Phycology. Affiliated East-West Press Ltd., New Delhi.
3. Mehrotra R.S and Aneja R.S 1998. An introduction to Mycology. New Age Intermediate Press.
4. Morries I 1986. An Introduction to the Algae. Cambridge University Press, U.K. (Page 5)
5. Round F.E. 1986. The Biology of Algae. Cambridge University Press, Cambridge.
6. Webster J. 1985. Introduction to Fungi. Cambridge University Press.
7. Hawker L.E. 1967. An Introduction to Fungi Cambridge.
8. Vashista B.R & A.K Sinha 2005. Botany for degree students – Algae, S.Chands Publication.
9. Vashista B.R & A.K Sinha 2005. Botany for degree students – Fungi, S.Chands Publication.
11. Vashista B.R & A.K Sinha 2005. Botany for degree students – Bryophta, S.Chands Publication
12. Bessey 1950. Morphology and Taxonomy of fungi. The Blakistan Co.
14. Burnett J.H. 1968. Fundamentals of Mycology. Edwards Arnold Publication.
15. Vijayraghavan M.R and Bela Bhatia (1997), Red Algae : Structure, ultrastructure and Reproduction, APH publishing Corporations, New Delhi.
16. Vijayraghavan M.R and Bela Bhatia (1997), Brown Algae : Structure, ultrastructure and Reproduction, APH publishing Corporations, New Delhi.
17. Fritsch F.E (1945). The structure and reproduction of the algae Volume I and II, Cambridge University Press.
18. Chapman V.J and Chapman D.J (1973). Thje Algae Macmillon and company, New York.
19. Bold H.C and Wynne M.J (1975). Introduction to the Algae structure and reproduction

prentice hall Biological Science Series.
20. Pandey S.N. A Text-book of Botany Volume I, Vikas Publications.

1. Blatter E and W.S Millard. 1929. Some Beautiful Indian Trees J.Bom. Nat Hist Soc. 33:624-635.
2. Bor N.L 1943. Manual of Indian Forest Botany. London.
3. Cliford H.T and W. Stephenson. 1975. An Introduction to Numerical Taxonomy. Academic Press, N.Y.
4. Cole A.J (Ed.) 1969. Numerical Taxonomy. Academic Press,N.Y.
5. Cronquist, A. 1968. The Evolution and Classification of Flowering Plants. Thomas Nel and Sons, Ltd. London.
6. Davis P.H and V.H Heywood 1963. Principles of Angiosperm Taxonomy. Oliver and Boyd London.
7. Heywood V.H 1967. Plant Taxonomy, London.
8. Lawrence, G.H.M 1951. Taxonomy of Vascular Plants. N.Y.
9. Lawrence G.H.M 1955. An Introduction to Plant Taxonomy N.Y.
10. Rendle A.B. 1925. The Classification of flowering plants. 2 Vols. London.
11. Santapau H. 1953. The Flora of Khandala on the Western Ghats of India.
12. Singh V. and D.K Jain, 1981 Taxonomy of Angiosperms. Rastogi Publication, Meerut.
13. Swingle D.B. 1946. A Text book of Systematic Botany. Mc Graw Hill Book Co. New York.
14. Pande B.P 1997. Taxonomy of Angiosperms. S.Chand Publication.
15. Takhtajan A. 1969. Flowering Plants; Origin and Disposal.

SYLLABUS

M.Sc. III & IV SEMESTER

BOTANY

ACADEMIC YEAR - 2016-17

SEMESTER EXAMINATION

2016-17
PANDIT RAVISHANKAR SHUKLA UNIVERSITY, RAIPUR.

SCHEME OF EXAMINATION, 2016-2017

M.Sc. III SEMESTER, BOTANY

THEORY

PAPER	TITLE	External Marks	Internal Assessment/ Seminar	Total marks
I	PLANT DEVELOPMENT & PLANT RESOURCES	80	20	100
II	PLANT ECOLOGY – I **(E**cosystem and vegetation ecology)	80	20	100
III	BIOTECHNOLOGY-I (Biotechnology and genetic engineering of plants and microbes)	80	20	100
IV	ELECTIVE- I Molecular plant pathology-I ELECTIVE-2 Limnology - I ELECTIVE-3 Ethno botany – I	80 80 80	20 20 20	100 100 100

PRACTICAL

LAB COURSE-I	BASED ON PAPER I & II	80	20	100
LAB COURSE-II	BASED ON PAPER III & IV	80	20	100
	GRAND TOTAL OF MARKS			600

Choice Based Credit System: Semester III **Course Environmental Science.**
Marks 100 , Credit Points -03, Total Hours -50

SCHEME OF EXAMINATION

M.Sc. IV SEMESTER, BOTANY

THEORY

PAPER	TITLE	External	/ Internal	Total

		Marks	Assessment Seminar	marks
I	PLANT REPRODUCTION AND UTILIZATION OF RESOURCES	80	20	100
II	PLANT ECOLOGY-II (Pollution and biodiversity conservation)	80	20	100
III	BIOTECHNOLOGY-II (Plant cell, tissue culture and organ culture)	80	20	100
IV	ELECTIVE- I Molecular plant pathology-II ELECTIVE-2 Limnology -I I ELECTIVE-3 Ethnobotany - II	80 80 80	20 20 20	100 100 100

PRACTICAL

LAB COURSE-I	BASED ON PAPER I & II	80	20	100
LAB COURSE-II	BASED ON PAPER III & IV	80	20	100
	GRAND TOTAL OF MARKS			600

NOTE:

- Botanical excursion (within or outside Chhattisgarh) is compulsory for the Students of M.Sc.

- In each semester, each theory paper there will be five questions of equal marks. First question will be based on complete syllabus with no internal choice whereas rest question will be unit wise.

PRACTICAL SCHEME,
LAB COURSE-I
M.Sc. III SEMESTER (BOTANY)

Time-5 Hours **Maximum Marks 100**

1.	Practical based on Paper-I	30 Marks
2.	Practical based on Paper II	25 Marks
3.	Spotting	15 Marks
4.	Viva-voce	10 Marks
5.	Sessional (Internal Assessment)	20 Marks

Total- 100 Marks

PRACTICAL SCHEME, LAB COURSE-II
M.Sc. III SEMESTER (BOTANY)

Time-5 Hours **Maximum Marks 100**

1.	Practical based on Paper-III	25 Marks
2.	Practical based on Paper-IV	30 Marks
3.	Spotting	15 Marks
4.	Viva-voce	10 Marks
5.	Sessional (Internal Assessment)	20 Marks

Total- 100 Marks

PRACTICAL SCHEME,
LAB COURSE-I
M.Sc. IV SEMESTER (BOTANY)

Time-5 Hours **Maximum Marks 100**

1.	Exercise based on Paper-I	25 Marks
2.	Exercise based on Paper-II	25 Marks
3.	Spotting	20 Marks
4.	Viva-voce	10 Marks
5.	Sessional (Internal Assessment)	20 Marks

Total- 100 Marks

PRACTICAL SCHEME,
LAB COURSE-II
M.Sc. IV SEMESTER (BOTANY)

Time-5 Hours **Maximum Marks 100**

1.	Exercise based on Paper-III	25 Marks
2.	Exercise based on Paper-IV	25 Marks
3.	Spotting	20 Marks
4.	Viva-voce	10 Marks
5.	Sessional (Internal Assessment)	20 Marks

Total- 100 Marks

M.Sc. SEMESTER - III
PAPER - I
PLANT DEVELOPMENT AND PLANT RESOURCES
MAX.MARKS-80

UNIT-I

Introduction: Unique features of plant development. Metabolism of nucleic acids, proteins and mobilization of food reserves, tropisms; control of cell division, Programmed cell death in the life cycle of plants, Seed germination, Hormonal control of Seedling growth. Seed dormancy, Over coming of seed dormancy, Bud dormancy.

Root development : Organization of root apical meristem (RAM), Cell fates and lineages, Vascular tissue differentiation of root, Lateral roots, Root hairs, Root microbe interaction.

UNIT-II

Shoot development : Organization of shoot apical meristem (SAM), Cytological and molecular analysis of SAM. Control of tissue differentiation; especially Xylem and Phloem, Vascular cambium. Secretary ducts and laticifers, Wood development in relation to environmental factors.

UNIT-III

Leaf development : Development, Phyllotaxy, Control of leaf form, Differentiation of epidermis (with special reference to Stomata and Trichome) and Mesophyll cell. Senescence, Influences of hormones and environmental factors on senescence.

Flower development : Floral characteristics, Flower development, Genetics of floral organ differentiation: Homeotic mutant in Arabidopsis and Antirrhinum, Sex determination.

UNIT-IV

Plant resources : Origin, Evolution, Cultivation and Uses of (i) Food, Forage and Fodder crops, (ii) Fiber crops, (iii) Medicinal and Aromatic plants, (iv) Vegetable Oil-yielding crops (v) fruits.

Important fire-wood, Timber-yielding plants and Non-wood forest products (NFPs) such as bamboos, gums, tannins, dyes and resins.

SUGGESTED LABORATORY / FIELD EXERCISES

- Effect of gravity, unilateral light and plant growth regulators on the growth of young seedling.
- Role of dark and red light / far-red light on the expansion of cotyledons and epicotylar hook opening in pea.
- Study of living shoot apices by dissections using aquatic plants such as *Ceratophyllum* and *Hydrilla.*
- Study of monocot and dicot stem.
- Study of cytohistological zonation in the shoot apical meristem (SAM) in sectioned and double-stained permanent slides of a suitable plant such *Coleus, Kalanchoe,* and *Tobacco.* Examinations of shoot apices in monocotyledons in both T.S. and L.S. to show the origin and arrangement of leaf primordial.
- Study of alternate and distichous, alternate and superposed, opposite sand superposed, opposite and decussate leaf arrangement. Examination of rosette plants (*Launaea*, *Mollugo, Raphanus, Hyoscyamus* etc.) and induction of bolting under natural conditions as well as by GA treatment.
- Microscopic examination of vertical section of leaves such as *Cannabis, Tobacco, Nerium, Maize* and *wheat* to understand the internal structure of leaf tissues and trichomes, glands etc.
- Study the C3 and C4 leaf anatomy of plants.

- Study of epidermal peels of leaves such as *Coccinia, Gailardia, tradescantia, Notonea,* etc. To study the development and final structure of stomata and stomatal index. Demonstration of the effect of ABA on stomatal closure.
- Study of whole roots in monocots and dicots.
- Examination of L.S. of root from a permanent preparation to under stand the organization of root apical meristem and its derivatives. (Use *Maize,* Aerial roots of *Banyan, Pistia, Jussieua* etc.).
- Origin of lateral roots.
- Study of leguminous roots with different types of nodules.
- Food crops: Wheat, Rice, Maize, Chickpea, Potato, Tapioca, Sweet Potato, Sugar cane, Morphology, Anatomy, Micro chemical tests for stored food material.
- Forage/Fodder crops: Study of any five important crops of the locality (For example fodder sorghum, Bajra, Bersem, Clove, Guar bean, Gram, Ficus sp.)
- Plant fibers: (i) Textile fibers: Cotton, Jute, Linen, Sunn hemp, Cannabis. (ii) Cordage fibers; Coir (iii) Fibers for stuffing: Silk and Cotton.

SUGGESTED READINGS :

- Bewley, J.D. and Black. M. 1994 Seeds : Physiology of development and germination. Plenum Press, New Yor.
- Bendre, A. and Kumar, 2004 A. Rastogi pub. Meerut, India.
- Crocker, W. and Barton V.1953 Physiology of seeds. Waltham, Mass, U.S.A
- Santra, S.C., Chatterjee. T.P. and Das, 2005. A.P. College Botany Practical Vol. Li New Central pub. India.
- Parihar, NS. 1964, Hormonal control of plant growth. Asia pub. House, London.
- Wareing P.F. and Phillips I.D.J. 1973, Pergamon press. Oxford.

M.Sc. SEMESTER - III

PAPER - II
PLANT ECOLOGY- I

(ECOSYSTEM AND VEGETATION ECOLOGY)

MAX.MARKS-80

UNIT-I

ECOSYSTEM ORGANISATION:- Structure and functions, primary production (Methods of measurement, global pattern, controlling factors), Energy dynamics (trophic organization, energy flow pathways, ecological efficiencies), Litter fall and decomposition, (mechanism, substrate quality, and climatic factors), global biogeochemical cycles of C, N, P, and S, mineral cycles (pathways, processes and budgets) in terrestrial and aquatic ecosystems.

UNIT-II

ECOSYSTEM STABILITY AND MANAGEMENT
Concept (resistance and resilience), Ecological perturbations (natural and anthropogenic) and their impact on plants and ecosystems, ecology of plant invasion, environment impact assessment, ecosystem restorations. Concept of Sustainable development, sustainability indicators.

UNIT-III

VEGETATION ORGANISATION:-
Concepts of community and continuum, analysis of communities (analytical and synthetic characters), Community coefficients, inter specific associations, ordination, and concept of ecological niche.

UNIT-IV

VEGETATION DEVELOPMENT :-
Temporal changes (cyclic and non cyclic), mechanism of ecological succession (relay floristic and initial floristic composition, facilitation, tolerance and inhibition models), change in ecosystem properties during succession.

REFERENCE BOOKS :

Smith, R.L. 1996. Ecology and field biology, Harper Collins, New York.
Odum, E.P. 1971. Fundamentals of Ecology, Saunders, Philadelphia.
Odum, E.P. 1983. Basic ecology, Saunders, Philadelphia.
Kormondy, E.J. 1996. Concepts of Ecology, Prentice Hall of India Pvt.Ltd. New Delhi.
Moldan, B. and Billharz, S. 1997 Sustainability indicators, John Wiley and Sons, New York.

Muller-Dombosis, D and Ellenberg, H 1974 Aims and methods of vegetation ecology, Wiley, New York.
Begon M, Harper, J.L. Townsend, C.R.1996. Ecology, Blackwell science, Cambridge, USA.

Ludwig, J. and Reynolds, J,F, 1988 Statistical ecology, John Wiley and Sons. Barbour, M.G. Burk, J.H. and Pitts, W.D.1987. Terrestrial plant ecology, Benjamin Cummings Publication Company, California.
Chapman, J.L. and Reiss, M.J.1988 Ecology principles and applications,
Cambridge University press, Cambridge, U.K.

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LIST OF PRACTICALS

1. To determine minimum size and number of quadrat required for reliable estimate of biomass in grassland.
2. To compare protected and unprotected grassland stands using community coefficients (similarity indices).
3. To analyze plant communities Bra Curtis ordination method.
4. To estimate IVI of the species in a woodland using point centered quarter method.
5. To calculate mean, variance, standard deviation, standard error, coefficient of variations and to use t test for comparing two means related to ecological data.
6. To find out the relationship between two ecological variables using correlation and regression analysis.
7. To find out important grassland species using chi square test.
8. Scientific visits to a protected area, a wet land, a mangrove, NBPGR, BSI, CSIR, ICAR labs and a recognized botanical gardens or a museum.

REFERENCE BOOKS :

Ludwing, J.A. and Reynolds, J.F. 1988, Stastical Ecology, Willey New York.
Krebs, C.J. Ecological methodology, Herper and Row, New York, USA
Pielou, E.C.1984. The interpretation of ecological data, Wiley, New York.
Moore, P.W. and Chapman, S.B.1986. Methods inplant Ecology, Blackwell scientific publications.
Misra, R. 1968. Ecology work book, Oxford & IBH, New Delhi.
Smith, R.L. 1996. Ecology and Field Biology, Harpercollins, New York.
Muller-Dombois, D and Ellenberg, H. 1974. Aims and methods of vegetation ecology, Wiley, New York.
Sokal, R.R. and Rohlf, F.J. 1995. Biometry, W.H. Freeman & Co. San Francisco.

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M.Sc. SEMESTER - III
PAPER – III
BIOTECHNOLOGY AND GENETIC ENGINEERING OF PLANTS AND MICROBES
MAX.MARKS-80

UNIT-I

BIOTECHNOLOGY - Basic concepts, principles and scope.

RECOMBINANT D.N.A. TECHNOLOGY : Gene cloning principles, Tools - Restriction Endonucleases, DNA modifying enzymes, Choice of Vectors, Plasmid, Cosmid, Bacteriophage vectors, phagmids, Artificial chromosomes. Shuttle vectors, Yeast vectors, Expression vectors and techniques, construction of genomic / cDNA libraries.

UNIT-II

MICROBIAL GENETIC MANIPULATION: Bacterial transformation, selection of recombinants and transformants, genetic improvement of industrial microbes and nitrogen fixers, fermentation technology.

GENETIC ENGINEERING OF PLANTS : Aims, strategies for development of transgenies (with suitable examples), Gene transfer methods - Vector mediated gene transfer-Agrobeacterium the natural genetic engineer. t-DNA mediated DNA transformation. Virus mediated gene transfer, Vectorless or direct DNA transfer.

UNIT-III

DNA SYNTHESIS AND SEQUENCING : Chemical synthesis of gene, Polymerase chain reaction, its variation, application, advantages and limitations, DNA sequencing - Sanger and Coulson method, Maxam Gillbert method, High throughput DNA sequencing, DNA finger printing.

UNIT-IV

GENOMICS AND PROTEOMICS : Genetic and physical mapping of genes, molecular markers for integression of useful traits, Transposon mediated gene tagging, genome projects, bioinformatics, functional genomics, microarrays, protein profiling and its significance.

Suggested Reading :

1. Brown, T.A. 1999. Genomes, John Wiley and Sons (Asia) Pvt.Ltd., Singapore.
2. Callow, J.A., Fort-Lloyd, B.V. and Newbury, H.J. 1997.
3. Biotechnology and Plant Genetic Resources : Conservation and Use, CAB International, Oxon, UK.
4. Chrispeels, M.J. and Sadava, 1994, Plants, Genes and Agriculture, Jones & Barlloy Publishers, Boston, USA.
5. Glazer, A.N. and Nikaido, 11, 1995 Microbial Biotechnology. W.H. Freeman & Company, New York, USA.
6. Gustafson, J.P. 2000, Genomes Kluwer Academic Plenum Publishers, New York, USA.
7. Henry, R.J. 1997, Practical Applications of Plant Molecular Biology, Chapman & Hall London, UK/
8. Jolles, O. and Jornvall, H. (eds) 2000. Proteomics in Functional Genomics. Birkhauser Verlag, Bsel, Switzerland.
9. Old, R.W. and Primrose, S.B. 1989, Principal of Gene Manipulation, Blackwell Scientific Publication, Oxford, UK, Primrose, S.B. 1995, Principles of Genome Analysis, Blackwell Science Ltd., Oxford, UK.
10. Raghavan, V. 1997, Molecular Biology of Flowering Plants, Cambridge University Press, New York, USA.
11. Shantharam, S. and Montgomery, J.F. 1999, Biosafety, and Biodiversity, Oxford and IBH Publishing Co. Pvt.Ltd., New Delhi.

Suggested Laboratory Exercises :

1. Growth characteristics of E. coli using plating and turbidimetric methods.
2. Isolation of plasmid from E. coli by alkaline lysis method and its quantitation spectrophotometrically.
3. Restrictiion digestion of the plasmid and estimation of the size of various DNA fragment.
4. Cloning of DNA fragment in a plasmid vector, transformation of the given bacteria population and selection of recombinants.
   Demonstration of DNA sequencing by Sanger's dideoxy method.

Suggested Reading (for laboratory exercise)

1. Plant molecular biology Manual, 2nd edition, Kluwer Academic Publishers, Dordrecht, The Netherland.
2. Glick, B.R. and Thompson, J.E. 1993. Methods in Plant Molecular Biology and Biotechnology, CRS press, Boca Raton, Florida.

3. Glover, D.M. and Hames, B.D. (Eds), 1995, DNA Cloning 1: A Practical Approach; Core Techniques, 2nd edition, PAS, IRL Press at Oxford University Press, Oxford.
4. Hackett, P.B., Fuchs, J.W. 1988. An introduction to Recombinant DNA Techniques; Basic Experiments in Gene manipulation. The Benjamin Cummings/ Publishing Co.; Inc Menlo, Calio Park, Callifornin.
5. Shaw, C.H. (Ed.) 1988, Plant Molecule Biology: A Practical Approach, IRL Press, Oxford.

M.Sc. SEMESTER - III

PAPER - IV

ELECTIVE COURSE-- MOLECULAR PLANT PATHOLOGY-I

MAX.MARKS-80

UNIT-I

1. Introduction and history of plant pathology.
2. General Principles of plant pathology and classification of plant diseases.
3. **Diseases inciting organisms -** Animate Pathogens- fungi, Bacteria, Mycoplasma, Viruses, Nematodes, their general characteristics, heterotrophic behaviour with emphasis on parasitism ability and virulence.

UNIT-II

1. **Disease Syndrome and General Symptoms of plant diseases :** Pathogenic and nonpathogenic; Symptoms caused by fungi, Bacteria, Viruses, Mycoplasma and Nematodes.
2. **Sources of Infection :** Seeds, soil, water and airborne diseases of plants; Significance of phylosphere and rhizosphere studies.
3. **Pathogenesis -** Dissemination of plant pathogens; Mode of infection; Inoculum potential.

UNIT-III

1. **Effect of environment on disease development-** Predisposing factors; Survival of fungi; Germination of spores; Disease initiation and Epidemics.

2. **Host Parasites relationship -** Mechanism and physiology of infection, Path of infection, Role of enzymes, growth regulators and toxins in pathogenesis.
3. **Physiological specialization :** General account; Physiological specialization with special reference to smuts and rusts.

UNIT-IV

1. **Recurrence of disease** with special reference of recurrence of rust disease in India.
2. **Methods of Studying Plant Diseases:** General account, Macroscopic study, Microscopic study, Koch postulates, Culture technique, Preparation of culture tubes, media preparation, Inoculation, Isolation, Pure culture, Parasitism of obligate parasites, Methods in bacteriology, Techniques required in introductory bacteriology

Suggested Laboratory Exercises:
Experiment based on theory syllabus.

SUGGESTED READINGS :

1. Plant Pathology - J.C. Walkar
2. Fungi and plant diseases - B.B. Mundkar
3. Plant Pathology – G.N. Agrios
4. Plant Pathology - Whecler
5. Plant Pathology (Vol.1-3) – Horsfall & Dimon
6. A text book of Modern Plant Pathology – K.S. Bilgrami and H. S.Dubey
7. Plant Pathology – R.S.singh
8. An introduction to Principles of Plant pathology - R.S.singh
9. Plant Disease of Crop plants in India – N.G. Rangaswamy.
10. Plant Pathology problems and progress- Honfall
11. Essentials of Plant Pathology- V.N. Pathak
12. Plant Pathology – Butter and Jones.
13. Plant Pathology- R.S. Malhotra
14. Crop plant Disease Colender- IARI-India.
15. Physiology of Fungus- – K.S. Bilgrami and H. S.Dubey
16. Micro-organisms in laboratory – G.P. Agarwal and S.K. Hasija.
17. Physiology of fungi – V.G.Lily and H.L.. Barnet.
18. Illustrated Genera of Imperfecti fungi- H.L.. Barnet and.B.B. Hunter.
19. Microbiology and Plant Pathology- P.D.Sharma
20. Plant Pathology- P.D.Sharma
21. Microbiology – P.D.Sharma
22. The Fungi – G. Sumbali
23. Fungicides and crop protection- H.G.Mewitt
24. Fungal diseases of plants- B.M. Duggar
25. Plant Pathology – P.C. Trivedi
26. Plant Pathology – G.P. Gupta
27. Virus and Plant diseases S.R.Mishra
28. Bacterial Diseases- V. Kumar

29. Biotechnology and Plant Pathology- V.K.Jain
30. Laboratory manual of Plant Pathology- D.K.Jha.
31. Modern technology of Plant Pathology- V.Suri.

M.Sc. SEMESTER – III (Botany)

PAPER – IV

ELECTIVE COURSE-- LIMNOLOGY-I

MAX. MARKS-80

UNIT-1

1.Limnology–Definition, historical development and scope of Limnology.

2.The characteristics of water, Hydrological cycle, Global water balance.

3.Types of fresh water habitats and their ecosystem-

(a) Ponds, Streams and rivers. (b) Lakes– General characteristics of lakes and classification of lakes. Definition depth of lakes. Retention and replacement of water in lakes, origin of lakes.

UNIT-II

1.Morphometry–Use of various morphometric parameters and Zonation. Food Chains, Food webs, Trophic levels and Energy flow in freshwater ecosystems. Eutrophication: Causes, mechanism and significance, Management of freshwater bodies.

UNIT-III

Physical Characteristics of Lake water and their role.

1. Light and Temperature-

(a) Transmission and absorption of Light, Colour and Transparency of light

(b) Distribution of heat in lakes, Temperature Radiation, Stratification and Heat Budget. Comparative analysis of river, reservoir and lakes.

2. Water movements: Flow of water, surface and internal water movements. Turbidity, Salinity and Total Dissolved Solids

UNIT-IV

3. Chemical characteristics of fresh water with special reference to different parameters-Dissolved gases (Oxygen, Carbon di oxide, Hydrogen Sulphide), Seasonal changes in dissolved gases and pH, Hardness, Alkalinity, Sulphates,

Nitrogen, Phosphorus, Iron, Sulphur and Silica cycle, Arsenic, and Fluoride.

Suggested Readings:

1. Anathakrishnan : Bioresources Ecology

2. Goldman : Limnology
3. Odum : Ecology
4. Pawlosuske : Physico-chemical methods for water LimnologyWetzal : Chemical and biological methods for water pollution studies

5. Trivedi&Goyal : Chemical and biological methods for water pollution studies

6. Welch : Limnology Vols.I-II
7. Perkins : Ecology
8. Arora : Fundamentals of environmental biology

9. Ghoshe : Toxicology

10. Sood : Toxicology

Suggested Laboratory Exercises

1. Construction of morphometric maps of aquatic systems.
2. Measurement of transparency and temperature.
3. Analysis of different dissolved gases: Dissolved oxygen and Carbon dioxide.
4. Analysis of lake water for bicarbonates, carbonates, total alkalinity, chlorides etc.

M.Sc.(Botany) III SEMESTER

PAPER –IV

Elective Course –Ethnobotany

MAX. MARKS : 80

Unit I

- **Ethnobotany** : History, general account and its sub disciplines.
- Interdisciplinary approaches & aim of ethno botany.
- Main world centers of Ethnobotanical studies, workers & literature of Ethno botany
- Ethnobotany with special reference to Chhattisgarh.
- Ethnobotanical Research done in India:
- Ethnobotany in relation to national priorities and health care programme.
- Practical application of ethnobotany for tribal development programme.

Unit II

- Methods and techniques in ethnobotany**.**
- General account of major and minor tribes of Chhattisgarh with special reference to Gond ,Kamar ,Baiga , Abujhmaria .
- Ethnobotanical aspect of Art & literature.
- Abstract ethnobotany with special reference to folklore, Taboos, Majico-religious beliefs.

Unit –III

- Ethnobotanical importance of Bacteria, Algae, Fungi, Bryophyta, Pteridophyta and Gymnosperm.
- Ethnovaterinary medicines from plants.
- Major & Minor Forest Products (NWFPs)of Chhattisgarh.
- Ethnobotany in relation to livelihood security reference to tribes.

Unit- IV

- Ethnobotanical study of following plants with special reference to their medicinal importance 1. *Azadirachta indica* (Neem) 2. *Emblica officinalis* (Amla) 3. *Ricinus conmunis* (Andi) 4. *Madhuca indica* (Mahuaa) 5. *Cassia fistula* (Amaltash) 6. *Ficus religiosa* (Pipal) 7. *Oscimum*

sanctum (Tulsi) 8. *Asparagus racemosus* (Satavar) 9. *Aloe vera* (Ghrit kumari) 10. *Andographis paniculata* (Bhui neem).

Suggested Readings:-

- Baker, H.G. 1978. Plants and Civilization (3 rd edition). C.A. Wadsworth, Belmont.
- Chandel, K.P.S., Shukla, G.& Sharma, N. 1996. Biodiversity in medicinal and Aromatic Plants in India: Conservation & Utilization. National Bureau of Plant Genetic Resources, New Delhi.
- Chrispeels, M.J. & Sadava, D. 1977. Plants , Food & People. W.H Freeman and Co., San Francisco.
- Ambasta S.P. (ed.) (1986). The Useful Plants of India. Publications & Information Direxttorate, CSIR, New Delhi India.
- Anon. (1978). The tribes of Madhya Pradesh. Dept. of Tribal Welfare, Govt. of M.P. Bhopal.
- Arnold. J. E. M. & Ruiz Perez, M, (1998). The role of non-timber forest products in conservation and development. In: Wallenberg, Eva. & Andrew Ingles (Eds.) Income from the Forest, CIFOR 1998, Indonesia, pp-17 to 41.
- Asolkar, L.V. (1992). Second Supplement to Glossary of Medicinal Plants, (CSIR) NISCOM, New Delhi, India.
- Bal, S.N. (1984). Catalogue of Medicinal Plant Exhibits. BSI. Bishne Singh Mahendra Pal Singh, Cannaught Place, Dehra Dun, India.
- Buch, M.N. (1991). Forest of Madhya Pradesh, Madhya Pradesh Madhyam Bhopal.
- Chopra, R.N.; Badhwar, R.L. & Ghosh, S. (1965). Poisonous Plants of India. Vol. I. 2nd Ed. ICAR, New Delhi, India.
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- Faulks. P.J. (1958) An Introduction to Ethnobotany: Moredale Publications Ltd. London, England.
- Harshberger, J.W. (1896). Purposes of Ethnobotany Bot. Gaz. 21: 146-154.
- Jain S.K. and Phuipps, R.D. (1991). Medicinal Plants of India Rec. Pub.Algonac USA 2Vols. 1-849.
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- Jain, S. K. (1995). In Manual of Ethnobotany (edt. S.K. Jain,) Scientific Pubisher, Jodhpur. 128-134.
- Jain, S.K. & Rao, R.R. (1977). A handbook off field and herbarium methods. New Delhi: Today & Tomorrow's Printers and Publishers.
- Jain, S.K. (1981). Glimpses of Indian Ethnobotany. Oxford & IBH New Delhi, India.
- Jain, S.K. (1989). Methods and Approaches in Ethnobotany. Society of Ethnobotanist. Lucknow.
- Jain, S.K. and Mudgal, Hand Book of Ethanobotany. Bisen pal Singhm Mahendra Pal Singh Publication.
- Vaishnaw T.K. (2004). Chhattisgarh ki Anusuchit Janjatiyan, Adim Jati Anusandhan Avam Prshikshan Sansthan Raipur. Prakashan kramank 2, pp. 1-120

- Varghese, E. S. V D. (1996). Applied Ethnobotany - A case study among the Kharias of Central India. New Delhi. Deep Publications
- Jajoria, E, V.K. (1998); "The Kamar [A way of life.] Vanya Prakashan., Tribal Research and Development Institute. 35, Shamla Hills, Bhopal., ethnobot. Res.2:303-3 15.
- Joshi, S.G. (2000). Medicinal Plants, Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi, India.
- Kirtikar, K. R. & Basu, B.D. (1933-1935). Indian Medicinal plants. Vol.I to VIII (4 Vols. text & 4 vols. plates) Reprint 1994, Dehradun U.P.
- Maheshwari, J.K. Ed. (2000). Ethnobotany and Medicinal Plants of Indian Subcontinent. Scientific Publishers, Jodhpur
- Martin, G.J. (1995). Ethnobotany. Chapman and Hall, London.

Suggested Laboratory Exercises:-

1. Description and identification of medicinal plants and its medical properties.
2. Preparation of medicinal plants herbarium and photographs.
3. Herbal preparation:-
    a. Extract of Tulsi leaves.
    b. Ointment from Neem Leaves.
    c. Ayurvedic tooth powder.
    d. Face pack preparation from various herbs.
    e. Preparation of Triphla.
    f. Kwath of Triphla.
    g. Preparation of diabeties controlled powder.
    h. Preparation ofherbal shampoo.
4. To cultivate at least two medicinal plant in earthen pot.
5. Field Study of Forest area or Tribal area.
6. Documentation technique of Ethnobotanical knowledge.
7. To separate active principles from the extract of Medicinal plant.

M.Sc. SEMESTER - IV

PAPER - I
PLANT REPRODUCTION AND UTILIZATION OF RESOURCES
MAX.MARKS-80

UNIT-I

Reproduction : Vegetative reprodtion, Methods of propagation. Pollination, Pollination-mechanism and vector, Structure of pistil, Pollen stigma interaction, Sporophytic and gametophytic Self-incompatibility (Cytological, biochemical and molecular aspects), Fertilization, double fertilization, *in-vitro* fertilization.

UNIT-II

Male gametophyte : Structure of anther, Microsporogenesis, Role of tapetum, pollen development, male sterility, sperm dimorphism and hybrid seed production, Pollen germination, Pollen tube growth and guidance, Pollen storage, Pollen allergy, Pollen embryo sac.

Female gametophyte : Ovule development, Organization of embryo sac and Structure of embryo sac cells.

UNIT-III

Seed and Fruit development : Endosperm development during early, maturation and desiccation stages. Embryo genesis, Storage proteins of endosperm, Ultra structure and nuclear cytology, Cell lineage during late embryo development, Polyembryony, Apomixes, Embryo culture, Endospermic and non-endospermic seeds, Dynamics of fruit growth, biochemistry and biology of fruit maturation.

UNIT-IV

Utilization of resources : Plant used as avenue trees for shade, Pollution control and aesthetics, Innovation for meeting world food demands Origin of Agriculture. Green revolution; benefits and adverse consequences. Ethanobotanically important plants of Chhattisgarh. World centers of primary diversity of domesticated plants.

SUGGESTED READINGS :

- Bhojwani, SS. and Bhatnagar, S.P. 2000. The Embryology of Angiosperms (4 revised and enlarged edition) Vikas publication House, New Delhi.
- Fageri, K. and Vander Pijl, L. 1979. The Principles of Pollination Ecology Pergamon Press, Oxford.
- Proctor, And Yeo, P. 1973. The Pollination of Flowers. William Collins, London.
- Raghavan. V. 1997. Molecular Embryology of Flowering Plants. Cambridge University, Press, Cambridge.

- Raghavan, V. 1999 Developmental Biology of Flowering Plants. Springer-Verlag, New York.
- Raven, P.H. Evert, R.F. and Eichhorn, and S.E. 1992. Biology of plants (5 edition), Worth, New York.
- Sedgely, M. and Griffin, A.R. 1989. Sexual Reproduction of Tree Crops. Academic Press, London.
- Shivanna, K.R. and Sawhney, V.K. 1997. Pollen Biotechnology for crop Production and Improvement.
- Shivanna, K.R. and Rangaswamy, N.S. 1992. Pollen Biology : A Laboratory Manual. Springer-Verlag, Berlin.
- Shivanna, K.R. and Johri, B.M. 1985. The Angiosperm Pollen : Structure and Function. Wiley Eastern Ltd., New York.
- Chandel, K.P.S., Shukla, G. and Sharma N. 1996. Biodiversity in Medicinal and Aromatic Plants in India; Conservation and Utilization. National Bureau of Plant Genetic Resources, New Delhi.
- Chrispeels, M.J. and Sdava, D. 1977. Plants, Food and People. W.H. Freeman and CO., San Francisco.
- Council of Scientific and Industrial Research 1986. The Useful Plants of India. Publications and directorate, CSIR, New Delhi.
- Kochhar, S.L. 1998. Economic botany of the Tropics, 2nd edition. Macmillan India Ltd., Delhi.
- Thakur, R.S., Puri, H.S. and Hussain, A., 1989. Major Medicinal Plants of India. Central Institute of Medicinal and Aromatic Plants, CSIR, Lucknow.
- Swaminathan, M.S. and Kocchar, S.L.1989. Plants and Society. Macmillan Pub. London.

SUGGESTED LABORATORY / FIELD EXERCISES

- Study of microsporogenesis and gametogenesis in sections of anthers.
- Examination of modes of anther dehiscence and collection of pollen grains for microscopic examination (*Maize, Grasses, Cannabis Sativa Crotolaria, Tradiscantia, Brassica, Petunia, Solunum melongena etc.)*
- Tests for [p;;em voabo;otu isomg staoms and *in vitro* germination. Pollen germination using hanging drop and sitting drop cultures, suspension culture and surface culture.
- Estimating percentage and average pollen tube length *in vitro.*
- Role of transcription translation inhibitors on pollen germination and pollen tube growth.
- Pollen storage, Pollen-pistil interaction, self-incompatibility *in vitro* pollination.
- Study of ovule in cleared preparations, study of monosporic, bisporic and terrasporic types of embryo sac development through examination of permanent, stained serial sections.

- Field study of several types of flower with different pollination mechanisms (wind pollination thrips pollination bee/butterfly pollination, bird pollination.
- Emasculation, bagging and hand pollination to study of pollen germination, seed set and fruit development using self compatible and obligate out crossing system. Study of ceistogamous flowers and. Their adaptations.
- Study of nuclear and cellular endosperm through dissections and staining.

- Isolation of zygotic, globular, heart shaped, torpedo stage and nature embryo from suitable seeds and polyembryony in citrus, jamun (Syzygium cumin) etc. by dissections.
- Study of endospermic and non-endospermic seed.
- Study of seed dormancy and methods to break dormancy.
- Medicinal and Aromatic plants; Depending on the geographical location College/University select five medicinal and aromatic plants each from a garden, crop field or from the wild only if they are abundantly available. Papaver somniferum, Atropa belladonna, Catharanthus roseus, Adhatoda ceylanica, Allium sativum, Rauvolffia serpentina, Withania somnifera, Phyllanthus amarus, Andrographis paniculata, Aloe barbadense, Mentha arvesis, Rosa sp. Pogostemon cablins, Origanum vulgare, Vetivera zizanioides, Jasminum grandiflorum, Cymbopoogon sp., Pandanus odoratissimus.
- Study of live or herbarium specimens or other visual materials to become familiar with these resources.
- Vegetable oils; Mustard, Groundnut, Soya bean, Coconut, Sunflower and Castor.
- Gums, Resins, Tannins and Dyes; Perform simple tests for gums and resins. Prepare a water extract of vegetable tannins (Acacia. Terminalia, Mangroves. Tea. Cassia sp. Myrobalans) and dyes (Turmeric, Bixa orellana, Indigo, Butea monosperma, Lawsonia intermis) and perform tests to understand their chemical nature.

SUGGESTED READINGS FOR LABORATORY EXERCISE:

- Adriance, W. and Brison, R. Propagation of horticultural plants. Tata McGraw Hill pub. New Delhi.
- Sen. N. David, 1977. Environmental and seed germination of Indian plants. The chronica botanica co. New Delhi.
- Shivanna, K.R. and Rangaswamy, N.S. 1992 Pollen Biology : A Laboratory Manual. Springer-Verlag, Berlin.
- Shivanna, K.R., Johr, B.M. And Sastri, D.C. 1979. Development and physiology of angiosperm pollen. Today and tomorrows printers and pub. New Delhi.
- Vargheese, T.M. Experimental and applied embryology of angiosperms. Oxforc & IBS pub. Co. New Delhi.

M.Sc. SEMESTER - IV

PAPER - II
POLLUTION AND BIODIVERSITY CONSERVATION
MAX.MARKS-80

UNIT-I

CLIMATE, SOIL AND VEGETATION PATTERNS OF THE WORLD :
Life zones, major biomes, major vegetation types and soil types of the world, barren land.

UNIT-II
POLLUTION, CLIMATE CHANGE AND ECOSYSTEMS :
Air, water and soil pollution:- kinds, sources, quality parameters, effects on plants and ecosystem. Green house gases (Caron dioxide, methane, nitrous oxide, Chloro florocarbons: sources, trends and role), ozone layer, ozone hole, consequences of climate change) Carbon dioxide fertilization, global warming, seal level rise, UV radiation).

UNIT-III
BIOLOGICAL DIVERSITY :- Concepts and levels, status in India, Utilization and concerns, role of biodiversity in ecosystem functions and stability, speciation and extinction, IUCN categories of threat, distribution and global patterns, terrestrial biodiversity hot spots, inventory.

World centers of primary diversity of domesticated plants; The Indo Burmese center, plant introductions and secondary centers.

UNIT-IV
CONSERVATION STRATEGIES
Principles of conservation, extinctions, environmental status of plants based on International union for conservation of Nature.
In situ conservation, International efforts and Indian initiatives, protected areas in India-sanctuaries, national parks, biosphere reserves, Wetlands, Mangroves and coral reefs for conservation of wild biodiversity.
Ex situ conservation : Principles and practices, botanical gardens, field gene bank, seed banks, in vitro repositories, cryo banks, general account of the activities of Botanical survey of India (BSI), National Bureau of plant genetic resources (NBPGR), Indian council of Agriculture research (ICAR), Council of scientific and Industrial research (CSIR), and the department of Biotechnology (DBT) for conservation and non formal conservation efforts.

REFERENCE BOOKS :

Threshow, M1985. Air pollution and plant life, Wiley interscience.

Mason C.F. 1991. Biology of fresh water pollution, Longman.

Hill, M.K. 1997. Understanding Environmental pollution, Cambridge University press.

Anonymous, 1987. National gene bank, Indian heritage on plant genetic resources, National bureau of plant genetic resources.

Directory of Indian wet lands, 1993 WWF India and AWB, Kualalumpur.

Frankel, O.H., Brown, A.H.D. and Burdon, J.J. 1995. The conservation of Plant biodiversity, Cambridge University press, Cambridge, U.K.

Kothari, A. 1997. Understanding Biodiversity: Life sustainability and Equity, Orient Longman.

Nair, M.N.B. 1998. Sustainable management of non wood forest products, Faculty of forestry, University Putra Malaysia.

Paroda, R.S. and Arora R.K. 1991. Plant resources conservation and management, IPGRIP USA Campus, New Delhi.

Heywood, V.H. and Watson, R.T.1995. Global biodiversity assessment,

Cambridge University press Cambridge, U.K.

Brady, N.C. 1990. The nature and properties of soils, MacMilan.

Chandel, K.P.S., Shukla, G. and Sharma, N., 1996. biodiversity in medicinal and aromatic plants in India, conservation and utilization. National bureau of plant genetic resources, New Delhi.

Falk, D.A. Olwell, M Millan, C. 1996. Restoring biodiversity, Island press, Columbia, USA.

Gaston, K.J. Biodiversity: a biology of numbers and differences, Blackwell science Ltd. Oxford, U.K.

Heywood, V. 1995 Global biodiversity assessment. United nations environment programme, Cambridge University Press, Cambridge, U.K.

Heywood, V.H. and Wyse Jakon, P.S. 1991. Tropical botanical gardens, their role in conservation and development, Academic press San. Diego.

Walter, K.S. and Gillett H.J. 1998. 1997 IUCN Red list of threatened plants.

IUCN The World conservation union, IUCN, Gland, Switzerland and Cambridge, U.K.

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LIST OF PRACTICALS :

1. To prepare ombrothermic diagram for different sites on the basis of given data set and to comment on climate.
2. To determine soil moisture content, porosity and bulk density of soil collected from varying depths at different locations.
3. To determine the water holding capacity of soils collected from different locations.
4. To determine percent organic carbon and organic matter in the soils of cropland, grassland and forests.
5. To estimate rate of carbon dioxide evolution from different soils using soda lime or alkali absorption method.
6. To determine gross and net phytoplankton productivity by light and dark bottle method.
7. To estimate the dissolved oxygen content in eutrophic and oligotrophic water samples by azide modification method.
8. To estimate chlorophyll content in sulphur dioxide fumigated and unfumigated plant leaves.
9. To study environmental impact of a given developmental activity using checklist as a EIA method.
10. To determine diversity indices (Shannon Wiener, concentration of dominance, species richness, equability and B diversity.
11. Field survey of a part of town or city to make the students aware of the diversity of plants in urban ecosystems.

REFERENCE BOOKS FOR LABORATORY EXERCISE:

Magurran, A.E. 1988. Ecological diversity and its measurement, Chapman and Hall. London.
APHA-AWWA-WPCF Standard methods for the examination of water and waste water, American public health association, Washington, D.C.
Krebs, C.J. Ecologicl methodology, Harper and Row, New York, USA.
Pielou, E.C. 1984. The interpretation of ecological data, Wiley, New York.
Moore, P.W. and Chapman, S.B.1986. Methods in plant Ecology. Blackwell scientific publications.

M.Sc. SEMESTER - IV

PAPER – III
BIOTECHNOLOGY-II

PLANT CELL, TISSUE CULTURE AND ORGAN CULTURE

MAX.MARKS-80

UNIT-I

PLANTS CELLS AND TISSUE CULTURE : General introduction, history, scope, concept of cellular differentiation, cellular totipotency.

TISSUE CULTURE MEDIA: Introduction, Media constituents, Media selection, Media preparation.

CELL CULTURE : Introduction isolation of single cells. Suspension cultures, Culture of Single cell, Plant cell reactors, Applications of cell culture.

CLONAL PROPAGATION - Auxillary bud prolification, Meristem and shoot tip culture, bud culture.

ORGANOGENESIS AND ADVENTIVE EMBRYOGENESIS : Fundamental aspects of morphogenesis; organogenesis via callus formation, direct adventitive organ formation.

UNIT-II

SOMATIC EMBRYOGENESIS AND ANDROGENESIS : Mechanisms, techniques and utility.

SOMATIC HYBRIDIZATION : Methods of Protoplast isolation, Spontaneous and induced methods of protoplasm fusion, identification and selection of hybrid cells. Regeneration of hybrid plants. Verification and Characterization of somatic hybrids, Cybrids, posibilities, achievements and limitations of protoplast research.

UNIT-III

CRYOPRESERVATION AND GERMPLASM STORAGE : Raising sterile tissue cultures, Addition of cryoprotectants and pretreatment, freezing, storage, thawing, determination of survival viability. Plant growth and generation, verification, encapsulation and dehydration. Slow growth method, Applications.

INTELLECTUAL PROPERTY RIGHTS : Possible ecological risks and ethical concerns.

UNIT-IV

APPLICATION OF PLANT TISSUE CULTURE : Artificial seeds, Production of hybrids and somaclones.

PRODUCTION OF SECONDARY METABILITIES / NATURAL PRODUCTS : Morphological and chemical differentiations, Medium composition for secondary product formation. Growth production patterns, Environmental factors. Selection of cell lines producing high amounts of a useful metabolite, Problems associated with secondary metabolite production Immobilized cell system.

TRANSGENICS IN CROP IMPROVEMENT : Transgenic for Resistance to biotic and abiotic stresses, Transgenics for quality modification, Terminator seed technology. Chloroplast transformation and its utility.

Suggested Reading :

1. Bhojwani, S.S. and Razdan, M.K. 1996. Plant Tissue Culture: Theory and Practice revised edition). Elsevier Science Publishers, New York, U.S.A.
2. Bhojwani, S.S. 1990, Plant Tissue Culture; Application and Limitations. Elsevier Science Publishers, New York, USA.
3. Collins, H.A. and Edwards, S., 1998. Plants cell Culture Bio Scientific Publishers, Oxford UK.
4. Jain, S.M. Sopory, S.K. and Veilleux, R.E. 1996. In Vitro Hapliod Productin in Higher Plants, Vois. Fundamental Aspects and Methods Kluwer Academic Publishers. Dordrecht. The Netherlands.
5. Kartha, K.K. 1985. Cryopreservation of Plants Cells and Organs. CRC Press, Boca Raton, Florida, USA.
6. Raghavan, V. 1986. Embryogenesis, in Angiosperms: A Development an Experimental Study Cambridge University Press, New York, USA.
7. Vasil, Ikssshorpe, T.A. 1994. Plant Cell and Tissue Culture, Kluwer ACADEMIC publishers, The Netherlands.

Suggested Laboratory Exercise :

1. Isolation protoplast from various plant tissues and testing their viability.
2. Effect of physical (e.g. temperature) and chemical (e.g. osmoticum) factors on protoplast yield.
3. Demonstration of protoplast fusion employing PEG.
4. Organogenesis and somatic embryogenesis using appropriates explants and preparations of artificial seed.
5. Demonstration of androgenesis in Datura.
6. Electroporation of protoplasts and checking of transient expression of the reporter gene.
7. Co-cultivation of the plant material (e.g.leaf discs) with Agrobacterium and study GUS activity histochemically.

Suggested Reading (for laboratory exercise) :

1. Butenko, R.G.2000. Plant Cell Culture, University Press of pacific.
2. Ckollin, H.A. and Edwards, S. 1998. Plant Cell Culture. Bios Scientific Published, Oxford, UK.

3. Dixon, R.A. (Ed.) 1987. Plant Cell Culture : A Practical Approach. IRL Press, Oxford.
4. George, F.F., 1993, plant propagation by tissue Culture. Part 2. The Technology, 2nd Exegetics Ltd. Edington, UK.
5. Hall, R.D.; (E.D.) 1999. Plant Cell Culture Protocols, Humana Press, Inc., New Jersey, USA.
6. Smith, R.H. 2000, Plant Tissue Culture: Technique and Experiments. Academic Press, New York.

M.Sc. SEMESTER - IV

PAPER - IV
ELECTIVE PAPER-- MOLECULAR PLANT PATHOLOGY

MAX.MARKS-80

UNIT-I

1. **Epidemiology and disease forecasting :** form of epidemics, factors responsible for the establishment of an epidemic, disease forecasting.
2. **General principles of plant disease control :** General account; Prophylactic. chemical (including fungicides, systemic fungicides, fumigants, antibiotics, growth regulators etc.) and biological control; Breeding for disease resistance varieties of host plants, Plant quarantine.

UNIT-II

1. **Defense Mechanism-** Defense of host against pathogen, Structural defense; Physiological defense, Biochemical defense-role of phenolic compounds; Phytoalexins Defense through hyper-sensitive reactions.
2. **Resistance and susceptibility :** General account, types of resistance, vertical and horizontal resistance; breeding for disease resistance.

UNIT-III

1. **Wilt diseases :** General account, systems of diseases, Mechanism of wilting.
2. **Diseases due to fungi :** Rusts, smuts, Downy mildews powdery mildew diseases, Wilts, Leaf blight, Ergots, Tikka, necrosis, Rots-red rot of sugarcane, Damping off and warts diseases of economically important plants.
3. **Diseases due to Bacteria :** Bacterial blight of Rice, Tundu disease, citrus canker, Crown galls of stone fruits, Angular leaf spots.

UNIT-IV

1. **Diseases due to Viruses :** Mosaic of tobacco, Potato and tomato, Leaf curl of tomato & papaya, Yellow vein mosaic of Bhindi, Bunchy top of banana, Grassy shoot disease of sugarcane.

2. **Diseases due to Mycoplasma :** Sandal spike, Little leaf of Brinjal, Grassy shoot disease, Sesamum, phyllody, Citrus greening.
3. **Diseases due to Nematodes :** General characteristics of plants nematodes, Root knot, Malaya disease of Barley, wheat, Citrus nematodes, Ear cockle of wheat.

SUGGEST READINGS :

1. Plant Pathology - J.C. Walkar
2. Fungi and plant diseases - B.B. Mundkar
3. Plant Pathology – G.N. Agrios
4. Plant Pathology - Whecler
5. Plant Pathology (Vol.1-3) – Horsfall & Dimon
6. A text book of Modern Plant Pathology – K.S. Bilgrami and H. S.Dubey
7. Plant Pathology – R.S.singh
8. An introduction to Principles of Plant pathology - R.S.singh
9. Plant Disease of Crop plants in India – N.G. Rangaswamy.
10. Plant Pathology problems and progress- Honfall
11. Essentials of Plant Pathology- V.N. Pathak
12. Plant Pathology – Butter and Jones.
13. Plant Pathology- R.S. Malhotra
14. Crop plant Disease Colender- IARI-India.
15. Physiology of Fungus- – K.S. Bilgrami and H. S.Dubey
16. Micro-organisms in laboratory – G.P. Agarwal and S.K. Hasija.
17. Physiology of fungi – V.G.Lily and H.L.. Barnet.
18. Illustrated Genera of Imperfecti fungi- H.L.. Barnet and.B.B. Hunter.
19. Microbiology and Plant Pathology- P.D.Sharma
20. Plant Pathology- P.D.Sharma
21. Microbiology – P.D.Sharma
22. The Fungi – G. Sumbali
23. Fungicides and crop protection- H.G.Mewitt
24. Fungal diseases of plants- B.M. Duggar
25. Plant Pathology – P.C. Trivedi
26. Plant Pathology – G.P. Gupta
27. Virus and Plant diseases S.R.Mishra
28. Bacterial Diseases- V. Kumar
29. Biotechnology and Plant Pathology- V.K.Jain
30. Laboratory manual of Plant Pathology- D.K.Jha.
31. Modern technology of Plant Pathology- V.Suri.

M.Sc. SEMESTER – IV (Botany)

PAPER - IV

ELECTIVE PAPER-- LIMNOLOGY-II

MAX.MARKS-80

UNIT-1

1.Study of Biota

(a) Phytoplankton flora-classification of phytoplankton, special distribution of phytoplankton, seasonal distribution and species composition of phytoplankton. Algal blooms effects of salinity and climatic stresses on the distribution of phytoplankton, Phytobenthos-classification.

(b) Phytoplankton and their inter-relationship with Zooplanktons.

© Aquatic insects, birds and their environmental significance.

UNIT-II

1. Lake Flora-Higher Plants. Categories of aquatic higher plants, zonation of rooted higher plants, some peculiarities of aquatic higher plants.

2. Lake Bacteria-occurrence, characteristics and importance.

3.Ecological classification of aquatic higher aquatic plants and their significance.

4. Biotic relationship and interaction among organisms. Symbiosis, competition among algae, Parasitism of algae, predation of algae, impact of human being on algae.

UNIT-III

1.Concept of Productivity: Seasonal variation, Primary productivity in freshwater lakes, Estimation of Primary Productivity.

2.Bio indicators-Aquatic flora and fauna in relation to water quality in an aquatic environment.

3. Use and misuse of inland waters.

4. Methods of water quality testing BOD and COD.

UNIT-IV

1.Sewage–Definition, composition and its treatment.

2.Pollution by Domestic and Agriculture sewage, Industrial effluent.

3.Causes of pollution of Aquatic Resources, their management and conservation.

4.Resource Conservation–Aquatic pollution, control, legislation, regulation on discharge of industrial effluents and domestic wastes in rivers and reservoirs.

Suggested Readings:

Anathakrishnan : Bioresources Ecology
Goldman: Limnology
Odum: Ecology
Pawlosuske : Physico-chemical methods for water Limnology
Wetzal : Chemical and biological methods for water pollution studies
Trivedi&Goyal : Chemical and biological methods for water pollution studies Welch: LimnologyVols.I-II
Perkins: Ecology
Arora : Fundamentals of environmental biology
Ghoshe : Toxicology
Sood : Toxicology

Suggested laboratory Exercise

1. Sampling of phytoplankton and their qualitative and quantitative analysis.

2. Sampling of periphytes and macrophytes, and their qualitative and quantitative analysis.

3.Sampling of Zooplankton and their qualitative and quantitative analysis.

4.Primary production: Experiment-in-situ by light and dark bottle method.

5.Short-term productivity experiments for the understanding of diel variation in aquatic ecosystems.

6.Analysis of sediments for benthic fauna and flora.

Suggested Reading:

1. Adoni, A.D. et al. 1985. Workbook on Limnology. Pratibha Pub. Sagar 216 p.
2. APHA 1981. Standard Methods for the Examination of Water and Waste water. American Public Health Association, Washington.
3. Arber, A. 1920. Water Plants. Cambridge University Press.
4. Barnes, A.K. and K.H. Mann, 1980. Fundamentals of Aquatic Ecosystems. Blackwell Scientific Publication, Oxford.
5. Brown, A.L. 1971. Ecology of Fresh Water. Heinemann, London, 129 p. nd
6. Cole G.A., 1979. Text book of Limnology. 2
7. De, A.K., 1989. Environmental Chemistry. Wiley Eastern Limited, New Delhi.
8. Goldman, C.R. and A.J. Horne, 1983. Limnology. McGraw Hill Inc. Tokyo, 464 p.
9. Golterman H.L., 1975. Physiological Limnology. Elsevier Scientific Publishing Co., Amsterdam, The Netherlands, 489 p.
10. Hutchinson G.E. 1957. A Treatise on Limnology. Vol. I,II,III, John Wiley & Sons, NY.
11. Mackereth, F.J.H., 1963. Some methods of water Analysis for Limnologists. Fresh Water Biological Association. Scientific Publication, No. 21, Ambleside England.
12. Mackereth, F.J.H., J. Heron and J.F. Talling. 1978. Water Analysis : Some Revised Methods for Limnologists. Freshwater Biological Association, Sci. Pub. No. 36.
13. Moss, B., 1980. Ecology of fresh waters. Blackwell Scientific Publications, Oxford, 417 p. rd

14. Odum, E.P. 1971. Fundamentals of Ecology. 3
15. Ruttner, F., 1963. Fundamentals of Limnology, 3 p.

16. Schwoerbel, I. 1987. Handbook of Limnology. Gustav fisher, Verlag.
17. Strickland J.D.H. and T.R. Parson. 1972. A Practical Handbook of Sea Water Analysis. Fisheries Research Board of Canada, Ottawa.

18. Subramanyam, K. 1962. Aquatic Angiosperms C.S.I.R., New Delhi.
19. Welch, P.S. 1935. Limnology. McGraw Hill Co. N.Y., 472 p.
20. Welch, P.S. 1948. Limnological methods. Philadelphia, Blakiston Co. 381p.
21. Wetzel, R.G. 1975. Limnology0. W.B. Saunders Co., Phildalelphia, 743 p.

M.Sc. IV SEMESTER

PAPER –IV

ELECTIVE COURSE – ETHNO BOTANY

MAXIMUM MARKS : 80

Unit - I

- Plant Conservation by Tribes & role of Joint Forest Management Programme in Plant Conservation specially People's Protected Area
- Ethnobotany and its role in domestication and conservation of native plant and genetic resources.
- The protection of plant varieties and Intellectual Properties Rights.
- General account of conservation of medicinal plants.
- General role of Aromatic plants.

Unit-II

- General ideas of various system of medicine using plants.
- Basic knowledge of Ayurvedic, Homeopathic, Allopathic system of medicine.
- General idea of active principles of Plants.
- Herbal Cosmetics.
- General account of toxic plants and Harmful effect of plants on human society with special reference to allergic plants of Chhattisgarh.

Unit –III

- Endemic plants of Chhattisgarh.
- Endangered plants of Chhattisgarh.
- Techniques of cultivation and marketing of Aromatic plants –Podina, Lemon grass Kasturibhindi, Palmarosa.
- Techniques of cultivation ,marketing and importance of mushroom
- Techniques of cultivation, extraction of juice and importance of wheat grass.

Unit-IV

- Ethnobotanical study of the following plants with special reference to their medicinal importance-

1. *Allium sativum* (Lahsun) 2. *Aegle marmelos* (Bel) 3. *Terminallia arjuna* (Arjun) 4 *T. bellerica* (Bahera) 5. *T chebula* (Harra) 6. *Calendula officianallis* (Calendula) 7. *Thuja occidentalis* (Vidhya) *8 Dhatura alba* (Dhatura) 9. *Argemone maxicana* (Pili kateli) 10. *Ephedra* sps. (Ephedra).

Suggested Readings :-

- Baker, H.G. 1978. Plants and Civilization (3 rd edition). C.A. Wadsworth, Belmont.
- Chandel, K.P.S., Shukla, G.& Sharma, N. 1996. Biodiversity in medicinal and Aromatic Plants in India: Conservation & Utilization. National Bureau of Plant Genetic Resources, New Delhi.
- Chrispeels, M.J. & Sadava, D. 1977. Plants, Food & People. W.H Freeman and Co., San Francisco.
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- Anon. (1978). The tribes of Madhya Pradesh. Dept. of Tribal Welfare, Govt. of M.P. Bhopal.
- Arnold. J. E. M. & Ruiz Perez, M, (1998). The role of non-timber forest products in conservation and development. In: Wallenberg, Eva. & Andrew Ingles (Eds.) Income from the Forest, CIFOR 1998, Indonesia, pp-17 to 41.
- Asolkar, L.V. (1992). Second Supplement to Glossary of Medicinal Plants, (CSIR) NISCOM, New Delhi, India.
- Bal, S.N. (1984). Catalogue of Medicinal Plant Exhibits. BSI. Bishne Singh Mahendra Pal Singh, Cannaught Place, Dehra Dun, India.
- Buch, M.N. (1991). Forest of Madhya Pradesh, Madhya Pradesh Madhyam Bhopal.
- Chopra, R.N.; Badhwar, R.L. & Ghosh, S. (1965). Poisonous Plants of India. Vol. I. 2nd Ed. ICAR, New Delhi, India.
- Cotton C.M, (1996). Ethnobotany: Principals and Applications, John Willey & Sons, Chichester. New York.
- Faulks. P.J. (1958) An Introduction to Ethnobotany: Moredale Publications Ltd. London, England.
- Harshberger, J.W. (1896). Purposes of Ethnobotany Bot. Gaz. 21: 146-154.
- Jain S.K. and Phuipps, R.D. (1991). Medicinal Plants of India Rec. Pub.Algonac USA 2Vols. 1-849.
- Jain, S. K. (1991). Dictionary of India folk medicine and Ethnobotany. Deep publications. NEW DELHI, pp. 1-311.
- Jain, S. K. (1995). In Manual of Ethnobotany (edt. S.K. Jain,) Scientific Pubisher, Jodhpur. 128-134.
- Jain, S.K. & Rao, R.R. (1977). A handbook off field and herbarium methods. New Delhi: Today & Tomorrow's Printers and Publishers.
- Jain, S.K. (1981). Glimpses of Indian Ethnobotany. Oxford & IBH New Delhi, India.
- Jain, S.K. (1989). Methods and Approaches in Ethnobotany. Society of Ethnobotanist. Lucknow.
- Jain, S.K. and Mudgal, Hand Book of Ethanobotany. Bisen pal Singhm Mahendra Pal Singh Publication.
- Vaishnaw T.K. (2004). Chhattisgarh ki Anusuchit Janjatiyan, Adim Jati Anusandhan Avam Prshikshan Sansthan Raipur. Prakashan kramank 2, pp. 1-120
- Varghese, E. S. V D. (1996). Applied Ethnobotany - A case study among the Kharias of Central India. New Delhi. Deep Publications

- Jajoria, E, V.K. (1998); "The Kamar [A way of life.] Vanya Prakashan., Tribal Research and Development Institute. 35, Shamla Hills, Bhopal., ethnobot. Res.2:303-3 15.
- Joshi, S.G. (2000). Medicinal Plants, Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi, India.
- Kirtikar, K. R. & Basu, B.D. (1933-1935). Indian Medicinal plants. Vol.I to VIII (4 Vols. text & 4 vols. plates) Reprint 1994, Dehradun U.P.
- Maheshwari, J.K. Ed. (2000). Ethnobotany and Medicinal Plants of Indian Subcontinent. Scientific Publishers, Jodhpur
- Martin, G.J. (1995). Ethnobotany. Chapman and Hall, London.

Suggested Laboratory Exercises:-

Ethnobotany

1. Description and identification of medicinal plants and its medical properties.
2. Extraction of phytochemicals from various medicinal plants.
3. Preparation medicinal plants herbarium and photographs.
4. Herbal preparation –

a. Preparation of digestive powder.
b. Mouth freshener of Ajwain.
c. Beverage of Tulsi,Bel,Tikhur,Mango.
d. Ayurvedic tea preparation.
e. Tablet of amla vati.
f. Murabba of Awla/Bel.
g. Herbal dye
h. Shitopladi powder.

5. Identification and study of Ethnobotanical importance of some plants of Raipur.

6. To cultivate at least two medicinal plant in earthen pot.

SYLLABUS M.Sc. BOTANY

PT. RAVISHANKAR UNIVERSITY , RAIPUR

Semester	Paper	Title	External marks	Internal marks	Credit
First	I	Cytology	80	20	4
	II	Genetics	80	20	4
	III	Microbiology, Phycology and Micology	80	20	4
	IV	Bryophyta, Pteridophyta and gymnosperm	80	20	4
	LC - I	Lab Course-I (Based on paper I &III)	80	20	4
	LC - II	Lab Course-II (Based on paper II &IV)	80	20	4
Second	I	Taxonomy and diversity of plants	80	20	4
	II	Molecular Biology	80	20	4
	III	Plant physiology	80	20	4
	IV	Plant metabolism	80	20	4
	LC- I	Lab Course-I (Based on paper I &II)	80	20	4
	LC-II	Lab Course-I (Based on paper III &IV)	80	20	4
Third	I	Plant development and plant resources	80	20	4
	II	Plant Ecology– I **(E**cosystem and vegetation ecology)	80	20	4
	III	Biotechnology I (Genetic engineering of plants & microbes)	80	20	4
	IV	**Elective paper-1** Molecular plant pathology-I **OR** **Elective paper-II** Limnology-I **OR** **Elective paper-III** Ethnobotany I	80	20	4
	LC-I	Lab Course-I (Based on paper I &II)	80	20	4
	LC-II	Lab Course-II (Based on paper III &IV)	80	20	4

Fourth	I	Plant reproduction and plant resources utilization	80	20	4
	II	Plant Ecology II (Pollution and biodiversity conservation)	80	20	4
	III	Biotechnology II (Plant cell, tissue culture & organ culture)	80	20	4
	IV	**Elective paper-1** Molecular plant pathology-II **OR** **Elective paper-II** Limnology-II **OR** **Elective paper-III** Ethnobotany II	80	20	4
	LC-I	Lab Course-I (Based on paper I &II)	80	20	4
	LC-II	Lab Course-II (Based on paper III &IV)	80	20	4

Choice Based Credit System: Semester II **Course Forestry seed Technology.**
Marks 100 , Credit Points -03, Total Hours -50

Choice Based Credit System: Semester III **Course Environmental Science.**
Marks 100 , Credit Points -03, Total Hours -50

- Each theory paper will have 5 questions of equal marks. First question will encompass all the five units without internal choice, whereas rest questions will be unit wise with internal choice.
- The respective teachers on each paper will ensure the internal evaluation by a class test and a seminar / poster presentation of 20 marks each and submit the foil and counter foil to the HOD by the end of the activity.

SYLLABUS

2016-2017

PT. RAVISHANKAR SHUKLA UNIVERSITY

RAIPUR

CHHATTISGARH

SYLLABUS

CODE 321 & 322

M. Sc. CHEMISTRY

SEMESTER EXAMINATION

2016-2017

PT. RAVISHANKAR SHUKLA UNIVERSITY
RAIPUR - 492 010, CHHATTISGARH

EXAMINATION SCHEME

M.Sc. examination will be conducted in four SEMESTERS. Each semester exam shall consist of FOUR THEORY PAPERS AND TWO LAB COURSES.

SEMESTER –I (20 CREDIT)

THEORY (16 CREDIT)

PAPER	COURSE	CREDIT	DURATION	INTERNAL ASSESSMENT	THEORY MARKS	TOTAL MARKS
CH - 1	GROUP THEORY AND CHEMISTRY OF METAL COMPLEXES	4	3 Hrs	20	80	100
CH - 2	CONCEPTS IN ORGANIC CHEMISTRY	4	3 Hrs	20	80	100
CH - 3	QUANTUM CHEMISTRY, THERMODYNAMICS AND CHEMICAL DYNAMICS - I	4	3 Hrs	20	80	100
CH - 4	THEORY AND APPLICATIONS OF SPECTROSCOPY-I	4	3 Hrs	20	80	100

PRACTICAL (4 CREDIT)

PAPER	COURSE	CREDIT	DURATION	MARKS
CH - 5	Lab Course - I	2	8 Hrs	100
CH - 6	Lab Course - II	2	8 Hrs	100

SEMESTER –II (20 CREDIT)

THEORY (16 CREDIT)

PAPER	COURSE	CREDIT	DURATION	INTERNAL ASSESSMENT	THEORY MARKS	TOTAL MARKS
CH - 7	TRANSITION METAL COMPLEXES	4	3 Hrs	20	80	100
CH - 8	REACTION MECHANISMS	4	3 Hrs	20	80	100
CH - 9	QUANTUM CHEMISTRY, THERMODYNAMICS AND CHEMICAL DYNAMICS - II	4	3 Hrs	20	80	100
CH - 10	THEORY AND APPLICATIONS OF SPECTROSCOPY-II	4	3 Hrs	20	80	100

PRACTICAL (4 CREDIT)

PAPER	COURSE	CREDIT	DURATION	MARKS
CH - 11	Lab Course - III	2	8 Hrs.	100
CH - 12	Lab Course - IV	2	8 Hrs.	100

SEMESTER –III (20 CREDIT)

THEORY (16 CREDIT)

PAPER	COURSE	CREDIT	DURATION	INTERNAL ASSESSMENT	THEORY MARKS	TOTAL MARKS
CH – 13	RESONANCE SPECTROSCOPY, PHOTOCHEMISTRY AND ORGANOCATALYSIS	4	3 Hrs	20	80	100
CH – 14	CHEMISTRY OF BIOMOLECULES	4	3 Hrs	20	80	100
CH – 15	CATALYSIS, SOLID STATE AND SURFACE CHEMISTRY	4	3 Hrs	20	80	100
CH – 16	ANALYTICAL TECHNIQUES AND DATA ANALYSIS	4	3 Hrs	20	80	100

PRACTICAL (4 CREDIT)

PAPER	COURSE	CREDIT	DURATION	MARKS
CH – 17	Lab Course - V	2	8 Hrs.	100
CH – 18	Lab Course - VI	2	8 Hrs.	100

SEMESTER –IV (20 CREDIT)

THEORY (16 CREDIT)

PAPER	COURSE	CREDIT	DURATION	INTERNAL ASSESSMENT	THEORY MARKS	TOTAL MARKS
CH – 19	INSTRUMENTAL METHODS OF ANALYSIS	4	3 Hrs	20	80	100
CH – 20	NATURAL PRODUCTS AND MEDICINAL CHEMISTRY	4	3 Hrs	20	80	100
CH – 21	MATERIAL AND NUCLEAR CHEMISTRY	4	3 Hrs	20	80	100

CH - 22	ENVIRONMENTAL & APPLIED CHEMICAL ANALYSIS	4	3 Hrs	20	80	100

OPTIONAL PAPERS

(In place of paper No CH 22, student can opt any optional papers CH 22a to CH 22 g)

CH-22 a	MEDICINAL CHEMISTRY
22 b	CHEMISTRY OF SURFACTANTS
22 c	CHEMISTRY AND APPLICATION OF PESTICIDES
22 d	MOLECULAR SYMMETRY, COORDINATION AND ORGANOMETALLIC CHEMISTRY
22 e	NANOCHEMISTRY
22 f	CHEMISTRY OF NATURAL PRODUCTS
22 g	POLYMERS

PRACTICAL (4 CREDIT)

PAPER	COURSE	CREDIT	DURATION	MARKS
CH - 23	Lab Course - VII	2	8 Hrs.	100
CH - 24	Lab Course - VIII	2	8 Hrs.	100

SCHEME FOR PRACTICAL EXAMINATION

EXPERIMENT	MARKS
Experiment-1	30
Experiment -2	30
Viva-voce	20
Sessional Marks	20
TOTAL MARKS	**100**

FIRST SEMESTER

PAPER NO. CH –1

GROUP THEORY AND CHEMISTRY OF METAL COMPLEXES

ax. Marks 100

UNIT - I

SYMMETRY AND GROUP THEORY IN CHEMISTRY: Symmetry elements and symmetry operation, definitions of group, subgroup, relation between orders of a finite group and its subgroup. Conjugacy relation and classes. Point symmetry group. Schonflies symbols, representations of groups by matrices (representation for the C_n, C_{nv}, C_{nh}, D_{nh} etc. groups to be worked out explicitly). Character of a representation. The great orthogonality theorem (without proof) and its importance. Character tables and their use; spectroscopy.

UNIT - II

A. **METAL-LIGAND BONDING:** Limitation of crystal field theory, molecular orbital theory, octahedral, tetrahedral and square planar complexes, bonding and molecular orbital theory.

B. **METAL-COMPLEXES:** Metal carbonyls, structure and bonding, vibrational spectra of metal carbonyls for bonding and structural elucidation, important reactions of metal carbonyls; preparation, bonding, structure and important reactions of transition metal nitrosyl, dinitrogen and dioxygen complexes; tertiary phosphine as ligand.

UNIT –III

A. **METAL–LIGAND EQUILIBRA IN SOLUTION:** Stepwise and overall formation constants and their interaction, trends in stepwise constants, factors affecting the stability of metal complexes with reference to the nature of metal ion and ligand, chelate effect and its thermodynamic origin, determination of binary formation constants by pH-metry and spectrophotometry.

B. **ISOPOLY ACID AND HETEROPOLYACID:** Isopoly and heteropoly acids of Mo and W. Preparation, properties and structure. Classification, Preparation, properties and structures of borides, carbides, nitrides and silicides. Silicates- classification and Structure, Silicones- preparation, properties and application.

UNIT – IV

A. **METAL CLUSTERS:** Higher boranes, carboranes, metalloboranes and metallocarboranes. Metal carbnonyl and halide cluster, compounds with metal-metal multiple bonds.

B. **CHAINS:** catenation, heterocatenation, intercatenation.

C. **RINGS:** Borazines, phosphazines.

BOOK SUGGESTED:

1. Advanced Inorganic Chemistry, F.A. Cotton and Wilkinson, John Wiley.
2. Inorganic Chemistry, J.E. Huhey, Harpes and Row.
3. Chemistry of the Elements, N.N. Greenwood and A. Earnshow, Pergamon.
4. Inorganic Electronic Spectroscopy, A.B.P. Lever, Elsevier.
6. Comprehensive Coordination Chemistry Eds. G. Wilkinson, R.D. Gillars and J.A. McCleverty, Pergamon.

PAPER NO. CH –2

CONCEPTS IN ORGANIC CHEMISTRY

Max. Marks 100

UNIT - I

A. NATURE OF BONDING IN ORGANIC MOLECULES: Localized and Delocalized chemical bond, conjugation and cross-conjugation, Bonding in Fullerenes, Bonds weaker than covalent, addition compounds,

Crown ether complexes and cryptands. Inclusion compounds, Cyclodextrins, Catenanes and Rotaxanes.

B. AROMATICITY: Aromaticity in benzonoid and non-benzenoid compounds, Huckel anti-aromaticity, homo-aromaticity. PMO approach for Aromaticity, Annulenes.

UNIT - II

A. CONFORMATIONAL ANALYSIS: Conformational analysis of cycloalkanes, decalins, effect of conformation on reactivity, conformation of sugars, steric strain due to unavoidable crowding.

B. STEREOCHEMISTRY: Elements of symmetry, chirality, molecules with more than one chiral center, methods of resolution, optical purity, stereospecific and stereoselective synthesis. Asymmetric synthesis. Optical activity in the absence of chiral carbon (Biphenyls, allenes and spiranes), chirality due to helical shape**.**

UNIT - III

A. REACTION INTERMEDIATES: Generation, structure, stability and reactivity of carbocations, carbanions, free radicals, carbenes and nitrenes. Sandmeyer reaction, Free radical rearrangement and Hunsdiecker reaction.

B. ELIMINATION REACTIONS: The E_2, E_1 and E_{1cB} mechanisms. Orientation of the double bond. Reactivity, effects of substrate structures, attacking base, the leaving group and the medium.

UNIT - IV

PERICYCLIC REACTIONS: Classification of pericyclic reactions. Woodward-Hoffmann correlation diagrams. FMO and PMO approach. Electrocyclic reactions - conrotatory and disrotatory motions, 4n, 4n+2 and allyl systems. Cycloadditions - antrafacial and suprafacial additions, 4n and 4n+2 system, 2+2 addition of ketenes, 1,3 dipolar cycloadditions and cheleotropic reactions. Sigmatropic rearrangements - suprafacial and antarafacial shifts of H, sigmatrophic shifts involving carbon moieties, 3,3- and 5,5- sigmatropic rearrangements. Claisen, Cope and Aza-Cope rearrangements. Ene reaction.

BOOKS SUGGESTED:

1. Advanced Organic Chemistry, F. A. Carey and R. J. Sundberg, Plenum.
2. A Guide Book to Mechanism in Organic Chemistry, Peter Sykes, Longman.
3. Structures and Mechanism in Organic Chemistry, C. K. Ingold, Cornell University Press.
4. Organic Chemistry, R. T. Morrison and R. N. Boyd, Prentice-Hall.
5. Modern Organic Reactions, H. O. House, Benjamin.
6. Principles of Organic Synthesis, R. O. C. Norman and J. M. Coxon, Blackle Academic and Professional.
7. Pericyclic Reactions, S. M. Mukherji, Macmillan, India.
8. Reaction Mechanism in Organic Chemistry, S. M. Mukherji and S. P. Singh, Macmillian.
9. Stereochemistry of Organic Compounds, D. Nasipuri, New Age International.
10. Some Modern Methods of Organic Synthesis, W. Carruthers, Cambridge Univ. Press.
11. Rodd's Chemistry of Carbon Compounds, Ed. S. Coff
12. Organic Chemistry, Vol 2, I. L. Finar, ELBS.
13. Stereo selective Synthesis: A Practical Approach, M. Nogradi, and VCH.
14. Organic Chemistry, Paula Yurkanis Bruice, Pearson Education.

PAPER NO. CH –3

QUANTUM CHEMISTRY, THERMODYNAMICS AND CHEMICAL DYNAMICS - I

Max. Marks 100

UNIT - I

A. MATHEMATICAL CONCEPT IN QUANTUM CHEMISTRY :

Vector quantities and their properties Complex numbers and Coordinate transformation. Differential and Integral Calculus, Basis rules of differentiation and Integration Applications.

B. The Schrodinger equation and postulates of quantum mechanics. Discussion of solutions of the Schrodinger equation to some model systems viz Particle in a box the harmonic oscillator, the rigid rotator, the hydrogen atom.

UNIT –II

BASICS OF THERMODYNAMICS: Maxwell's thermodynamic relations isotherm, Vant's Hoff hypothesis. Partial molar volume and partial molar heat content. Chemical potential, Gibbs Duhem equation, variation of

chemical potential with temperature and pressure. Chemical potential of ideal gases, pure solids, liquids and mixture of ideal gases. Activity and Fugacity, Determination of Fugacity, Variation of Fugacity with Temperature and Pressure.

UNIT –III

ELECTROCHEMISTRY–I: Electrochemistry of solution. Debye-Huckel Onsager treatment and its extension, ion solvent interactions. Debey-Huckel-Limiting Law. Debye-Huckel theory for activity coefficient of electrolytic solutions. Determination of activity and activity coefficient, ionic strength, Thermodynamics of electrified interface equations. Derivation of electro-capillarity, Lippmann equation (surface excess), methods of determination.

UNIT –IV

CHEMICAL DYNAMICS –I: Methods of determining rate laws, consecutive reactions, collision theory of reaction rates, steric factor, Activated complex theory, kinetic salt effects, steady state kinetics, and thermodynamic and Kinetic control of reactions. Dynamic chain (Hydrogen-bromine and Hydrogen-chlorine reactions) and Oscillatory reactions (Belousov-Zhabotinsky reaction)

BOOKS SUGGESTED :

1. Physical Chemistry, P.W. Atkins, ELBS.
2. Coulson's Valence, R. McWeeny, ELBS.
3. Chemical Kinetics, K. J. Laidler, Pearson.
4. Kinetics and Mechanism of Chemical Transformations, J. Rajaraman and J. Kuriacose, McMillan.
5. Modern Electrochemistry Vol. I and Vol. II, J.O.M. Bockris and A.K.N. Reddy, Plenum.
6. Thermodynamics for Chemists, S. Glasstone EWP.
7. An Introduction to Electrochemistry S. Glasstone EWP.
8. Organic Chemist's Book of Orbitals. L. Salem and W.L. Jorgensen, Academic Press
9. The Physical Basis of Organic Chemistry, H. Maskill, Oxford University Press

PAPER NO. CH - 4

THEORY AND APPLICATIONS OF SPECTROSCOPY- I

Max. Marks 100

UNIT - I

UNIFYING PRINCIPLES :

Electromagnetic radiation, interaction of electromagnetic radiation with matter-absorption, emission transmission, reflection, dispersion, polarization and scattering, Uncertainty relation and natural line width and natural line broadening, transition probability, selection rules, intensity of spectral lines, Born-Oppenheimer approximation, rotational, vibrational and electronic energy levels. Region of spectrum, representation of spectra, F.T. spectroscopy, computer averaging, lasers.

UNIT- II

MICROWAVE SPECTROSCOPY:

Classification of molecules in term of their internal rotation mechanism, determination of rotation energy of diatomic and polyatomic molecules, intensities of rotational spectral lined, effect of isotopic substitution on diatomic and polyatomic molecules, intensities of rotational spectral lines and parameters of rotational energy of linear and the transition frequencies, non-rigid rotators, spectral lines and parameters of rotational energy of linear and symmetric top polyatomic molecules. Application in determination of bond length.

UNIT- III

SCATTERING SPECTROSCOPY:

Principle, instrumentations and application of Auger spectroscopy and Scanning Electron Microscopy for chemical characterization, electron diffraction of gases and vapours, The Wierl equation and co-related method, application of electron diffraction.

Theory, instrumentation and application of turbidimetry, nephelometry and fluorometry. Fluoroscence and phosphorescence and factors affecting them.

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UNIT- IV

RAMAN SPECTROSCOPY:

Classical and quantum theories of Raman effect, pure rotational, vibrational and vibrational-rotational Raman spectra, selection rules mutual exclusion principle, Resonance Raman spectroscopy, Coherent anti Stokes Raman spectroscopy (CARS), Instrumentation , Application of Raman effect in molecular structures, Raman activity of molecular vibration, structure of CO_2, N_2O, SO_2, NO_3^-, ClF_3

BOOKS SUGGESTED

1. Modern Spectroscopy, J.M. Hollas, John Wiley.
2. Fundamentals of Molecular Spectroscopy, C.N. Banwell.
3. Spectroscopy, B.K. Sharma, Goel Publication.
4. Organic Spectroscopy: Principles and Applications, Jag Mohan, Narosa Publication.
5. Spectroscopy Methods in Organic Chemistry, D.H. Williams & I. Fleming, Tata Mcgraw-Hill Publication.
6. Spectrophometric Identification of Organic Compounds, R.M. Silversteion & F. X. Webster, John Wiley Publication.

PAPER NO. CH - 5

LABORATORY COURSE–I

Max. Marks 100

1. QUALITATIVE ANALYSIS OF MIXTURE CONTAINING EIGHT RADICALS INCLUDING TWO LESS COMMON METAL FROM AMONG THE FOLLOWING BY SEMI MICRO METHOD.

1) *Basic Radicals :*

Ag, Pb, Hg, Bi, Cu, Cd, As, Sb, Sn, Fe, Al, Cr, Zn, Mn, Co, Ni, Ba, Sr, Ca, Mg, Na, K, Ce, Th, Zr, W, Te, Ti, Mo, U, V, Be, Li, Au, Pt.

2) *Acid Radicals :*

Carbonate, Sulphite, Sulphide, Nitrite, Nitrate, Acetate, Flouride. Chloride, Bromide, Iodide, Sulphate, Borate, Oxalate, Phosphate, Silicate, Thiosulphate, Ferrocyanide, Ferricyanide, Sulphocyanide, Chromate, Arsenate and Permanganate.

2. QUANTITATIVE ANALYSIS:

Involving separation of two of the following in ores, alloys, or mixtures in solution, one by volumetric and the other by gravimetric methods.

3. ESTIMATION OF:

1) Phosphoric acid in commercial orthophosphoric acid.
2) Boric acid in borax.
3) Ammonia in a ammonium salt.
4) Manganese dioxide in pyrolusite.
5) Available chlorine in bleaching powder.
6) Hydrogen peroxide in a commercial samples.

4. PREPARATIONS:-

Preparation of selected inorganic compound and their studies by I.R. electronic spectra, Mössbauer, E.S.R. and magnetic susceptibility measurements. Handling of air and moisture sensitive compounds

(1) $VO(acac)_2$
(2) $TiO(C_9H_8NO)_2 . 2H_2O$
(3) cis-K $[Cr(C_2O_4)_2 (H_2O)_2]$
(4) Na $[Cr (NH_3)_2 (SCN)_4]$
(5) $Mn (acac)_3$
(6) $K_2[Fe(C_2O_4)_3]$
(7) Prussian Blue, Turnbull's Blue.
(8) $[Co (NH_3)_6] [Co (NO_2)_6]$
(9) cis-$[Co(trien) (NO_2)_2] Cl.H_2O$
(10) Hg $[Co (SCN)_4]$
(11) $[Co (Py)_2Cl_2]$
(12) $[Ni (NH_3)_6] Cl_2$
(13) $Ni (dmg)_2$
(14) $[Cu (NH_3)_4] SO_4 . H_2O$

BOOKS SUGGESTED

1. Vogel's Textbook of Quantitative Analysis, revi Mendham, ELBS.
2. Synthesis and Characterization of Inorganic Compounds, W.L. Jolly, Prentice Hall.

PAPER NO. CH –6

LABORATORY COURSE –II **Max. Marks 100**

ADSORPTION/SURFACE CHEMISTRY

1. To Study Surface Tension - Concentration relationship for solutions (Gibbs equation).
2. To Verify the Freundlich and Langmuir Adsorption isotherms using acetic acid/Oxalic acid and activated charcoal.
3. Determination of CMC of surfactants.

PHASE EQUILIBRIA

1. To Construct the Phase diagram for three component system (e.g., chloroform-acetic acid-water).

CHEMICAL KINETICS

1. Determination of the effect of (a) Change of temperature (b) Change of concentration of reactants and catalyst and (c) Ionic strength of the media on the velocity constant of hydrolysis of an ester/ionic reactions.
2. Determination of the velocity constant of hydrolysis of an ester/ionic reaction in micellar media.
3. Determination of the rate constant for the decomposition of hydrogen peroxide by Fe^{+++} and Cu^{++} ions.
4. Determination of the primary salt effect on the kinetics of ionic reactions and testing of the Bronsted relationship (iodide ion is oxidized by persulphate ion).

SOLUTIONS/MOLECULAR WEIGHTS

1. Determination of molecular weight of non-volatile substances by Landsber
2. Determination of Molar masses of Naphthelene/acetanilid
3. Molecular weight of polymers by viscosity measurements.

CONDUCTOMETRY

1. Determination of the velocity constant, order of the reaction and energy of activation for saponification of ethyl acetate by sodium hydroxide conductometrically.
2. Determination of solubility and solubility product of sparingly soluble salts (e.g., $PbSO_4$, $BaSO_4$) conductometrically.
3. Determination of pK_a of Acetic acid and verification of Ostwald dilution law.

POTENTIOMETRY/pH METRY

1. Determination of the strength of strong and weak acids in a given mixture using a potentiometer/pH meter.
2. Determination of the dissociation constatnt of acetic acid in DMSO, DMF, acetone and dioxane by titrating it with KOH.
3. Determination of the dissociation constant of monobasic/dibasic acid by Albert-Serjeant method.
4. Determination of Redox potential of Fe^{++}/Fe^{+++} system.

POLARIMETRY

1. Determination of rate constant for hydrolysis/inversion of sugar using a polarimeter.
2. Enzyme kinetics –inversion of sucrose.
3. Determine the specific and molecular rotation of optically active substances.

BOOKS SUGGESTED

1. Experiments and Techniques in Organic Chemistry, D.Pasto, C. Johnson and M.Miller, Prentice Hall.
2. Macroscale and Microscale Organic Experiments, K.L. Williamson, D.C. Heath.
3. Systematic Qualitative Organic Analysis, H. Middleton, Adward Arnold.
   Handbook of Organic Analysis –Qualitative and Quantitative, H. Clark, Adward Arnold.
4. Vogel's Textbook of Practical Organic Chemistry,
5. Practical Physical Chemistry, A.M. James and F.E. Prichard, Longman.
6. Findley's Practical Physical Chemistry, B.P. Levi

   Experimental Physical Chemistry, R.C. Das and B. Behera, Tata McGraw Hill.

SECOND SEMESTER

PAPER NO. CH - 7

TRANSITION METAL COMPLEXES

Max. Marks 100

UNIT - I

REACTION MECHANISM OF TRANSITION METAL COMPLEXES: Energy profile of a reaction, reactivity of metal complexes, inert and labile complexes, kinetic application of valence bond and crystal field theories, kinetics of octahedral substitution, anation reactions, reactions without metal ligand bond cleavage. Substitution reactions in square planar complexes, the trans effect. Redox reactions, electron transfer reactions, mechanism of one electron transfer reactions, outer sphere type reactions, cross reactions and Marcus-Hush theory, inner sphere type reactions.

UNIT - II

ELECTRONIC SPECTRA AND MAGNETIC PROPERTIES OF TRANSITION METAL COMPLEXES:

Spectroscopic ground states, Correlation, Orgel and Tanabe-Sugano diagrams for transition metal complexes (d^1-d^9 states), Selection rules, mechanism for break down of the selection rules, intensity of absorption, band width, spectra of d-d metal complexes of the type $[M(H_2O)]^{n+}$, spin free and spin paired ML_6 complexes of other geometries, Calculations of Dq, B and parameters, spin forbidden transitions, effect of spin-orbit coupling, Spectrochemical and Nephelouxetic series. Magnetic properties of complexes of various geometries based on crystal field model, spin free-spin paired equillibria in octahedral stereochemistry.

UNIT - III

A. **TRANSITION METAL COMPLEXES:** Tranisition metal complexes with unsaturated organic molecules,alkanes ,allyl ,diene dienyl,arene and trienyl complex,preparations,properties,nature of bonding and structure features.Imporant reaction relating to nucleophilic and electrophilic attack on ligands and organic synthesis.

B. **TRANSITION METALS COMPOUND WITH BOND TO HYDROGEN:** Transition Metals Compound with Bond to Hydrogen.

UNIT-IV

A. **ALKYLS AND ARYLS OF TRANSITION METALS:** Types, routes of synthesis, stability and decomposition pathways, organocopper in organic synthesis.

B. **COMPOUNDS OF TRANSITION METAL - CARBON MULTIPLE BONDS :** Alkylidenes, low valent carbenes nature of bond and Structural characteristics.

C. **FLUXIONAL ORGANOMETALLIC COMPOUNDS:** Fluxionality and dynamic equilibria in compounds such as olefin, -allyl and dienyl complexes.

BOOKS SUGGESTED :

1. Pinciples and application of organotransition metal chemistry, J.P.Collman, L.S.Hegsdus, J. R. Norton and R.G. Finke, University Science Books.
2. The Organometallic chemistry of the Transition metals, R. H. Crabtree, John Wiley.
3. Metallo - organic chemistry, A.J. Pearson, Wiley.
4. Organometallic chemistry, R. C. Mehrotra and A.Singh, New age International.

PAPER NO. CH - 8

REACTION MECHANISMS

Max. Marks 100

UNIT - I

A. ALIPHATIC NUCLEOPHILIC SUBSTITUTION: The S_N2, S_N1, mechanisms.The neighbouring group mechanism, neighbouring group participation by πand σbonds, anchimeric assistance. Reactivity effects of substrate structure, attacking nucleophile, leaving group and reaction medium, phase transfer catalysis, ambident nucleophile and regioselectivity.

B. AROMATIC NUCLEOPHILIC SUBSTITUTION: The S_NAr, S_N1, and benzyne mechanisms. Reactivity - effect of substrate structure, leaving group and attacking nucleophile. The von Richter, Sommelet-Hauser, and Smiles rearrangements.

UNIT - II

A. ALIPHATIC ELECTROPHILIC SUBSTITUTION: Mechanisms of- S_E2 S_E1, electrophilic substitution accompanied by double bond shifts. Effect of substrates, leaving group and the solvent polarity on the reactivity.

B. AROMATIC ELECTROPHILIC SUBSTITUTION: The arenium ion mechanism, orientation and reactivity.

The ortho/para ratio, ipso attack, orienation in other ring systems.Ɵ Reactivity-Effectofsubstrates and electrophilles. Vilsmeir reaction and Gattermann-Koch reaction.

UNIT - III

ADDITION TO CARBON-CARBON MULTIPLE BONDS: Mechanistic and stereochemical aspects of addition reactions involving electrophiles, nucleophiles and free radicals, regio- and chemoselectivity. Addition to cyclopropane ring. Hydrogenation of double and triple bonds, hydrogenation of aromatic rings Hydroboration, Micheal reaction. Shrapless asymetric epoxdation.

UNIT - IV

ADDITION TO CARBON-HETERO MULTIPLE BONDS: Mechanism of metal hydride reduction of saturated and unsaturated carbonyl compounds, acids esters and nitriles.Addition of Grignard Reagents, Organo-Zinc and Organo-lithium to carbonyls and unsaturated carbonyl compounds, Wittig reaction.

Mechanism of condensation reactions involving enolates - Aldol, Knoevenagel and Stobbe reactions. Hydrolysis of esters and amides, ammonolysis of esters.

BOOKS SUGGESTED :

1. Advanced Organic Chemistry-Reactions, Mechanism and Structure, Jerry March,Johan Wiley.
2. Modern Organic Reactions, H. O. House, Benjamin.
3. Principles of Organic Synthesis, R. O. C. Norman and J. M. Coxon, Blackle Academic & Professional.
4. A Guide Book to Mechanism in Organic Chemistry, Peter Sykes, Longman.
5. Structures and Mechanism in Organic Chemistry, C. K. Ingold, Cornell University Press.
6. Reaction Mechanism in Organic Chemistry, S. M. Mukherji and S. P. Singh, Macmillian

PAPER NO. CH –9

QUANTUM CHEMISTRY, THERMODYNAMICS AND CHEMICAL DYNAMICS - II

Max. Marks 100

UNIT –I

A. **APPLICATION OF MATRICES IN QUANTUM CHEMISTRY :** Addition and multiplication, inverse and transpose of matrices. Determinants, in quantum Chemistry**.**

B. **ANGULR MOMENTION IN QUANTUM CHEMISTRY:** Angular momentum, angular momentum Operators. Eigen functions and Eigen values Angular momentum, ladder operators.

C. **APPROXIMATE METHODS:** The variation theorem, linear variation principle. Perturbation theory (first order and non-degenerate). Applications of variation method and perturbation theory to the Helium atom.

UNIT –II

STATISTICAL THERMODYNAMICS : Probability, permutations and combinations

concepts of probability, Maxwell Boltzmann distribution. Different ensembles and Partition functions translational, rotational, vibrational and Electronic. Thermodynamic function using appropriate Partition function. Fermi-Dirac and Bose-Einstein Statistics and statistical basis of entropy. Heat capacity of solids Debye and Einstein Models.

UNIT –III

ELECTROCHEMISTRY –II: Structure of electrified interfaces. Gouy-Chapman, Stern, Over potentials and exchange current density, Derivation of Butler –Volmer equation, Tafel plot.Semiconductor interfaces, Theory of double layer at semiconductor, electrolyte solution interfaces, structure of double layer interfaces. Effect of light at semiconductor solution interfaces. Electro catalysis influence of various parameters. Hydrogen electrode.

UNIT –IV

CHEMICAL DYNAMICS –II: General features of fast reactions by flow method, relaxation method, flash photolysis and the nuclear magnetic resonance method. Dynamics of molecular motions, probing the transition state, dynamics of barrier less chemical reactions in solutions, dynamics of unimolecular reaction. [Lindemann –Hinshelwood , RRK and Rice-Ramsperger-Kassel-Marcus {RRKM}] theories of unimolecular reactions.

BOOKS SUGGESTED :

1. The Chemistry Mathematics Book, E. Steiner, Oxford University Press.
2. Mathematics for Chemistry, Doggett and Sutclilffe, Longman.
3. Mathematical Preparation for Physical Chemistry, F. Daniels, McGraw Hill.
4. Chemical Mathematics, D.M, Hirst, Longman.
5. Applied Mathematics for Physical Chemistry, J.R. Barrante, Prentice Hall.
6. Basic Mathematics for Chemists, Tebbutt, Wiley.
7. Physical Chemistry, P.W. Atkins, ELBS.
8. Introduction to Quantum Chemistry, A.K. Chandra, Tata McGraw Hill.
9. Quantum Chemistry, Ira N. Levine, Prentice Hall.
10. Coulson's Valence, R. McWeeny, ELBS.
11. Chemical Kinetics, K. J. Laidler, Pearson.
12. Kinetics and Mechanism of Chemical Transformations, J. Rajaraman and J. Kuriacose, McMillan.
13. Modern Electrochemistry Vol. I and Vol. II, J.O.M. Bockris and A.K.N. Reddy, Plenum.
14. Thermodynamics for Chemists, S. Glasstone EWP.
15. An Introduction to Electrochemistry S. Glasstone EWP.
16. Physical Chemistry, Ira N. Levine McGraw Hill.
17. Physical Chemistry, Silbey, Alberty, Bawendi, John-Wiley.

PAPER NO. CH - 10

THEORY AND APPLICATIONS OF SPECTROSCOPY –II

Max. Marks 100

UNIT - I

ULTRAVIOLET AND VISIBLE SPECTROSCOPY:

Introduction, intensity of vibrational-electronic spectra and Frank-Condon principle for dissociation energy, rotational fine structure of electronic-vibrational spectra, Shape of some molecular orbitals viz., H_2, He_2, N_2, O_2. Electronic spectra of organic molecules, chromophores, application of electronic spectroscopy: spectrophotometric studies of complex ions, determination of ligand/metal ratio in a complex, identification of compounds, determination stability constants.

UNIT _II

INFRA RED SPECTROSCOPY:

Introduction, simple and anharmonic oscillators in vibrational spectroscopy, diatomic-vibrating rotator, Modes of vibration in polyatomic molecules, vibration-coupling, Fourier Transform IR spectroscopy: instrumentation, interferometric spectrophotometer, sample handling,Factors influencing vibrational frequencies, Application of IR spectroscopy: Interpretation of IR spectraof normal alkanes, aromatic hydrocarbons, alcohols and phenols aldehydes and ketones, eathers, esters, carboxylic acids and amines and amides

UNIT - III

MASS SPECTROMETRY:

Introduction, basic principles, separation of the ions in the analyzer, resolution, molecular ion peak, mass spectral fragmentation of organic compounds, factors affecting fragmentation, McLafferty rearrangement. Instrumentation, Characteristics of mass spectra of Alkanes, Alkenes, Aromatic hydrocarbons, Alcohols, Amines. Nitrogen rule, ring rule, Molecular weight and formula determination, Gas chromatography-Mass spectrophotometry: Introduction.

UNIT - IV

NUCLEAR RESONANCE SPECTROPHOTOMETRY:

Theory of NMR spectroscopy, interaction of nuclear spin and magnetic moment, chemical shift, processional motion of nuclear particles in magnetic field, spin-spin splitting, coupling constants, factor affecting the chemical shift, shielding effect, effect of chemical exchange, hydrogen bonding, instrumentation of Fourier transform NMR spectrophotometer, structure determination of organic compounds, Carbon-13 NMR spectroscopy, Multiplicity-proton (^{1}H) decoupling-noise decoupling, off resonance decoupling, selective proton decoupling, chemical shift.

BOOKS SUGGESTED

1. Modern Spectroscopy, J.M. Hollas, John Wiley.
2. Fundamentals of Molecular Spectroscopy, C.N. Banwell.
3. Spectroscopy, B.K. Sharma, Goel Publication.
4. Organic Spectroscopy : Principles and Application, Jag Mohan, Narosa Publication.
5. Spectroscopic Methods in Organic Chemistry, D.H. Williams & I. Fleming, Tata Mcgraw-Hill Publication.
6. Spectrophometric Identification of Organic Compounds, R.M. Silverstein & F.X. Webster, John Wiley Publications.

PAPER NO. CH - 11

LABORATORY COURSE –III

Max. Marks 100

1. GENERAL METHODS OF SEPARATION AND PURIFICATION OF ORGANIC COMPOUNDS WITH SPECIAL REFERENCE TO:

1) Solvent Extraction
2) Fractional Crystallisation

2. DISTILLATION TECHNIQUIES:

Simple distillation, steam distillation, Fractional distillation and distillation under reduced pressure.

3. ANALYSIS OF ORGANIC BINARY MIXTURE:

Separation and Identification of organic binary mixtures containing at least one component with two substituents.
(A student is expected to analyse at least 10 different binary mixtures.)

4. PREPARATION OF ORGANIC COMPOUNDS: SINGLE STAGE PREPARATIONS.

1) **Acetylation:** Synthesis of β-Naphthyl acetate from β-Naphthol / Hydroquinone diacetate from Hydroquinone.
2) **Aldol condensation:** Dibenzal acetone from benzaldehyde.
3) **Bromination:** p-Bromoacetanilide from acetanilide.
4) **Cannizzaro Reaction:** Benzoic acid and Benzyl alcohol from benzaldehyde.
5) **Friedel Crafts Reaction:** O-Benzoyl Benzoic acid from phthalic anhydride.
6) **Grignard Reaction:** Synthesis of triphenylmethanol from benzoic acid,
7) **Oxidation:** Adipic acid by chromic acid oxidation of cyclohexanol.
8) **Perkin's** Cinnamic **Reaction:** acid from benzaldehyde.
9) **Sandmeyer Reaction:** p-Chlorotoluene from p-toluidine/o-Chlorobenzoic acid from anthranilic acid.
10) **Schotten Baumann Reaction:** β-Naphthyl benzoate from:β-Naphthol / Phenyl benzoate from phenol.
11) **Sulphonation Reaction:** Sulphanilic acid from aniline.

BOOK SUGGESTED :

1. Practical Organic chemistry by A. I. Vogel.
2. Practical Organic chemistry by Mann and Saunders.
3. Practical Organic chemistry by Garg and Salija.
4. The Systematic Identification of Organic compounds, R. L. Shriner and D. Y. Curtin.
5. Semimicro Qualitative Organic Analysis, N.D. Cheronis, J. B. Entrikin and E. M. Hodnett.
6. Practical Physical chemistry by Alexander Findlay.
7. Experimental Physical chemistry, D. P. Shoemaker, G. W. Garland and J. W. Niber, Mc Graw Hill Interscience.
8. Findlay's Practical Physical chemistry, revised B

PAPER NO. CH –12

LABORATORY COURSE –IV

Max. Marks 100

I. ERROR ANALYSIS AND STATISTICAL DATA ANALYSIS

1. Linear Regression Analysis
2. Curve Fitting
3. Student "t" Test
4. Data Analysis Using Basic Statistical Parameters
5. Calibration of volumetric Apparatus, Burette, Pipette Weight Box etc.

II. USE OF COMPUTER PROGRAMMES

The students will learn how to operate a PC and how to run standard programmes and packages. Execution of linear regression, X-Y plot, numerical integration and differentiation as well as differential equation solution programmes. Monte Carlo and Molecular dynamics. Programmes with data preferably from physical chemistry laboratory. Further, the student will operate one or two or the packages such as MICROSOFT ECXEL, WORLD, POWERPOINT, SPSS, ORIGIN, MATLAB, EASYPLOT.

III. A. FLAME PHOTOMETRIC DETERMINATIONS

1. Sodium and potassium when present together.
2. Sodium/potassium in solid samples.
3. Solid Sodium and Potassium in Liquid Samples.
4. Lithium/calcium/barium/strontium.
5. Cadmium and magnesium in tap water.

B. NEPHELOMETRIC DETERMINATIONS

1. Sulphate
2. Phosphate
3. Silver

IV. ELECTROPHORESIS

1. To separate cations of inorganic salts by paper electrophoresis.
2. Capillary Electrophoresis of water –soluble Vitamines

V. SPECTROSCOPY

1. Verification of Beer's Lambert Law.
2. Determination of stoichiometry and stability constant of inorganic (e.g. ferric –salicylclic acid) and organic (e.g. amine-iodine) complexes, thiocynam.
3. Characterization of the complexes by electronic and IR, UV spectral data.
4. Determination of Indicator constant (pK_a) of methyl red.

BOOK SUGGESTED :

1. Computer and Common Sense, R. Hunt and J. Shelley, Prentice Hall.
2. Computational Chemistry, A.C. Norris.
3. Microcomputer Quantum Mechanics, J.P. Killngbeck, Adam Hilger.
4. Computer Programming in FORTRAN IV, V. Rajaraman, Prentice Hall.
5. An Introduction to Digital Computer Design, V. Rajaraman and T. Radhakrishnan, Prentice Hall.
6. Experiments in Chemistry, D.V. Jahagirgar.

THIRD SEMESTER

PAPER NO. CH - 13

RESONANCE SPECTROSCOPY, PHOTOCHEMISTRY AND ORGANOCATALYSIS

Max. Marks 100

UNIT –I

A. ELECTRON SPIN RESONANCE SPECTROSCOPY : Hyperfine coupling, spin polarization for atoms and transition metal ions, spin-orbit coupling and significance of g-tensors, application to transition metal complexes (having one unpaired electron).

B. NUCLEAR QUADRUPOLE RESONANCE SPECTROSCOPY: Quadrupole nuclei, quadrupole moments, electric field gradient, coupling constant, splittings, applications.

UNIT –II

A. PHOTOELECTRON SPECTROSCOPY : Basic principle both for atoms and molecules; Photo-electric effect, ionization process, ectraKoopman'sofsimplemolecules,theorem,Auger p electron spectroscopy, Determination of Dipole moment.

B. PHOTOACOUSTIC SPECTROSCOPY: Basic principle of Photo acoustic Spectroscopy (PAS), PAS –gases and condensed system Chemical and Surface application.

UNIT –III

A. PHOTOCHEMICAL REACTIONS : Interaction of electromagnetic radiation with matter, Stern Volmer equation, types of excitations, fate of excited molecule, quantum yield, transfer of excitation energy, Actinometry.

B. DETERMINATION OF REACTION MECHANISM: Classification, rate constatnts and life times of reactive energy states –determination of rate constants of reactions. Effect of light intensity on the rate of photochemical reactions.

C. MISCELLANEOUS PHOTOCHEMICAL REACTIONS : Photo-Fries reactions of anilides, Photo-Fries rearrangement. Barton reaction. Singlet molecular oxygen reactions. Photochemical formation of smog. Photodegradation of polymers, Photochemistry of vision.

UNIT –IV

A. ORGANOCATALYSIS

General Principles: Energetic, Catalytic cycles, catalytic efficiency and life time, selectivity. Type of organometallic reaction: Ligand substitution, Oxidative addition, reductive elimination and insertion and deinsertion. Homogeneous catalysis: Hydrogenetion of alkenes, Hydroformylation, Monsanto acetic acid synthesis, Wacker oxidation of alkenes, Alkenes metathesis, Palladium-Catalysed C-C bond forming reactions, asymmetric oxidation. Heterogenous catalysis: The nature of heterogenous catalysts, Fischer- Tropsch synthesis, alkene polymerization

BOOK SUGGESTED:

1. Infrared and Raman Spectra: Inorganic and Coordination Compounds, K. Nakamoto, Wiley.
2. Fundamentals of Photochemsitry, K.K. Rohtagi-Mukherji, Wiley-Eastern.
3. Essentials of Molecular Photochemistry, A. Gilbert and J. Baggott, Blackwell Scientific Publications.
4. Molecular Photochemsitry, N.J. Turro, W.A. Benjamin.
5. Introductory Phtochemistry, A. Cox and T. Camp, McGraw-Hill.
6. Photochemistry, R.P. Kundall and A. Gilbert, Thomson Nelson.
7. Application of Spectroscopy of Organic Compounds, J.R. Dyer, Prentice Hall.
8. Photochemistry , R.P. Kundall and A. Gilbert, Thomson Nelson.
9. Organic Photochemistry, J. coxon and B. Halton, Cambridge University Press.
10. Shriver& Atkins Inorganic Chemistry: P.Atkins, T.Overtone, J. Rourke, M. Weller, F. Armstrong, Oxford University Press
11. Inorganic Chemistry: C.E. Housecraft, A.G. Sharpe, Pearson Education Limited.
12. Inorganic Chemistry: Principles of Structure and Reactivity: J.E. Huheey, E.A. Keiter, R.L.Keiter, O.K. Medhi, Pearson Education
13. Organometallic Chemistry: A Unified Approach: R.C. Mehrotra, A.Singh, New Age International Publishers.

PAPER NO. CH - 14

CHEMISTRY OF BIOMOLECULES

Max. Marks 100

UNIT –I

A. BIOENERGETICS: Standard free energy change in biochemical reactions, exergonic, endergonic. Hydrolysis of ATP, synthesis of ATP from ADP.

B. ELECTRON TRANSFER IN BIOLOGY: Structure and function of metalloproteins in electron transport processes –cytochromes and ion-sulphur proteins, synthetic models.

C. TRANSPORT AND STORAGE OF DIOXYGEN: Heme proteins and oxygen uptake, structure and function of haemoglobin, myoglobin, haemocyanins and haemerythrin, model synthetic complexes of iron, cobalt and copper.

UNIT –II

A. METALLOENZYMES: Zinc enzymes –carboxypeptibase and carbonic anhydrase. Iron enzymes – catalase, peroxidase and cytochrome P-450. copper enzymes- superoxide dismutase. Molybdenum oxatransferase enzymes –xanthine oxidase.

B. ENZYME MODELS: Host-guest chemistry, chiral recognition and catalysis, molecular recognition, molecular asymmetry and prochirality. Biomimetic chemistry, Cyclodextrin-based enzyme models, calixarenes, ionophores, synthetic enzymes or synzymes.

UNIT –III

A. ENZYMES : Nomenclature and classification ofnducedEnzyme. F fit hypothesis, concept and identification of active site by the use of inhibitors.

B. CO-ENZYME CHEMISTRY: Structure and biological functions of coenzyme A, thiamine pyrophosphate, pyridoxal phosphate, NAD+, NADP+, FMN, FAD, lipoic acid, vitamin B_{12}.

C. BIOTECHNOLOGICAL APPLICATIONS OF ENZYMES: Tehcniques and methods of immobilization of enzymes, effect of immobilization on enzyme activity, application of immobilization enzymes in medicine and industry. Enzymes and Recombinant DNA Technology.

UNIT –IV

A. BIOPOLYMER INTERACTIONS: forces involved in biopolymer interaction. Electrostatic charges and molecular expansion, hydrophobic forces, dispersion force interactions. Multiple equilibria and various types of binding processes in biological systems. Hydrogen ion titration curves.

B. THERMODYNAMICS OF BIOPOLYMER SOLUTIONS: Thermodynamics of biopolymer solution, osmotic pressure, membrane equilibrium, muscular contraction and energy generation in mechnochemical system.

C. CELL MEMBRANE AND TRANSPORT OF IONS: Structure and functions of cell membrane, ion transport through cell membrane, irreversible thermodynamic treatment of membrane transport and Nerve conduction.

BOOK SUGGESTED:

1. Principles of Bioinorganic Chemistry, S.J. Lippard and J.M. Berg, University Science Books.
2. Bioinorganic Chemistry, I. Bertini, H.B. Gray, S.L. Lippard and J.S. Valentine, University Science Books.
3. Inorganic Biochemistry vols II and I.Ed G.L. Eichhorn, Elservier.
4. Principles of Bioinorganic Chemistry, S.J. Lippard and J.M. Berg, University Science Books.
5. Bioinorganic Chemistry, I. Bertinin, H.B. Gary, S.J. Lippard and J.S. Valentine, University Science.
6. Inorganic Biochemistry vols I and II ed. G.L. Eichhorn, Elsevier.
7. Bioorganic Chemistry: A Chemical Approach to Enzyme Action, Hermann Dugas and C. Penny, Springer-verlag.
8. Understanding Enzymes, Trevor palmer, Prentice Hall.
9. Enzyme Chemistry : Impact and Applications, Ed. Collin J Suckling, Chapman and Hall.
10. Enzyme Mechanisms Ed, M.I. Page and A. Williams, Royal Society of Chemistry.
11. Fundamentals of Enzymology, N.C. Price and L. Stevens, Oxford University Press.
12. Immobilizaed Enzymes: An Introduction and Applications in Biotechnology, Michael D. Trevan, and John Wiley.

13. Enzymatic Reaction Mechanisms, C. Walsh, W.H. Freeman.
14. Enzyme Structure and Mechanisms, A Fersht, W.H. Freeman.
15. Biochemistry: The Chemical Reacitons of liging cells, D.E. Metzler, Academic Press.
16. Principles of Biochemistry, A.L. Lehninger, Wroth Publishers.
17. Biochemistry, L. Stryer, W.H. Freeman.
18. Biochemistry, J. David Rawn, Neil Patterson.
19. Biochemistry, Voet and Voet, John Wiley.
20. Outlines of Biochemistry, E.E. Conn and P.K. Stumpf, John Wiley.
21. Bioorganic Chemistry : A Chemistry Approach to Enzyme Action, H. Dugas and C. Penny, Springer-Verlag.
22. Biochemistry and Molecular Biology of Plants, Buchanan, Gruissem and Jones, I.K. International Pvt. Ltd.

PAPER NO. CH –15

CATALYSIS, SOLID STATE AND SURFACE CHEMISTRY

Max. Marks 100

UNIT –I

ACIDS, BASES, ELECTROPHILES, NUCLEOPHILES AND CATALYSIS :

Acid-base dissociation, Electronic and structural effects, acidity and basicity. Acidity function and their applications. Hard and soft acids and bases. Nucleophilicity scales. Nucleofugacity. The alpha effect. Ambivalent Nucleophilies. Acid base catalysis-specific and general catalysis. Bronsted catalysis, Enzyme Catalysis.

UNIT –II

MICELLES AND ADSORPTION :

Micelles : Classification of surface active agents, micellization, hydrophobic interaction, critical micellar concentration (CMC), factors affecting the CMC of Surfactants. Thermodynamics of micellization - phase separation and mass action models. Reverse micells, micro-emulsion. Micellar Catalysis, Surface tension capillary action, pressure difference across curved surface (Laplace equation), vapor pressure of droplets (Kelvin equation), Gibbs adsorption isotherm.

UNIT –III

SOLID STATE CHEMISTRY - I :

Crystal defects and Non-stoichiometry - Perfect and imperfect crystals, intrinsic and extrinsic defects - point defect, line and plane defects, vacancies - Schotty defects and Frankel defects. Thermodynamics of Schotty and Frenkel defect, formation of color centres, non-stoichiometry and defects. Electronic properties and Band theory of semiconductors.

UNIT –IV

MACROMOLECULES :

Polymer - Definition types of polymers, electrically conducting, fire resistant, liquid crystal polymers, kinetics of polymerization, mechanism of polymerization.

Molecular mass, average molecular mass molecular mass determination (Osmometry, Viscometry, diffusion and light scattering methods), Sedimentation, chain configuration of macromolecules calculation of average dimensions of various chain structures.

BOOK SUGGESTED :

1. G.W. Castellan, "Physical Chemistry", Addison- Lesley Publishing Co.
2. E.A. Moelwyn Hughes, "Physical Chemistry", Pergamon Press.
3. Denbigh, "Chemical Equilibria", D. Van Nostrand.
4. J. Rose, "Dynamic Physical Chemistry" Sir Issac Pitman and Sons.
5. Solid state "Chemistry and its Applications, A.R. West, Plenum.
6. Principle of Solid State H.V. Kar, Wiley Eastern.
7. Solid State Chemists, D.K. Chakrabarty, New Age International (P) Ltd.
8. Micelles, Theoretical and Applied Aspects, V. Moral Plenum.
9. The Chemistry Mathematics Book, E. Steiner, Oxford University Press.
10. Mathematics for Chemistry, Doggett and Sutcliffe, Longman.
11. Mathematical Preparation for Physical Chemistry, F. Daniels, McGraw Hill.
12. Chemical Mathematics, D.M. Hirst, Longman.
13. Applied Mathematics for Physical Chemistry, J.R. Barrante, Prentice Hall.
14. Basic Mathematics for Chemists, Tebbutt, Wiley.
15. Quantum Chemistry, Ira N. Levine, Prentice Hall.
16. Introduction to Quantum Chemistry, A.K. Chandra, Tata McGraw Hill.

PAPER NO. CH –16

ANALYTICAL TECHNIQUES AND DATA ANALYSIS

Max. Marks 100

UNIT –I

SAMPLE PREPARATION, DEGESTION AND STATISTICAL ANALYSIS

A. Sampling - Collection, Preservation and preparation of sample, Techniques of sampling solids, liquids and gases, Operation of drying and preparing a solution of the analyte.

Principle, methodology and application of different types of digestions such as acid digestion, base digestion, enzymatic and microwave digestion for liquid and solid materials.

B. Evolution and procession of Analytical Data, Precision and Accuracy, Types of Errors, Propagation of errors, Normal Distribution Curve, Standard deviation, Confidence limit, Graphical presentation of result-method of average, Method of Linear least square, Significant figures, Statistical aid to hypothesis testing-t-test, F-test, Correlation coefficient, Rejection of data.

UNIT –II

SEPARATION TECHNIQUES

A. Efficiency of extraction, Selectivity of extraction, Extraction system, Method of Extraction, applications.

B. Principle, classification of chromatographic techniques, Technique and applications of paper chromatographic, Thin-layer chromatographic, HPTLC, Column chromatography.

UNIT –III

THERMAL AND AUTOMATED METHODS

A. Principle, Instrumentation, Application of TGA, DTA and DSC methods.

B. Automated methods, Principle, instrumentation and application of flow injection analysis.

UNIT –IV

ELECTROCHEMISTRY

A. Principles and instrumentation of pH potentiometry, coulometry and counductometry.

B. Basic principles, Diffusion current, polarized electrode, Micro electrode, Dropping Mercury Electrode llkovic equation, Polarographic wave, Qualitative analysis Stripping methods, Cyclic Voltammetry, Amperometric titration :-curves, Differential pulse polarography and Square wave polarography.

BOOK SUGGESTED :

1. Fundamental of Analytical Chemistry- Skoog D.A. and West D.M.
2. Saunders, College Publication.
3. Textbook of Quantitative Inorganic Analysis-Vogel A.I.
4. Principles and Practice of Analytical Chemistry-Fifield F.W and Kealey
5. D. Black well Science
6. Instrumental Analysis R. Braun, McGraw Hill, International Edition.
7. Analytical Chemistry, Christian, G.D., WSE/Wiley.
8. Instrumental Analysis, Willard Meritt Dean, CBS.
9. Chemical Analysis, Brawn, McGraw Hill.
10. Fundamental of Analytical Chemistry-Skoog D.A. and West D.M.
11. Principles of instrumental analysis, Skoog Holler - Niemann.
12. Instrumental analysis, Wizard Dean and Merit.
13. Principle and PRACTICAL analytical chemistry, Fifield and Kealey.

PAPER NO. CH - 17

LABORATORY COURSE –V

Max. Marks 100

1. To determine the percent efficiency of given counter.
2. To calculate the activity with given radioactive source.
3. Determination of the half-life of Radionuclide.
4. Determination of absorption coefficient & half
5. Determination of absorption coefficient & half thickness of lead for gamma radiation.
6. Determination of range and energy of β particle
7. Prove the inverse square law for gamma rays.
8. Measurement of gamma ray energy by gamma ray spectrometry.
9. Determination of the partition coefficient for iodine between carbon tetrachloride & (a) Water, (b) aqueous potassium iodide.
10. Study of kinetics of exchange between ethyl iodide & the iodide ion.
11. Determination of the solubility product of lead iodide.
12. Determination of the dissociation constant of Barium Nitrate.
13. Determination of the concentration of iodine in a given sample (KI), by isotope dilution technique.
14. To study the effect of temperature, concentration of the reactant and catalyst on the rate of a chemical reaction (Hydrolysis/Nucleophilic Substituttion).
15. Reaction between Sodium Formate and Iodine by
    (i) Volumetric Method.
    (ii) Conductometric Method.
16. Saponification of ethyl acetate
    (i) Volumetric Method.
    (ii) Conductometric Method.
17. Reaction between Acetone and Iodine.
18. To study the autocatalylic reaction between $KMnO_4$ and Oxalic acid.
19. Reaction between $K_2S_2O_8$ and Iodine.
20. Determination of pKa by Kinetic Measurement.
21. Evaluation of Equilibrium constants from kinetic data.
22. Determination of rate constant of the decomposition of benzene diazonium chloride at different temperature.
23. To study the photolysis of uranyl oxalate.
24. To study the effect of substate catalyst etc (i) HCl, $K_2S_2O_8$ (ii) KOH, NaOH.
25. To study the Activation parameters.
26. To study the solvent effect using some Aprotic & Protic Solvents.
27. To examine the substituent effect (Hammett equation).
28. To study the effect of Electrolyte on the rate hydrolysis (KCl, NaCl,)
29. To study some simple enzyme catalyzed reaction.
30. To study the Micellar Catalyzed Reaction.

- **Some advanced level sophisticated instrument based (FTIR, NMR, GC-MS, AAS, FLUORESCENCE SPECTROPHOTOMETER, TENSIOMETER etc) experiments may be given to the students**

BOOK SUGGESTED :

1. Basic Experiment with radioisotopes by John, N. Andrews & David J. Hornsey, Pitam Publishing New York.
2. Practical radiochemistry by M.F.C. Ladd & W.H. Lee, Cleaver Hune press Ltd.
3. Practical Physical Chemistry by Alexander Findlay.
4. Experimental Physical Chemistry, D.P. Shoemaker, C.W. Garland and J.W. Niber, Mc Graw Hill Interscience.
5. Findlay'sicalPractialChemistry,revised B.Phys.Levitt,Longman.

PAPER NO. CH –18

LABORATORY COURSE –VI

Max. Marks 100

A. SPECTROPHOTOMETRIC DETERMINATIONS

I. Manganese / Chromium, Vanadium in steel sample.

II. Nickel / Molybdenum / Tungsten / Vanadium / Uranium by extractive spectrophotometric method.

III. Fluoride / Nitrate / Phosphate.

IV. Iron –phenanthroline complex; Job's Method of con

V. Zirconium –Alizarin Red –S complex: Mole-ratio method.

VI. Copper –Ethylene diamine complex: Slope-ratio method.

B. pH METRY

Stepwise proton-ligand and metal-ligand stability constant of complexes by Leving –Rossoti methods.

C. POLAROGRAPHY

Composition and stability constant of complexes.

D. FLAME PHOTOMETRIC DETERMINATIONS.

(i) Sodium and potassium when present together

(ii) Lithium / calcium / barium / strontium.

(iii) Cadium and magnesium in tap water.

E. REFRACTOMETRY

1. Determination the specific and molar refraction of a given liquid by abbe Refractometer.
2. Determine the variation of refractive index.
3. To verify law of refraction of mixture (glycerol + water).

F. SEPARATION AND QUANTITATIVE ESTIMATION OF BINARY AND TERNARY MIXTURES BY THE USE OF FOLLOWING SEPARATION TECHNIQUES:

1. Paper chromatography –Cadmium and Zinc, Zinc and Magnesium.
2. Thin –layer chromatography –separation of nickel, manganese, cobalt and zinc.
3. Ion-exchange.
4. Solvent extraction.
5. Electrophoretic separation.

- **Some advanced level sophisticated instrument based (FTIR, NMR, GC-MS, AAS, FLUORESCENCE SPECTROPHOTOMETER, TENSIOMETER etc) experiments may be given to the students**

BOOK SUGGESTED :

1. Quantitative Inorganic Analysis, A.I. Vogel.
2. Test book of quantitative chemical analysis, A.I. Vogel.
3. Practical Physical chemistry, A.M. James and F.E. Prichard, Longman.
4. Findley's Practical Physical Chemistry, B.P. Levi
5. Experimental Physical Chemistry, R.C. Das and B. Behera, Tata McGraw Hill.

FOURTH SEMESTER

PAPER NO. CH - 19

INSTRUMENTAL METHODS OF ANALYSIS

Max. Marks 100

UNIT –I

ADVANCED CHROMATOGRAPHY :

A. Ion chromatography : Ion exchange equilibrium, Ion-exchange packing and Inorganic Applications.

B. Size exclusion chromatography : Column packing, Theory of size of exclusion chromatography and applications.

C. Supercritical fluid chromatography : Properties of supercritical fluid SFC-Instrumentation and operating variables, comparison with other types of chromatography, applications.

D. Capillary Electrophoresis and capillary electro chromatography : overviews and applications

UNIT –II

X-RAY AND PROTON INDUCED SPECTROSCOPY :

A. X-Ray fluorescent method : Principles-Characteristics x-ray emission.
Instrumentation x-ray tube, Radioactive sources. Wavelength dispersive instruments.
Energy dispersive instruments. Analytical Applications-Qualitative Analysis.

B. Proton Induced X-Ray Spectroscopy : Theory, instrumentation and application.

UNIT –III

ATOMIC EMISSION SPECTROSCOPY

A. Selectivity, sensitivity and interferences of atomic spectroscopy.

B. Theory, instrumentation and application of flame photometer, AES, ICP-AES and AFS.

UNIT –IV

ATOMIC ABSORPTION SPECTROSCOPY AND HYPHENATED TECHNIQUES

A. Theory instrumentation and application of flame and graphite furnace AAS, cold-vapor and hydride generation AAS.

B. Theory, instrumentation and application of hyphenated techniques i.e. GC/HPLC/-MS, GC/IC/HPLC-ICP-MS.

BOOK SUGGESTED :

1. Instrumental methods of analysis, Willard, Meritt and Dean.
2. Basic concepts of analytical chemistry, S.M. Khopkar, John Wiley & Sons.
3. Metallurgical analysis, S.C. Jain.
4. Material Science and Engineering. An Introduction, W.D. Callister, Wiley.
5. Material Science, J.C. Anderson, K.D. Leaver, J.M. Alexander and R.D. Rawlings, ELBS.
6. Fundamentals of Analytical Chemistry, Skoog, Welt, Holler and Crouch Thomson Learning Inc.

PAPER NO. CH - 20
NATURAL PRODUCT AND MEDICINAL CHEMISTRY

Max. Marks 100

UNIT-I

A. **Terpenoids and Carotenoids**: Classification, nomenclature, occurrence, isolation, general methods of structure determination of Citral, Geraniol, α-Terpeneol, Menthol, Farnesol, Zingiberene, Santonin, Phytol, Abietic acid and β – Carotene.

B. **Alkaloids:** Definition, nomenclature and physiological action, occurrence, isolation, general methods of structure elucidation, degradation, classification based on Nitrogen heterocyclic ring, role of alkaloids in plant. Synthesis and biosynthesis of the following: Ephedrine, (+)- Coline, Nicotine, Atropine, Quinine and Morphine.

UNIT-II

A. **Steroids:** Isolation, structure determination and synthesis of Cholesterol, Bile acids, Androsterome, Testosterone, Esterone, Progestrone, Aldostrone and Biosythesis of cholesterol.

B. **Plant Pigments**: Occurrence, nomenclature and general method of structure determination. Isolation and synthesis of Apigenin, Luteolin, Quercetin, Myrcetin, Quercetin-3-glucoside, Vitexin, Diadzine, Butein, Aureusin, Cyanidin-7-arebinoside,Cyanidin, Hirsutidin.

C. **Pyrethroids and Rotenones**: Synthesis and reaction of Pyrethroids and Rotenones.

UNIT- III

Drug Design

A. Development of new drugs procedures followed in drug design, concepts of lead compound and lead modification, concepts of prodrugs and soft drugs, Structure-Activity Relationship (SAR), Factors affecting bioactivity, resonance, inductive effect. Theories of drug activity: occupancy theory, rate theory, induced fit theory. Quantitative Structure Activity Relationship (QSAR).

B. Concepts of drug receptors, lipophilicity, phamacophore, pharmacological activity and typical range of parameters related to drug likeness.

C. General introduction of pharmacokinetics and pharmacodynamics.

UNIT – IV

A. **Anteoplastic Agents**: Introduction, Alkylating agents, antimetabolites, carcinolytic antibiotics, mitotic inhibitors.

B. **Antibiotics**: Constitution and synthesis of penicillins, chloramphenicol, tetracycline and streptomycin.

C. **Antimalarials**: Synthesis and properties of the following Antimalarial: 8-amino quinolone derivatives- Pamaquine, Primapune, Pentaquinr, Isopentaquine, 4- amino quinolone derivatives- Santoquine, Camaquine, Acridine derivatives- Mepracrine, Azacrin, Pyrimidine and Biguanid derivatives- Paludrine Pyremethamine.

Book Suggested:

1. Natural Products: Chemistry and Biological Significance, J. Mann, R. S. Davidson, J. B. Hobbs.
2. D. V. Banthrope and J. B. Harbrone, Longman, Essex., Organic Chemistry, Vol. 2, I. L. Finar, ELBS.
3. Chemistry, Biologcal and Pharmacological properties of Medicinal Plants from the Americans, Ed. Kurt Hostettmann, M. P. Gupta and A. Marston, Harwood Academic Publishers.
4. Introduction to Flavonoids, B. A. Bhom, Harwood Academic Publishers.
5. New Trends in Natural Product Chemistry, Att-ur-Rahman and M. I. Choudhary, Harwood, Academic Publishers.
6. Insecticides of Natural Origin, Sukh Dev, Harwood Academic Publishers.
7. Introduction to medicinal Chemistry, A Gringuage, Wiley-VCH.
8. Burger's Medicinal Chemistry-1 (Chapter-9 and Ch- 14), Drug Ed. M. E. Discovery, Wolff, John Wiley.

PAPER NO. CH - 21

MATERIAL AND NUCLEAR CHEMISTRY

Max.Marks 100

UNIT- I

NON EQUILIBRIUM THERMODYNAMICS : Fundamental concepts, Forces and Fluxes, Entropy production, Phenomenological Laws and Onsager's r for biological systems, coupled reactions.

UNIT- II

MATERIAL CHEMISTRY :

Preparation and Properties of Nanopaeticles, Materials-Metals, Ceramics (Oxide, carbides, sulphides, nitrides).physical and chemical Methods, Size and Shape controlled Synthesis, Sol-gel methods, Optical Properties, Electrical and Magnetic Properties, Application of Nanoparticles.Characterization of Nanoparticles(SEM, TEM etc.)

UNIT-III

SUPRAMOLECULAR CHEMISTRY :

Properties of covalent bonds, bond length, inter bond angles, Force constant, bond and molecular dipole moment, molecular and bond polarizability.

Intermolecular Forces, hydrophobic effects, Electro static, induction, dispersion and resonance energy, Hydrogen bond, Magnetic interactions. Principles of molecular association ad organization Biological marcomolecules, Molecular receptors and design principal, cryptands, Cxclophanes, calixerancs and cyclodextrins.

Supramoleular reactivity and catalysis.

UNIT-IV

NUCLEAR AND RADIOCHEMISTRY

NUCLEAR THEORY :

Nuclear cross section and nuclear radii, nuclear shells and magic numbers, theory of nuclear shell model, nuclear potentials, square well and simple harmonic oscillator potentials, application, liquid drop model, semi-empirical mass equation, application and limitations.

NUCLEAR FISSION :

Mass, energy and charge distribution of fission products, decay chains, prompt and neutrons, liquid drop model of nuclear fission.

NUCLEAR ENERGY :

Nuclear fission, chain reaction, multiplication factor, nuclear reactors

APPLIED RADIOCHEMISTRY :

Radioactive isotopes, purity and strength of radioisotopes. Radiochemical principle in the use of tracers, Application of Tracers in Chemical investigations, Physico-chemical methods, Analytical applications, Age determinations, Medical applications, Agricultural application.

BOOKS SUGGESTED:

1. Nuclear and Radiochemistry by G. Friedlander, J.W. Kennedy & J.M. Miller, John Wittey and Sons, Ine New York.
2. Source Book an Atomic Energy –S.Glasstone, Affiliated East –West Press Pvt. Ltd. New Delhi.
3. Nuclear Physics by I. Kaplan, Addision –Welsly. Publishing company London.
4. Nuclear Chemistry and its applications, M. Haissinsky, Addision –Welsley, Publishing Company, London.
5. Essentials of Nuclear chemistry, H.J. Arnikar, Wiley Eatern Ltd, New Delhi.
6. Molecular Mechanics, U. Burkert and N.L. Allinger, ACS Monograph 177, 1982.
7. Mechanism and Theory in Organic Chemistry, T.H. Lowry and K.C. Richrdson, Harper and Row.
8. Introduction to Theoretical Organic Chemistry and Molecular, Modelling, W.B. Smith, VCH, Weinheim.
9. Physical Organic Chemistry, N.S. Isaacs, ELBS./ Longman.
10. Supramolecular Chemistry: concept and Perspectives, J.M. Lehn, VCH.
11. The Chemistry Mathematics Book, E. Steiner, Oxford University Press.
12. Chemical Mathematics, D.M, Hirst, Longman.
13. Applied Mathematics for Physical Chemistry, J.R. Barrante, Prentice Hall.
14. Quantum Chemistry, Ira N. Levine, Prentice Hall.
15. Introduction to Quantum Chemistry, A.K. Chandra, Tata McGraw Hill.

PAPER NO. CH - 22

ENVIRONMENTAL & APPLIED CHEMICAL ANALYSIS

Max. Marks 100

UNIT –I

AIR POLLUTION MONITORING AND ANALYSIS

Classification of air pollution monitoring levels, air quality, standards and index, monitoring and analysis of selected air borne pollutants: SO_2, NO_x, SPM, VOC's, Pb, CO_2, POP's, Hg, carbon and ozone air pollution control devices Viz ESP, scrubber technique, baghouse filters etc. Atmospheric chemistry of acid rains, photochemical smog, green house effect, global warming, ozone hole.

UNIT –II

SOIL AND WATER POLLUTION

Soil and water quality standards, monitoring and analysis of selected soil water contaminants: COD, pesticides, heavy metals, POP's, fluoride, cynide, nitrate, phosphate, oil & greese, Geobiochemical impact of municipal solid waste, steel plants effluent, domestic sewage. Control devices of water pollutants.

UNIT –III

FOOD ANALYSIS

A. Introduction to general Constituents of food, Proximate Constituents and their analysis, Additives-Introduction -Types - Study of preservatives colors and Antioxidants and method of estimation, adulteration - Introduction, Types, Test for adulterants.

B. Introduction standards composition and analysis of following foods : Wheat, Bread, Biscuits, Jam, Jelly, Honey, Milk, Ice Cream, Butter, Cheese, Milk Powder, Oils and Fats, Tea, Coffee, Soft drinks, Alcoholic beverages, Cereal and pulses, Confectionery, Fruits, Vegetables, Egg, Fish, Meat.

UNIT –IV

COSMETICS, CLINICAL AND DRUG ANALYSIS

A. Introduction of Cosmetics, evaluation of cosmetics materials, raw material and additives, Cosmetics colors, Perfumes in cosmetics, Cosmetics formulating, introduction, standards and methods of analysis, Creams, face powders, Make-up, Shaving preparations, Bath preparations.

B. Concepts and principles of analytic methods commonly used in the clinical species: i.e. ammonia, blood urea Nitrogen, Ca, Cl, CO_2, Fe, K, Li, Mg, Na, P, urea, glucose.

Method for analysis of proteins (i.e. albumin, bilirubin, creatinine, cholesterol, HDL-cholesterol, triglycerides, creatinine) and Enzymes (i.e. Aanine Aminotransferase, acid phosphatase, alkaline phosphatase, amylase, aspartate, aminotransferase, cholinesterase, lactate, and lipase).

BOOK SUGGESTED :

1. Environmental Chemistry, S.E. Manahan, Lewis Publishers.
2. Environmental chemistry, Sharma and Kaur, Krishna Publishers.
3. Environmental Chemistry, A.K. De, Wiley Eastern.
4. Environmental Chemistry, Analysis, S.M. Khopkar, Wiley Eastern.
5. Standard Method of Chemical Analysis, F.J. Welcher Vol. III, Van Nostrand Reinhold Co.
6. Environmental Toxicology, Ed. J. Rose, Gordon and Breach Science Publication.
7. Environmental Chemistry, C. Baird, W.H. Freeman.
8. Analytical chemistry, G.D. Christian, J. Wiley.
9. Fundamentals of Analytical Chemistry, D.A. Skoog, D.m. West and F.J. Holler, W.B. Saunders.
10. Analytical Chemistry - Principles, J.H. Kennedy, W. Saunders.
11. Analytical Chemistry-Principles, and Techniques, L.G. hargis, Prentice Hall.
12. Principles of Instrumental Analysis, D.A. Skoog and J.L. Loary, W.B. Saunders.
13. Principles of Instrumental Analysis, D.A. Skoog, W.B. Saunders.
14. Quantitative Analysis, R.A. Day, Jr. and A.L. Underwood, Prentice Hall.
15. Environmental Solution Analysis, S.M. Khopkar, Wiley Eastern.

16. Basic Concepts of Analytical Chemistry, S.M. Khopkar, Wiley Eastern.
17. Handbook of Instrumental Techniques for Analytical Chemistry, F. Settle, Prentice Hall.
18. Environmental Biotechnology, Indushekhar Thakur, I.K. International Pvt. Ltd.
19. Fundamental of Analytical Chemistry, D.A. Skoog, D.m. West, F.J. Holler and S.R. Crouch, Thompson Learning Inc.
20. APHA, 1977, "Methods of air c HealthSamplingAssociationWashingtonand –Analysis US.

OPTIONAL PAPERS

CH-22a MEDICINAL CHEMISTRY

UNIT I

(a) **DRUG DESIGN**: Development of new drugs, procedures followed in drug design, concepts of lead compound and lead modification, concepts of prodrugs and soft drugs, structure – activity relationship (SAR). Theories of drug activity: Occupancy theory, rate theory, induced fit theory. Quantitative structure activity relationship. History and development of QSAR. Concepts of drug receptors. Lipophilicity and Lipinski Rule of 5.

(b) **PHARMACOKINETICS**: Introduction to drug absorption, disposition, elimination using pharmacokinetics, important pharmacokinetics parameters in defining drug disposition and in therapeutics.

(c) **PHARMACODYNAMICS**: Introduction, elementary treatment of enzyme stimulation, enzyme inhibition, membrane active drugs, drug metabolism, biotransformation significance of drug metabolism in medicinal chemistry.

UNIT II

(a) **ANTINEOPLASTIC AGENTS**: Introduction, role of alkylating agents and antimetabolites in treatment of cancer. Mention of carcinolytic antibiotics and Mitotic inhibitors. Mechlorethamine, cyclophosphamide, melphalan, uracil, mustards, and 6-mercaptopurine.

(b) **CARDIOVASCULAR DRUGS**: Introduction, cardiovascular diseases, drug inhibitors of peripheral sympathetic function. Direct acting arteriolar dilators. Synthesis of amyl nitrate, sorbitrate, diltiazem, quinidine, verapamil, methyldopa, atenolo, oxyprenolo.

UNIT III

(a) **LOCAL ANTIINFECTIVE DRUGS**: Introduction and general mode of action. Synthesis of sulphonamides, furazolidine, nalidixic acid, ciprofloxacin, norfloxacin, dapsone, amino salicylic acid, isoniazid, ethionamide, ethambutal, fluconazole, econozole, griseofulvin, chloroquin and primaquin.

(b) **ANTIBIOTICS**: Cell wall biosynthesis, inhibitors, β-lactam rings, antibiotic inhibiting protein synthesis. Synthesis of penicillin G, penicillin V, ampicillin, amoxicillin, chloramphenicol, cephalosporin, tetracycline and streptomycin.

UNIT IV

PSYCHOACTIVE DRUGS- THE CHEMOTHERAPY OF MIND : Introduction, neurotransmitters, CNS depressants, mode of action of hypnotics, sedatives, anti-anxiety drugs, benzodiazipines, busipirone.Antipsychotic drugs – the neuroleptics, antidepressants, butyrophenones, serendipity and drug development, stereochemical aspects of psychotropic drugs. Synthesis of diazepam, oxazepam, chlorazepam, alprazolam, phenytoin, ethosuximode, trimethadione, barbiturates, thiopental sodium, glutethimide.

Books Suggested

1. Introduction to Medicinal Chemistry, A Gringuage, Wiley-VCH
2. Wilson and Gisvold's Text Book of Organic Medicinal and Pharmaceutical Chemistry, Ed Robert F. Dorge
3. An Introduction to Drug Design, S. S. Pandeya and J.R.Dimmock, New Age International.
4. Burgers's Medicinal Chemistry and Drug Discovery, Vol-1(Chapter-9 and Chapter-14), Ed. M.E. Wolff, John Wiley.
5. Goodmann and Gilman's Pharmacological Basis of Therapeutics, Mc-Graw Hill.
6. The Organic Chemistry of Drug Design and Drug Action, R. B. Silverman, Academic Press.
7. Strategies for Organic Drug Synthesis and Design, D.Lednicer, John Willey

CH-22b CHEMISTRY OF SURFACTANTS

UNIT- I

OVERVIEW OF SURFACTANTS: Classification of Surfactants, Physicochemical Properties of Surfactants, Critical Micelle Concentration , Determination, Effect of Additives,Aggregate Shapes , Structure and Morphology, Novel and New Generation Surfactants, Aggregation Behavior.

UNIT-II

PRINCIPLES OF SELF-ASSEMBLY: Closed and Continuous Association , Surfactant MicellizationPseudo-Phase Model , Mass Action Model, Estimation of Micelle Size ,Size Dispersion of Micelles, Concentration Dependence of Micelle Size , Phase Behavior, Aggregation Behavior.

UNIT-III

SURFACTANT MIXTURES: Ideal and Non-Ideal Mixed Micelles ,Regular Solution Model Size and Composition Distribution of Aggregates ,Nonionic –ionic Surfactant Mixtures ,Ionic -Ionic Surfactant Mixtures,Origin of Ideal and Non-Ideal Mixing Behavior, Polymer SurfactantInteraction.

UNIT-IV

APPLICATIONS OF SURFACTANTS: Micellar Catalysis, Quantitative Models ,Micellar Enzymology, Phenomenon of Solubilization , Solubilization in Mixed Micelles, Drug Surfactant Interaction, Protein Surfactant Interactions, Microemulsions and its applications, Industrial Application of Surfactants.

Books:

1. Surfactants Edited by Th. F. Tadros, Academic Press
2. Micelles : Theoretical and Applied Aspects by Y. Moroi
3. Chemistry and Technology of Surfactants by R. J. Farn Wiley

CH-22c CHEMISTRY AND APPLICATION OF PESTICIDES

UNIT-1

INTRODUCTION: What is pesticides, classification of pesticides, utility of pesticides, categories of toxicity, Threshold limit value, LD 50 value, Effect of pesticides in food, House hold and Human health.

UNIT-2

CHEMICAL TOXICOLOGY: Biochemical effects of pesticides, pesticides persistence, bioaccumulation and biomagnifications of pesticides, Toxicology of pesticides, Toxicology of organophosphates, carbamates, organochlorine and Dermal Toxicology of pesticides.

UNIT-3

INSTUMENTAL TECHNIQUES IN PESTICIDES DETECTION: Spectrophotometry, paper chromatography, Thin layer chromatography (TLC), GC-MS, indicator tube, High performance (pressure) Liquid chromatography (HPLC).

UNIT-4

PESTICIDES AND ITS RESIDUE ANALYSIS: Steps in pesticides residue analysis, clean-up, concentration (evaporation), Analysis, Extent of residue of pesticides in different commodities.

References

- Environmental chemistry. A.K De. New Age International Pvt. Ltd. 6th edition.
- Soil Testing and Analysis,plant, water and pesticide residues- Patiram,Bajendra N.S. Azad, Thakur and T.Ramesh.Agricultural,Horticultural,Food and Veterinary Science Book.2nd edition.
- Toxicology of pesticides: Experimental,clinical and regulatory perspectives. Edited by: Lucio G. Costa,Corrado L. GalliSheldon D. Murphy.Springer,1st edition.
- Persistent Pesticide in the Environment- C.A Edward, CRC Press Inc.,Florida 2nd edition.
- Agricultural chemicals and chemical mutagens- C.L.Canoria.
- Progress in pesticide Biochemistry and Toxicology- D.H Hutson and T.R Roberts. Willey,7th edition.
- Air pollution from Pesticides and Agricultural process. Lee,R.F., Jr.CRC Press Inc., Florida, 1976,174.

CH-22 d MOLECULAR SYMMETRY, COORDINATION AND ORGANOMETALLIC CHEMISTRY

UNIT – I

SYMMETRY AND GROUP THEORY IN CHEMISTRY: Symmetry elements and symmetry operation, definitions of group, subgroup, relation between orders of a finite group and its subgroup.Conjugacy relation and classes.Point symmetry group.Schonflies symbols, representations of groups by matrices (representation for the C_n, C_{nv}, C_{nh}, D_{nh} etc. groups to be worked out explicitly). Character of a representation.The great orthogonality theorem (without proof) and its importance.Character tables and their use; spectroscopy.

UNIT – II

A. METAL-LIGAND BONDING: Limitation of crystal field theory, molecular orbital theory, octahedral, tetrahedral and square planar complexes, bonding and molecular orbital theory.

B. ELECTRONIC SPECTRA AND MAGNETIC PROPERTIES OF TRANSITION METAL COMPLEXES: Spectroscopic ground states, Correlation, Orgel and Tanabe-Sugano diagrams for transition metal complexes (d^1-d^9 states), Selection rules, mechanism for break down of the selection rules, intensity of absorption, band width, spectra of d-d metal complexes of the type $[M(H_2O)]^{n+}$, spin free and spin paired ML6 complexes of other geometries, Calculations of Dq, B and parameters, spin forbidden transitions, effect of spin-orbit coupling, Spectrochemical and Nephelouxetic series.

UNIT – III

A. REACTION MECHANISM OF TRANSITION METAL COMPLEXES: Energy profile of a reaction, reactivity of metal complexes, inert and labile complexes, kinetic application of valence bond and crystal field theories, kinetics of octahedral substitution, anation reactions, reactions without metal ligand bond cleavage. Substitution reactions in square planar complexes, the trans effect. Redox reactions, electron transfer reactions, mechanism of one electron transfer reactions, outer sphere type reactions, cross reactions and Marcus-Hush theory, inner sphere type reactions.

B. METAL–LIGAND EQUILIBRA IN SOLUTION: Stepwise and overall formation onstants and their interaction, trends in stepwise constants, factors affecting the stability of metal complexs with reference to the nature of metal ion and ligand, chelate effect and its thermodynamic origin, determination of binary formation constants by pH-metry and spectrophotometry.

UNIT – IV

METAL π-COMPLEXES: Metal carbonyls, structure and bonding, vibrational spectra of metal carbonyls for bonding and structural elucidation, important reactions of metal carbonyls; preparation, bonding, structure and important reactions of transition metal nitrosyl, dinitrogen and dioxygen complexes; tertiary phosphine as ligand. B. Tranisition metal complexes with unsaturated organic molecules,alkanes ,allyl ,dienedienyl,arene and trienyl complex,preparations,properties,nature of bonding and structure features.Important reaction relating to nucleophilic, electrophilic attack on ligands and organic synthesis.Alkylidenes, low valentcarbenes nature of bond and Structural characteristics.

CH-22 e NANOCHEMISTRY

UNIT I

GENERIC METHODOLOGIES FOR NANOCHEMISTRY AND NANOTECHNOLOGY

Introduction and classification, What is nanotechnology?, Classification of nanostructures, Nanoscale architecture, Summary of the electronic properties of atoms and solids, The isolated atom, Bonding between atoms, Giant molecular solids, The free electron model and energy bands, Crystalline solids, Periodicity of crystal lattices, Electronic conduction, Effects of the nanometre length scale, Changes to the system total energy, Changes to the system structure, How nanoscale dimensions affect properties

UNIT -II

MATERIAL CHEMISTRY

Preparation and Properties of Nanoparticles, Materials-Metals, Ceramics (Oxide, carbides, sulphides, nitrides).physical and chemical Methods, Size and Shape controlled Synthesis, Sol-gel methods, Optical Properteis, Electrical and Magnetic Properties, Application of Nanoparticles.

UNIT-III

CHARACTERIZATION METHODS

X-ray diffraction, Debye-Scherer formula, dislocation density, micro strain, Synchrotron Radiation, Principle and Applications, Raman Spectroscopy and its Applications, Dynamic Light Scattering (DLS). Electron microscopes: scanning electron microscope (SEM), transmission electron microscope (TEM), atomic force microscope (AFM), scanning tunneling microscope (STM), XPS, Working Principle, Instrumentation and Applications. Differential scanning calorimeter (DSC), Thermogravimetric/Diffferential Thermal Analyzer (TG/DTA), UV – Visible Spectrophotometer, FTIR, Principle and Applications, Photoluminescence (PL) Spectroscopy.

UNIT-IV

APPLICATIONS ON NANOCHEMISTRY

Nanobiology, Introduction, Bio-inspired nanomaterials, Interaction Between Biomolecules and Nanoparticle Surfaces, Different Types of Inorganic Materials Used for the Synthesis of Hybrid Nano-bio Assemblies, Applications of Nano in Biology, Nanoprobes for Analytical Applications, Current Status of Nanobiotechnology, Future Perspectives of Nanobiology; Nanosensors, Electrochemical, Nanobiosensors, Smart Dust; Nanomedicines, Nanodrug Administration Diagnostic and Therapeutic Applications.

References:

1. Nanoparticles: From Theory to Application Edited by Gu¨nter Schmid, @ 2004 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim
2. Nanoparticles and Catalysis Edited by Didier Astruc @ 2008 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim
3. Peter Atkins, Tina Overton, Jonathan Rourke, Mark Weller, Fraser Armstrong, Mike HagermanShriver and Atkin's Inorganic Chemistry, Fifth Edition, Oxford, 2010.
4. Nanoscale Science and Technology, Robert W. Kelsall, Ian W. Hamley and Mark Geoghegan, John Wiley & Sons, Ltd., UK, 2005.
5. Introduction to Nanotechnology, Charles P. Poole Jr and Frank J. Owens, Wiley Interscience, 2003.
6. Nano:The Essentials: Understanding Nanoscience and Nanotecnology, T.Pradeep, Tata McGraw-Hill Publishing Company Limited, New Delhi, 2008.

CH-22 f CHEMISTRY OF NATURAL PRODUCTS

UNIT-I

I Terpenoids and Carotenoids 15 Hrs

Classification; nomenclature, occurrence, isolation, general methods of structure determination, isoprene rule.Structure determination, stereochemistry, biosynthesis and synthesis of the following representative molecules; Citral, Geraniol, α-Terpeneol, Menthol, Farnesol, Zingiberene, Santonin, Phytol, Abietic acid and β-Carotene.

UNIT-II

II Alkaloids 15 Hrs

Definition, nomenclature and physiological action, occurrence, isolation, general methods of structure elucidation, degradation classification based on nitrogen heterocyclic ring, role of alkaloids in plants.Structure, stereochemistry, biosynthesis and synthesis of the following: Ephedrine, (+)- Coniine, Nicotine, Atropine, Quinine and Morphine.

UNIT-III

III Gteroids 15 Hrs

Occurrence, nomenclature, basic skeleton, Diel's hydrocarbon and stereochemistry. Isolation, structure determination and synthesis of Cholesterol, Bile acids, Androsterone, Testosterone, Estrone, Progestrone, Aldosterone.

IV Plant Pigments 7 Hrs

Occurrence, nomenclature, general methods of structure determination, isolation and synthesis of Apigenin, Luteolin, Quercetin, myrcetin, Quercetin-3-glucoside, Vitexin, Diadzein, Butein, Aureusin, Cyanidin-7-arabinoside, Cyanidin, Hirsutidin. Biosynthesis of flavonoids: Acetate pathway and Shikimic acid pathway.

UNIT-IV

V Porphyrins 3 Hrs

Structure and synthesis of Haemoglobin and Chlorophyll.

VI Prostaglandins 3 Hrs

Occurrence, nomenclature, classification, biogenesis and physiological effects.
Synthesis of PGE_2 and $PGF_{2\alpha}$.

VII. Pyrethroids and Rotenones

Synthesis and Reaction of Pyrethroids and Rotenones

Books Suggested :

1. Natural Products : Chemistry and Biological Significance, J. Mann, R.S. Davidson, J B Hobbs, D.V. Banthrope and J B Harborne, Longman
2. Organic Chemistry, Vol 2 , IL Finar ELBS
3. New Trends in Natural Products Chemistry , A R Rahman and M I Choudhury, Harwood Academic Publishers
4. Roods Chemistry of Carbon Compounds, Ed S. Coffey, Elsevier

CH-22 g POLYMERS

UNIT-I

I **Basics** **8 Hrs**

Importance of polymers. Basic concepts: Monomers, repeat units, degree of polymerization. Linear, branched and network polymers. Classification of polymers.Polymerization: condensation, addition, radical chain-ionic and co-ordination and co-polymerization. Polymerization conditions and polymer reactions. Polymerization in homogeneous and heterogeneous system.

II **Polymer Characterization** **14 Hrs**

Polydispersion-average molecular weight concept. Number, weight and viscocity average molecular weights. Polydispersity and molecular weight distribution. The practical significance of molecular weight. Measurement of molecular weights. End-group, viscocity, light scattering, osmotic and ultracentrifugation methods. Analysis and testing of polymers-chemical analysis of polymers, spectroscopic methods, X-ray diffraction study. Microscopy. Thermal analysis and physical testing-tensile strength. Fatigue, impact. Tear resistance. Hardness and abrasion resistance.

UNIT-II

III **Structure and Properties** **14 Hrs**

Morphology and order in crystalline polymers-configurations of polymer chains. Crystal structure of polymers. Morphology of crystalline polymers, strain-induced morphology, crystallization and melting. Polymer structure and physical properties-crystalline melting point Tm- melting point of homogeneous series, effect of chain flexibility and other steric factors, entropy and heat of fusion. The glass transition temperature, Tg-Relationship between Tm and Tg, effects of molecular weight, diluents, chemical structure, chain topology, branching and cross linking. Property requirements and polymer utilization.

UNIT-III

IV **Polymer Processing** **12 Hrs**

Plastics, elastomers and fibres. Compounding. Processing techniques: Calendering, die casting, rotational casting, film casting, injection moulding, extrusion moulding, thermoforming, foaming, reinforcing and fibre spinning.

UNIT-IV

V **Properties of Commercial Polymers** **12 Hrs**

Polyethylene, polyvinyl chloride, polyamides, polyesters, phenolic resins, epoxy resions and silicone polymers. Functional polymers- Fire retarding polymers and electrically conducting polymers. Biomedical polymers- contact lens, dental polymers, artificial heart, kidney, skin and blood cells.

Books Suggested :

1. Textbook of Polymer Science, F W . Billmeyer Jr. Wiley
2. Polymer Science, V R Gowarikar, N V Viswanathan and J Sreedhar, Wiley Eastern
3. Contemporary Polymer Chemistry, H R Alcock and F W Lambe, Prentice Hall
4. Physics and Chemistry of Polymers, J M G Cowie, Blackie Academic and Professional

PAPER NO. CH –23

LABORATORY COURSE –VII

Max. Marks 100

A. MULTI - STEP SYNTHESIS OF ORGANIC COMPOUNDS

(i) Beckmann Rearrangement: Benzanilide from benzene
(Benzene Benzophenone Benzophenone oxime Benzanilide).

(ii) Benzilic Acid Rearrangement: Benzilic acid from Benzoin (Benzoin Benzil Benzilic acid)

(iii) Skraup's synthesis (Synthesis of heterocyclic
Quinoline from o - Amino phenol

(iv) p - Bromoaniline from Aniline
(Aniline Acetanilide p - Bromoacetanilide p - Bromoaniline)

(v) p - Nitroacetanilide from Acetanilide
(Aniline Acetanilide p - Nitroactanilide p - Nitroaniline)

(vi) m - Nitroaniline from Benzene
(Benzene Nitrobenzene m - dinitrobenzene m - nitroaniline)

(vii) Acridone from Anthranilic acid
(Anthranilic acid o - Chlorobenzoic acid N - Phenylanthranilic acid Acridone)

(viii) Enzymatic Synthesis

Enzymatic reduction : Reduction of ethylace enantiomeric

excess of S(+) ethyl - 3 - hydroxybutanone and determine its optical purity.

B. QUANTITATIVE ORGANIC ANALYSIS

(i) Estimation of Sulphur by Messenger's Method.

(ii) Estimation of Nitrogen by Kjeldahl Method.

C. ESTIMATION OF FUNCTIONAL GROUP

(i) Extimation of Aniline.

(ii) Estimation of Amino Group By Acetylation Method.

(iii) Estimation of Hydroxyl Group By Acetylation Method.

(iv) Estimation of Carbonyl Group By Hydrazone Formation Method.

(v) Estimation of Carboxyl Group By Titration Method.

(vi) Determination of Equivalent Weight of Carboxylic Acid By Silver Salt Method.

(vii) Estimation of Glucose By Fehling Solution Method.

(viii) Estimation of Glycine By Titraiton Method.

D. EXTRACTION OF ORGANIC COMPOUNDS FROM NATURAL SOURCES

(i) Isolation of caffeine from leaves.

(ii) Isolation of Casein from milk.

(iii) Isolation of lactose from milk.

(iv) Isolation of nicotine dipicrate from tabacco.

(v) Isolation of Cinchonine from cinchona bark.

(vi) Isolation of Piperine from black pepper.

(vii) Isolation Lycopene from tomatoes.

(viii) Isolation of β–Carotene from carrots.

(ix) Isolation of Limonene from citrus rinds.

(x) Isolation of protein and carbohydrates from seeds –colour test

(xi) Extraction of Fatty oil from seeds and determination of refractive index of the oil.

(xii) Isolation of protein and carbohydrate (as reducing sugars) from seed-colour test.

E. Some advanced level sophisticated instrument based (FTIR, NMR, GC-MS, AAS, FLUORESCENCE SPECTROPHOTOMETER, TENSIOMETER etc) experiments may be given to the students.

BOOKS SUGGESTED :

1. Practical Organic chemistry by A. I. Vogel.
2. Practical Organic chemistry by Mann and Saunders.
3. Practical Organic chemistry by Garg and Saluja.
4. The Systematic Identification of Organic compounds, R. L. Shriner and D. Y. Curtin.
5. Semimicro Qualitative Organic Analysis, N.D. Cheronis, J. B. Entrikin and E. M. Hodnett.
6. Experimental Organic chemistry, M. P. Doyle and W. S. Mungall.
7. Small Scale Organic preparation, P. J. Hill.
8. Experimental Biochemistry, by B.S.Roa and V.Deshpande. I.K. International Pvt.Ltd.
9. Comprehensive Practical Organic Chemistry, Preparation and Qualitative Analysis, V.K.Ahluwalia and Renu Aggarwal, University Press.

PAPER NO. CH –24

LABORATORY COURSE –VIII

Max. Marks 100

A. TITRIMETIC/GRAVIMETRIC DETERMINATIONS

(i) Manganese in iron / Steel by Bismuthate / Linganane –Karplus/Periodate methods.
(ii) Maganese in pyrolusite ores.
(iii) Nickel in steel by dimethylglyoxine method.
(iv) Lead by dithizone precipitation.

B. SPECTROPHOTOMETRIC DETERMINATIONS

(i) Maganese/Chromium / Vanadium / Copper / Lead in Steel and Environmental / Industrial effluent samples.
(ii) Nickel / Molybdenum / Tungsten / Vanadium / Uranium by extractive spectrophotometric methd.
(iii) Fluoride / Nitrite / Phosphate in tap / pond / river industrial waste water.
(iv) Iron in water samples by thiocyanate and phenanthroline methods.

C. CHROMATOGRAPHIC SEPARATION

1. Sepraration and identification of the sugars present in the given mixture of glucose, fructose and sucrose by paper chromatography and determination of Rf values.
2. Thin layer chromatography – separation of nickel, manganese, cobalt and zinc, Determination of Rf values.

D. FLOW INJECTION ANALYSIS.

Determination of the following anions/cations in synthetic/real/ environmental samples.

(i) Ca^{2+}, Mg^{2+}, Al^{3+}, Mn^{2+}, Cr^{6+}, Fe^{3+}
(ii) F^-, Cl^-, PO_4^{3-}, NO_2^-, NO_3^-, SO_4^{2-}, BO_3^{3-}.

E. ATOMIC ABSORPTION SPECTROPHOTOMETER

Determination of metal contents (Fe/Pb/As/Zn/Co/Ni etc.) in real and environmental samples.

F. MISCELLANEOUS

(i) Nutrient and micronutrient analysis in plant/soil/sediment.
(ii) Speciation of toxic metals i.e. As, Hg, Se, etc.
(iii) Analysis of clinical samples i.e. blood, urine, hair, etc.

- **Some advanced level sophisticated instrument based (FTIR, NMR, GC-MS, AAS, FLUORESCENCE SPECTROPHOTOMETER, TENSIOMETER etc) experiments may be given to the students.**

BOOK SUGGESTED :

1. Quantitative Inorganic Analysis, A.I. Vogel.
2. Standard Methods of Water Analysis.
3. Colorimetric Determination of Traces of Metals, E.B. Sandell.
4. GBC, Manuals on AAS analysis, Austria.

SYLLABUS

2016-2017

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SYLLABUS FOR 2016-17

M. Sc. ZOOLOGY

Semester	Paper	Title	External marks	Internal marks	Credit
First JULY-DEC, 2016	I	Biosystematics, Taxonomy and Biodiversity	**80**	**20**	4
	II	Structure and Function of Invertebrates	**80**	**20**	4
	III	Population Genetics and Evolution	**80**	**20**	4
	IV	Tools & Techniques in Biology	**80**	**20**	4
	LC-I	Lab Course I (Based on paper I & II)	**80**	**20**	2
	LC-II	Lab Course II (Based on paper III & IV)	**80**	**20**	2
Second JAN-JUNE, 2017	I	Molecular Cell Biology and Biotechnology	**80**	**20**	4
	II	General Physiology and Endocrinology	**80**	**20**	4
	III	Development Biology	**80**	**20**	4
	IV	Quantitative Biology and Computer Application	**80**	**20**	4
	LC-I	Lab Course I (Based on paper I & II)	**80**	**20**	2
	LC-II	Lab Course II (Based on paper III & IV)	**80**	**20**	2
Third JULY-DEC, 2017	I	Comparative Anatomy of Vertebrates	**80**	**20**	4
	II	Animal Behaviour	**80**	**20**	4
	III	Environment Physiology and Population Ecology	**80**	**20**	4
	IV	Immunology and	**80**	**20**	4

		Parasitism			
	LC-I	Lab Course I (Based on paper I & II)	**80**	**20**	2
	LC-II	Lab Course II (Based on paper III & IV)	**80**	**20**	2
	Compulsory				
Fourth JAN-JUNE, 2018	I	Biochemistry	**80**	**20**	4
	II	Neurophysiology	**80**	**20**	4
	Optional papers (Group I)*				
	I	Fish (ichthyology) structure and function	**80**	**20**	4
	II	Cell biology	**80**	**20**	4
	III	Entomology	**80**	**20**	4
	IV	Wild life conservation	**80**	**20**	4
	V	Biology of Vertebrate immune system	**80**	**20**	4
	Optional paper (Group II)*				
	I	Pisciculture and economic importance of fishes (Icthyology)	**80**	**20**	4
	II	Cellular organization and molecular organization	**80**	**20**	4
	III	Applied entomology	**80**	**20**	4
	IV	Environment and Biodiversity conservation	**80**	**20**	4
	V	Molecular endocrinology and reproductive technology	**80**	**20**	4
	LC-I	Lab Course I (Based on paper I & II)	**80**	**20**	2
	LC-II	Lab Course I (Based on paper III & IV)	**80**	**20**	2
Total			**1920**	**480**	**80**

* Student has choice to opt. for one paper each (special paper) from group I & group II.

*Each theory paper will have 5 questions of equal marks. First question will encompass all the four units without any internal choice, whereas rest questions will be unit wise with internal choice.

UGC guideline should be strictly followed for animal dissections. Animal dissections can be performed by using alternate methods like clay modeling.

**The respective teachers on each paper will ensure the internal evaluation by a class test and a seminar/ poster presentation of 10 marks each and submit the foil and counter foil to the HOD by the end the activity.

M. Sc. ZOOLOGY FIRST SEMESTER

PAPER – I
BIOSYSTEMATICS, TAXONOMY AND BIODIVERSITY

(There will be 5 questions of equal marks. First question will encompass all the four units without any internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Definition and basic concepts of biosystematics and taxonomy.
    - Historical resume of systematics.
    - Importance and applications of biosystematics in biology

Trends in biosystematics concepts of different conventional and newer aspects

- Chemotaxonomy
- Cytotaxonomy
- Molecular taxonomy

UNIT-II

Dimensions of speciation and taxonomic characters

- Mechanisms of speciation in panmictic and apomictic species
- Species concepts and species category.
- Theories of biological classification.
- Taxonomic characters and different kinds.

UNIT-III

- Procedure keys in taxonomy.
    - Taxonomic procedures-taxonomic collections, preservation, curetting
    - Taxonomic keys-different kinds of taxonomic keys, their merits and demerits.
    - Process of typification and different Zoological types.
    - International code of Zoological Nomenclature (ICZN)

UNIT-IV

- Biodiversity

- Types of Biodiversity
- Hot spots of Biodiversity
- Threats to Biodiversity
- Conservation of Biodiversity

- Evaluation of biodiversity indices

  6.1 Shannon-Weiner index.

<u>SUGGESTED READING MATERIALS</u> - (ALL LATEST EDITION)

- **Biosystematics & Taxonomy**

  Dr.R.C.Tripathi, University Book House JAIPUR.

- **Theory & Practice of Animal Taxonomy**
  V.C. Kapoor, 5th Edition Oxford & IBH Publishing Co.
- **Principle of Animal Taxonomy**
  G.G. Simpson, Oxford & IBH Publishing Co.
- **Elements of Taxonomy**
  Earnst Mayer
- **Biodiversity**
  E.O. Vilson, Acadmic Press Washington
- **The Biology of Biodiversity M. Kato,**
  Springer
- **Molecular Markers - Natural History & Evolution J.C. Avise**

M.Sc. ZOOLOGY FIRST SEMESTER

PAPER-II: STRUCTURE & FUNCTION OF INVERTEBRATES

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Organization of coelom
  - Acoelomates and Pseudocoelomates
  - Coelomates: Protostomia and Deuterostomia.
- Locomotion

- Flagellar and cilliary movement in Protozoa.
- Hydrostatic movement in Coelenterata, Annelida and Echinodermata.

UNIT-II

- Nutrition and Digestion
  - Patterns of feeding and digestion in Protozoa
  - Filter feeding in polychaeta.
- Respiration
  - Organs of respiration Gills, lungs and trachea.
  - Respiratory pigments.

UNIT-III

- Excretion
  - Organs of excretion.
  - Excretion and osmoregulation
- Nervous System
  - Primitive nervous system: Coelenterata and Echinodermata.
  - Advanced Nervous system: Annelida, Arthropoda (Crustacea and insecta) and Mollusca (Cephalopoda)

UNIT-IV

- Invertebrate larvae
- Larval forms of free-living and parasitic invertebrates
- Minor Phyla
  - Organization and general characters of (Ctenophore, Rotifera, Ectoprocta, Endoprocta)

SUGGESTED READING MATERIALS (ALL LATEST EDITION)

- **Invertebrate Structure and function:-**
  E.J.W. Barrigton English language Book society UK.
- **Invertebrate Zoology:**
  Robert Barnes IVth Edition Holt Saunders International Edition Japan.
- **The Cambrige Natural History Vol 1 - 9.**
  S F Harmer, A.E. Shipley.
  Todays & Tomorrows Book agency, New Delhi India.
- **A Text book of Zoology Invertebrate:**
  Parker Hasvell, Marshall & Williams. AITBS Publishing & Distributers, Delhi
- **The Invertebrates Vol. 1 - 9**
  Libbic Henrietta Hyman, McGraw Hill Book Company

M. Sc. ZOOLOGY FIRST SEMESTER

PAPER-III: POPULATION GENETICS & EVOLUTION

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Concepts of evolution and theories of organic evolution: Lamarckism, Darwinism and Synthetic theory of evolution
- Evidences of evolution: anatomical, embryological, palaentological, physiological and Bio-chemical

Unit-II

- Hardy-Weinberg law of genetic equilibrium
- Detailed account of destabilizing forces.
- Natural selection
    - Mutation
    - Genetic drift
    - Meiotic drive
- Phenotypic variation

UNIT-III

- Patterns and mechanisms of reproductive isolation
- Phylogenetic and biological concepts of species
- Gene Evolution, Evolution of gene families
- Factors affecting human disease frequency

UNIT-IV

- Origin of higher categories
- Micro-and Macro-evolution
- Evolution of horse, elephant, camel, man

SUGGESTED READING MATERIALS - (ALL LATEST EDITION)

- **Gene & Evolution**
  Jha A.P. John Publication, New Delhi
- **Evolution & Genetics**
  Merrel D.J. Holt rinchert & Wiston INC.
- **The Genetics & Origin of Species**
  Dobzhansky, Columbia University Press.
- **Evolution**

Dobzhansky, Ayala F.J., Stebbins G.L. & Valentine J.M. Surjeet Publication New Delhi.

- **Species Evolution - The Role of Chromosomal Change**
  King M. Cambridge University Press.Cambridge
- **A Primer of Population Genetics**
  Hartl D.L. Suinaer Associates INC, Massachusetts
- **Evolutionary Genetics**
  Smith J.M. Oxford University Press, NewYork
- **Evolutionary Biology**
- Futuyama D.J. Suinaer Associates INC publishers, Dunderland
- **Evolution**
  Strikberger M.W. Johns & Bartett Publishers, Boston London

M. Sc. ZOOLOGY FIRST SEMESTER

PAPER-IV: TOOLS & TECHNIQUES IN BIOLOGY

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Principles and application of
  - Ultracentrifugation
  - Electrophoresis
  - Chromatography (various types)
  - Lambert-Beers Law and colorimetry and spectrophotometry
  - Flow cytometry.

UNIT-II

- Principles and Application of
  - Light Microscopy and micrometry
  - Phase Contrast microscopy
  - Interference microscopy
  - Fluorescence microscopy
  - Transmission Electron microscopy.
  - Scanning Electron microscopy.

UNIT-III

- Assay
- Chemical assays
- Biological assays-in vivo and in vitro

- Principles of cytological and cytochemical techniques
    - Fixation: chemical basis of fixation by formaldehyde, gluteraldehyde, chromium salts, mercury salts, osmium salts, alcohol and acetone
    - Chemical basis of staining of carbohydrate, protein lipids and nucleic acids.

UNIT-IV

- Principle and techniques of
    - Nucleic acid hybridization and cot curve
    - Sequencing of proteins and nucleic acids
- Freeze techniques
- Media preparation and sterilization
- Inoculation and growth monitoring

SUGGESTED READING MATERIALS - (ALL LATEST EDITION)

- **Introduction to Instrumental Analysis**
    - **Robert Braun,** McGraw Hill International Edition
- **A biologist guide to principles and techniques of practical biochemistry**
    - **K Wilson and K. H. Goulding** ELBs Edition
- **Instrumentation**
    - **Upadhyay and Nath,** Meerut Publications
- **Instrumentation and Techniques**
    - **R.C. Bajpayee,** Himalayan Publications

M. Sc. ZOOLOGY FIRST SEMESTER

LAB COUSE-I: (PRACTICAL BASED ON PAPER I & II)

- **Biosystematics and Taxonomy**

- Study of biodiversity among various invertebrates and vertebrates (Listing of all the animals found in and around your house and also try to find out their Zoological names).
- Collection of various insect species.
- Visits to a local animal park or zoo to identify and study the captive fauna and preparation of report.
- Study of adaptive characteristics of various invertebrates and vertebrates in different climate.
- Taxonomic key formation and conversion.
- Study of biodiversity in grassland and pond water by using Shannon -Weiner index

- Other exercise related to theory paper

- **Structure and function of invertebrates**
  - Identification, classification and study of distinguishing features of important representatives from various groups (Protozoa to Hemichordata)**.**
  - Study of permanent prepared slides (from Protozoa to Hemichordata).
  - Dissection by using alternate methods like clay modeling : Reproductive, Excretory, nervous and haemocoelomic systems of leech.
  - Dissection by using alternate methods like clay modeling: Reproductive system of cockroach; general anatomy, nervous and reproductive systems of grasshopper; nervous system of crab; nervous and reproductive systems of scorpion.
  - Dissection by using alternate methods like clay modeling: Nervous system of Mytilus, Sepia and Aplysia, general anatomy of Aplysia.
  - Study of sections of the arm of a starfish; general anatomy of a Holothurian; Aristotle's lantern of a sea urchin complete as well as disarticulated parts of the Aristotle's lantern.
  - Permanent preparations of different materials to be provided for study.
  - Wonder invertebrates
  - Other exercise related to theory paper.

* UGC guideline should be followed.

EXAMINATION SCHEME

Based on paper I	35 marks
Based on paper II	35 marks
Viva	10 marks
Sessional (Internal)	20 mark
Total	**80+20 (100)**

M. Sc. ZOOLOGY FIRST SEMESTER
LAB COUSE-II: (PRACTICAL BASED ON PAPER III & IV)

- **Population genetics and evolution**

  - Problems on genetics (complete and incomplete linkage; dominance, sex-linked inheritance) Demonstration of Hardy-Weinberg law
  - Preparation of human chromosomes map, demonstration of chromosomal deficiencies.
  - Experiments based on population genetics, pedigree analysis.
  - Study of evolution of horse by way of models.
  - Study of evolution through homologous and analogous organs.
  - Other exercises related to theory paper.

- **Tools and techniques in biology**

  - Parts study, principles and use of following instruments for different techniques:
    - pH meter: Determination of pH of different soil and water samples.
    - Spectrophotometer: Preparation of absorption spectrum.
    - Chromatography: Paper and thin layer chromatography.
    - Centrifuge: Extraction proteins and carbohydrates from tissues.
    - Electrophoresis: Paper and gel electrophoresis.
    - Microscope: Parts study and principles of various microscopes.
    - Demonstration of cryostat.
    - Other exercise related to theory paper.

EXAMINATION SCHEME

Based on paper III	35 marks
Based on paper IV	35 marks
Viva	10 marks
Sessional (Internal)	20 Mark
Total	**80+20 (100)**

M. Sc. ZOOLOGY SECOND SEMESTER

PAPER – I: MOLECULAR CELL BIOLOGY AND BIOTECHNOLOGY

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Biomembranes
  - Molecular composition and arrangement
    Transport across membrane
  - Structure and
    function
    Mitochondria
  - Golgi complex
    Lysosome
    Ribosome

UNIT-II

- DNA replication
- Transcription
- Translation
  - Genetic code
  - Mechanisms of initiation, elongation and termination
  - Regulation of translation

UNIT-III

- Genome organization
  - Chromosomal organization: morphological and structural types.
  - Non-coding DNA
- Molecular mapping of genome
  - Genetic and physical maps
  - Polymerase Chain Reaction (PCR) and blotting techniques
  - Molecular markers in genome analysis.

UNIT-IV

- Transgenic animals and knock-outs
  - Production and applications
  - Embryonic stem cells
- Application of genetic engineering
  - Medicine
  - Agriculture
  - Industry

SUGGESTED READING MATERIALS - (ALL LATEST EDITION)

- **MOLECULAR CELL BIOLOGY**

  Lodish, W.H. Freeman & Co. NewYork
- **Lehninger PRINCIPLES OF BIOCHEMISTRY,**

  Fourth Edition - David L [1]. Nelson, Michael M. Cox
- **MOLECULAR CELL BIOLOGY**

  Lodish M. Baltimore, Scientific American books
- **ESSENTIALS OF CELL & MOLECULAR BIOLOGY**

Roberties & Roberties, Halt Saunders International Edition.

- **CELL & MOLECULAR CELL BIOLOGY**

Gerald Karp, Willey & Sons Co.

- **MEDICAL CELL BIOLOGY**

Flickinger E.J. Brown J.C. Halt Saunders International Edition.

- **CELL BIOLOGY**

Powar C.B. Himalaya Publishing House

M. Sc. ZOOLOGY SEMESTER - II

PAPER – II: GENERAL PHYSIOLOGY AND ENDOCRINOLOGY

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Digestion and Metabolism
    - General organization of alimentary canal
    - Mechanism of digestion
    - Mechanism of absorption
- Gas Exchange and Acid-base Balance
    - Oxygen and Carbon dioxide transport in blood
    - The role of hemoglobin
    - Regulation of body pH

UNIT-II

- Muscle Function and Movement
    - Anatomy of muscle
    - Mechanism of muscle contraction
    - Regulation of muscle contraction
- Nervous System
    - Neurons and membrane excitation
    - Action potentials

- Synapses and neurotransmitters

UNIT III

- Sensory Transduction
    - Auditory receptors
    - Chemoreceptor: taste and smell
    - Vision and Photoreception
- Thermoregulation and Cold Tolerance
    - Heat balance and exchange
    - Endotherms Vs Ectotherms
    - Torpor, hibernation and aestivation

UNIT-IV

- Endocrinology
    - Structure and functions of endocrine glands (Pituitary, pineal, pancreas, adrenal, thyroid etc.)
    - Biosynthesis of hormones (thyroid and gonadal)
    - Hormones and Reproduction

SUGGESTED READING MATERIALS - (ALL LATEST EDITION)

- Comparative vertebrate Endocrinology – by **Gorbman & Bern**
- Human Physiology – by **Dr. C. C. Chatterjee**
- Comparative Endocrinology – by **Barrington**
- Applied Animal Endocrinology – by **Squires**
- **Endocrinology –** Basic & Clinical principles - by **Melmed & Cohn**

M. Sc. ZOOLOGY SEMESTER - II

PAPER – III: DEVELOPMENT BIOLOGY

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Oogenesis
    - Differentiation and growth of oocytes.
    - Organization of egg cytoplasm and egg cortex.
    - Vitellogenesis
- Spermatogenesis
    - Differentiation and ultra structure of sperm
    - Capicitation

UNIT-II

- Fertilization
    - Biological role of fertilization.
    - Basic requirements of fertilization.
    - Activation of egg metabolism
    - Biochemistry of fertilization
- Cleavage
    - Characteristics and mechanisms of cleavages

UNIT-III

- Formative movements
- Fate maps
    - Utility and comparative topographical relationship of the

      Presumptive areas in early embryos of
        - Amphioxus
        - Fishes
        - Amphibian
        - Birds
- Differentiation

UNIT-IV

- Cell and tissue interactions in development
    - Primary embryonic induction

- Competence
- Concept of organizer

- Metamorphosis

- Teratology

SUGGESTED READINGS MATERIALS

- **Animal Gametes** –

  Vishmanath, Asia Publishing House
- **Foundation Of Embrology** –

  Bradley M.Patten, McGrow Publication
- **Fertilization In Animals** –

  Brain Dale, Arlond Heiniman, Gulab Vazerani Publication
- **Development Biology** -

  N.J. Berril, Tata McGraw Hill Publication N. Delhi
- **Embryology Of Vertebrates** -

  Nelson

M. Sc. ZOOLOGY SEMESTER - II

PAPER – IV: QUANTITATIVE BIOLOGY AND COMPUTER APPLICATION

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Introduction to digital computer and application
  - Basic knowledge of hardware and software
  - CPU (Central Processing Unit)
  - Input and Output devices
  - Auxiliary storage system

- Operating system and Binary number system

UNIT-II

- Computer application
    - Introduction to MS office
        - Word
        - Excel
        - Power point
- Computer application in biostatistics
- Simple computation and elementary knowledge of flow chart

UNIT-III

- Types of biological data
- Representation of data
- Sample and sampling
- Measures of central tendency
- Measures of dispersion
- Hypothesis testing: Null and alternate hypothesis

UNIT-IV

- Tests of significance
    - Chi-square test

    . Student's t-test
- Analysis of Variance
- Simple linear regression
- Correlation
- Probability distribution: normal and binomial

SUGGESTED READING MATERIALS

Bataschelet. E. Introduction to mathematics for site scientist springer-verlag, berling
-Lenderen D. Modelling in behavioral ecology. Chapman & Hall London U.K.
• Snedecor, G.W. and W.G. cochran, statical methods, Affilited East, West Press New Delhi (Indian ed.)
• Muray , J.D. Methamatical Biology, Springer Verlag Berlin
• Pelon, E.C. The interpretation of ecological data : A promer on classification and ordivation.
A. lewis . Biostatics
• B.K. Mahajan Methods in Biostatics
• J.D. Murrey Mathematical Biology
• Georgs & Wilians Startical method

M. Sc. ZOOLOGY SEMESTER – II
LAB COURSE – I: (PRACTICAL BASED ON PAPER I & II)

- **Molecular biology and Biotechnology**
  - Isolation of DNA/RNA
  - Study of mitochondria from buccal epithelium by staining with supravital stains.
  - Culture of amoeba, paramecium, euglena.
  - Study of cell division mitosis/meiosis by squash and smear preparation of root tip and cockroach/grasshopper testis.
  - Study of giant chromosome in the salivary gland of Chironomous larvae or Drosophila. .
  - Study of Barr body and human chromosome.
  - Culture and study of drosophila.
  - Preparation of culture media and culture of bacteria.
  - Other exercise related to theory paper.

- **General physiology and endocrinology**
  - Estimation of RBC, hemoglobin, hematocrit/PVC, blood group and Rh factor blood clotting time.
  - Determine the blood pressure of man.
  - Determination of urea, glucose and ketone bodies in urine.
  - Demonstration of osmosis.
  - Dissection by using alternate methods like clay modeling and exposure of major endocrine glands in an experimental animals.
  - Study of histology of endocrine glands in different animal types through permanent slides and microtomy.
  - Other exercise related to theory paper.

EXAMINATION SCHEME

Exercise based on paper I	35 marks

Exercise based on paper II	35 marks
Viva	10 marks

Sessional (Internal)	20 Mark
Total	**80+20 (100)**

M. Sc. ZOOLOGY SEMESTER – II
LAB COURSE-II: (PRACTICAL BASED ON PAPER III & IV)

- **Development biology**

  - Study of slides of development of frog.
  - Study of development of Hen's egg, by cover glass window method, staining and mounting of blastodisc.
  - Study of caudal regeneration in Teleost (Meal time effect).
  - Study of embryological slides: spermatogenesis, oogenesis, histology of gonads.
  - Study of effect of NaF/urea on growth of fish fingerlings.
  - Study of effect of thyroid hormone on metamorphosis of tadpole
  - Other exercises related to theory paper

- **Quantitative biology and computer application**

  - Preparation of frequency tables and graphs.
  - Calculation of standard deviation, variance and standard error of mean.
  - Calculation of probability and significance between means using t-test,Chi-square test, ANOVA
  - Calculation of correlation, regression and probability distribution.
  - Computer software use for computational tasks, data presentation, design task and communication
  - Other exercises related to theory paper.

EXAMINATION SCHEME

Exercise based on paper III	35 mark
Exercise based on paper IV	35 mark
Viva	10 mark
Sessional (Internal)	20 Mark
Total	**80+20 (100)**

M. Sc. ZOOLOGY SEMESTER - III

PAPER-I: COMPARATIVE ANATOMY OF VERTEBRATES

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise) with internal choice.

UNIT-I

- Origin of Chordates
- Amphibians, Reptiles, Birds and Mammals.
- Classification of Vertebrates
  - Amphibians
  - Reptiles
  - Birds
  - Mammals.

UNIT-II

- Vertebrate integument and its derivatives.
  - General structure and functions of Integument.
  - Structure and functions of glands, scales, horns, claws, nails, hoof, feather and hair.

. Skeletal system in vertebrates.

.Comparative account of (i) Jaw suspensorium, (ii) Limbs and Girdles.

UNIT-III

. Respiration in Vertebrates.

.Comparative account of respiratory organs (structure and functions).

- Circulation in Vertebrates.
  - Structure and function of blood.
  - Evolution of heart.
  - Evolution of aortic arches.

UNIT-IV

. Nervous System – Central, Peripheral and Autonomic.

- Sense organs.

. Comparative account of Sensory Receptors.

- Evolution of Urinogenital system in vertebrates.

SUGGESTED READING MATERIALS - (ALL LATEST EDITION)

- **Vertebrate life** :– William N. Ferland, F. Harvey pough, Tom J Gode, John B. Heiser
- Collier MacNillem International edition
- **Chordate morphology** :–Malcom Jollie
- Reinhold Publishing Corporation NewYork
- **Chordate –Structure & Function** :- Arnold G. Khage, B.E. Fry Johanson
- Mc Millan Publishing Co. INC. NewYork
- **Comparative Animal Physiology** :- Orosser
- Satish Book Enterprises, Agra
- **The Vertebrate Body** :- Alfred Sherwood Romer
- Vakils, Feffer & Simons Publications Ltd.

M. Sc. ZOOLOGY SEMESTER – III

PAPER-II: ANIMAL BEHAVIOUR

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise) with internal choice.

UNIT- I

. Historical perspectives- Ethology

- Behavioural patterns
- Innate behaviour
- Biological rhythms
  - Types of biological rhythm
  - Biological clock

UNIT- II

- Communications
  - Auditory
  - Visual
  - Chemical
- Learning and Memory

- Conditioning
- Habituation
- Reasoning
- Reproductive behaviour.

UNIT-III

Orientation

- Echolocation in bats
- Bird migration and navigation.
- Fish migration.

- Neural and hormonal control of behaviour

UNIT-IV

.Hormonal effect on behavioural patterns.

- Social behaviour
  - Social organization in insects and primates
  - Schooling in fishes and Flocking in birds
  - Homing, territoriality, dispersal
  - Altruism
  - Host–parasite relation

SUGGESTED READING MATERIALS - (ALL LATEST EDITION)

- **ANIMAL BEHAVIOR – Mc Farland** (English Language Book Society)
- **ANIMAL BEHAVIOR – Arora M.P.** (Himalaya Publishing House, Mumbai)
- **ANIMAL BEHAVIOR - Reena Mathur** (Rastogi Publications, Meerut)

M. Sc. ZOOLOGY SEMESTER – III

PAPER – III: ENVIRONMENT PHYSIOLOGY AND POPULATION ECOLOGY

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT – I

Population dynamics:

- Demography, life table, reproductive rates, reproductive values

- Population growth, exponential, non overlapping
- Stochastic and time lag models of population growth
- Population density
- Population evolution
- Community dynamics:Characteristics, development and classification

UNIT-II

- Adaptations
    - Levels of adaptation.
    - Mechanisms of adaptation.
- Adaptations to different environments.
    - Marine, shores and estuaries.
    - Freshwater.

- Terrestrial Life.

UNIT-III

- Stress Physiology

  Basic concepts of environmental stress and strain, Concept of elastic and plastic strain.
    - Stress avoidance, stress tolerance and stress resistance.
    - Acclimatization, acclimation and adaptation.
    - Endothermic and physiological mechanism of regulation of body temperature.

UNIT -IV

- Stress physiology in different conditions
    - Osmoregulation in aqueous and terrestrial habitats.
    - Physiological response to oxygen deficient stress.
    - Physiological response to body exercise.
    - Effect of meditation and yoga

SUGGESTED READING MATERIALS - (ALL LATEST EDITION)

ECOLOGY with special reference to animal & man

S. Charles, Kendeigh Prentice hall of India Pvt. Ltd. New Delhi

- **ELEMENTS OF TROPICAL ECOLOGY**

  - **Yanney Ewusie** (English language Book Society, Heine mann educational book publication)

- **FUNDAMENTALS OF ECOLOGY**

  - **Odum P.**

- **ANIMAL PHYSIOLOGY, MECHANISM AND ADAPTATION -**

  Eckert, R., W,H, Freeman and Co.

- **BIOCHEMICAL ADAPTATION -**

  Hochachka, P.W, and Somero S.N, Princeton, New Jersey

- **ANIMAL PHYSIOLOGY: ADAPTATION AND ENVIRONMENT.-**

  Schiemidt Nielsen, Cambridge

- **GENERAL & COMPARATIVE ANIMAL PHYSIOLOGY**

  Hoar W.S. Princeton Hall of India

- **ENVIRONMENTAL PHYSIOLOGY**

  Willmer, P.G. Stone & Johansan I, Blackwell Science Oxford

M. Sc. ZOOLOGY SEMESTER – III

PAPER – IV: IMMUNOLOGY AND PARASITISM

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Cells of immune system
- B-Lymphocytes, T-lymphocytes, Null Cells

- Mononuclear cells
- Granulocytic cells (Neutrophils, Eosinophils and Basophils)
- Mast cells
- Dendritic cells
- Organs of immune system
- Primary lymphoid organs (Thymus, bone marrow)
- Secondary lymphoid organs (Lymph nodes, spleen, mucosal associated lymphoid tissue, cutaneous associated lymphoid tissue)

UNIT-II

- Immunoglobulin structure and function
- Molecular structure of Ig, Light chain and Heavy chain
- Immunoglobulin classes
- lgG
- lgM
- IgE
- lgD

Monoclonal antibodies

UNIT-III

- Antigens

Immunogenicity

- Contribution of the immunogens.
- Contribution of Biological system.
- Antigen - Antibody Interaction
- Antibody affinity and activity
- Cross reactivity
- Agglutination reactions

- Precipitation Reaction
    - Vaccine
- Active and passive immunization
- Whole organism vaccine
- Recombinant vector vaccines
- DNA vaccines

UNIT-IV

- Immune system in Health disease
- Immune response to infectious disease
- Immune response in cancer
    - Pathophysiology of parasitic infection
        - Viral infections
        - Bacterial infection
        - Helminths infection
- AIDS

SUGGESTED READING MATERIALS

- **Immunology**
    - **Kuby,** W.H. Froeman USA
- **Fundamental of Immunology**
    - **W. Paul,**
- **Essential Immunology**
    - **I.M. Roitt,** ELBs Edition
- **Immunology**
    - **Richard M. Hyde, Robert A. Patnode,** A Wiley Medical Publications

- **Reproductive Physiology**
    - **Gayton,**

M. Sc. ZOOLOGY SEMESTER – III

LAB COURSE-I: (PRACTICAL BASED ON PAPER I & II)

- **Comparative anatomy of Vertebrates**
- Identification, classification and study of distinguishing features of important representatives, museum specimens and slides (Protochordates and Chordates)
- Comparative studies of integumentary, skeleton and reproductive system of major vertebrate classes.
- Dissections by using alternate methods like clay modeling: fowl/snake cranial nerves
- Wonder vertebrates
- Other exercise related to theory paper.

- **Animal Behaviour**
- To study the phototactic response in earthworm or grain/pulse pest.

- To study the geotaxis behaviour of earthworm.
- To study the food preference and cleaning behaviour of housefly.
- To study the food preference in tribolium or grain/pulse pests.
. To study the web construction and habituation in spider.
- Estimation of body temperature and pulse rate on daily time scale.
- Estimate the time perception among various individuals at two different time points on daily time scale.
- Determination of effect of time on schooling behaviour in fish.
- Toxicological response of fish opercular and surfacing activity.

EXAMINATION SCHEME

Based on paper I	35 mark
Based on paper II	35 mark
Viva	10 mark
Sessional (Internal)	20 Mark
Total	**80+20 (100)**

M. Sc. ZOOLOGY SEMESTER – III

LAB COURSE-II: (PRACTICAL BASED ON PAPER III & IV)

- **Immunology and Parasitism**

- Dissection of primary and secondary immune organs from fish/fowl- Preparation and study of cell suspension from spleen (spleenocytes) of fish / fowl.
- Total and differential counting of leucocytes.
- Protein estimation by Lowry's method in normal and infected blood sample.
- Determination of Blood group.
- Study of permanent slides (for spotting); thymus, lymph nodes, spleen, bone marrow, types of cells squamous, cuboidal, columnar, epithelial cells, blood cells, nerve cells, muscles cells, connective tissue of various types, adipose tissue, mitotic and meiotic chromosomes and their different phases cancer cells of various types etc.
- Study of parasites in fish
- Study of various parasites through slides and specimen.
- Other exercises related to theory paper.

- **Environmental Biology, Population ecology**
- Study of biotic community in a pond/grassland ecosystem.
- Study of population growth rate (curve) in protozoan culture.
- Population dynamics of *Tribolium* sp.
- Study of biogeochemical cycles by way of models.

- Visit to some natural habitats and man made habitats to study the human impact on environment.
- Water analysis for fresh and waste water (Dissolve oxygen and chloride).
- Other exercises related to theory paper.

EXAMINATION SCHEME

Based on paper III	35 mark
Based on paper IV	35 mark
Viva	10 mark
Sessional (Internal)	20 Mark
Total	**80+20 (100)**

M. Sc. ZOOLOGY SEMESTER – IV

PAPER– I (Compulsory)
BIOCHEMISTRY

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise) with internal choice.

UNIT-I

- Properties of Proteins
  - Structure and properties of amino acids.
  - Classification of proteins.
  - Structure of proteins.
  - Biological Functions of Proteins.
  - Protein Metabolism.

UNIT-II

- Carbohydrates
  - Classification of carbohydrates.
  - Structure and Functions of Carbohydrates.
  - Carbohydrate metabolism.
- Lipid
  - Lipid structure and functions
  - Lipid metabolism.

UNIT-III

- Vitamins
  - Water and Fat soluble vitamins,
  - Chemistry, occurrence and physiological role.
- Enzymes
  - Classification and nomenclature.
  - Mechanism of action
  - Regulation of enzyme activity and functions of Co-enzymes.

UNIT-IV

- Nucleic acid
  - Chemistry of DNA.
  - Chemistry of RNA.
  - Biological importance of nucleic acids.
  - Nucleoproteins.
  - Metabolism of nucleic acids.

Suggested Reading

Lehninger Principles of Biochemistry, Fourth Edition

David L. Nelson, Michael M. Cox
Publisher: W. H. Freeman

- **Biochemistry**
  Donald Voet, Hardcover: 1616 pages,
  Publisher: Wiley; 3 edition

- **Principles of Biochemistry With a Human Focus**
  Reginald H. Garrett, Charles M. Grisham

  Publisher: Brooks Cole

- **The Molecular Basis of Cell Cycle and Growth Control**

  Gary S. Stein (Editor), Renato Baserga, Antonio Giordano, David T. Denhardt,
  Publisher: Wiley-Liss

- **Experiments in Biochemistry: A Hands-On Approach**
  Shawn O. Farrell, Ryan T. Ranallo,
  Publisher: Brooks Cole

M. Sc. ZOOLOGY SEMESTER – IV

PAPER II (Compulsory)
NEUROPHYSIOLOGY

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise) with internal choice.

UNIT - I

- Physiological role of neurosecretory cells
- Histological structure of neurons and neuroglial cells

- Physiological properties of neural fibres
- Synapsis and synaptical transmission
- Myoneural junction and neuromuscular transmission
- Degeneration and regeneration of nerve fibre

UNIT - II

- Nerve fibre, peripheral nerves, receptors and effector endings, dermatomes and muscle activity

- The spinal cord and the ascending and descending tracts
- The cranial and spinal nerves

UNIT - III

- The fore brain, brain stem, the cerebellum
- The meninges and cerebrospinal fluid
- Peripheral nervous system

UNIT - IV

- Autonomic nervous system; sympathetic and para-sympathetic nervous system with special comparison to hormonal mechanism of transmission through autonomic nervous system

- Reflex action; verities, characteristics, unconditional reflex, electrophysiology of spinal reflexes

- Sensation
- Electro encephalography and its physiological basis.

Suggested Reading

- The Brain: Our Nervous System by Seymour Simon
- Mass Action in the Nervous System by Walter J. Freeman

- Human Anatomy and Physiology with Interactive Physiology 10-System Suite, 8th Edition by Elaine N. Marieb and Katja N. Hoehn (Jan 10, 2010)

- Neuroanantomy by H.G.Snell

- Clinical Neurophysiology-Guide for Authors - Elsevier
- Foundations of Cellular Neurophysiology (Bradford Books): Daniel Johnston,

M.Sc. ZOOLOGY SEMESTER – IV

Optional papers

- The following optional papers are being suggested as below

- OPTIONAL (SPECIAL PAPER) GROUP 1

• Fish (ichthyology) structure and function
Or
• Cell Biology
Or
• Entomology
Or
• Wild life conservation
Or

- Biology of vertebrates immune system

OPTIONAL (SPECIAL PAPER) GROUP 2

- Pisci culture and economic importance of fishes (Icthyology)

Or

- Cellular organization and molecular organization

Or

- Applied entomology

Or

- Environment and Biodiversity conservation

Or

- Molecular endocrinology and reproductive technology

** Student has choice to opt for one paper each (special paper) from group 1 and group 2

M.Sc Zoology
Semester-IV

Paper- III A (optional paper)
Icthyology (Fish) Structure and Function

Unit-1

- Origin and evolution of fishes
- Classification of fishes as proposed by Berg
- Fish integument
- Locomotion
- Alimentary canal and digestion

- Unit-2

- Accessary respiratory organs
- Air bladder and its functions
- Weberian ossicles their homologies and functions
- Excretion and osmoregulation
- Acoustico-lateral line system

Unit-3

- Luminous organs
- Colouration in fishes
- Sound producing organs
- Deep sea adaptions
- Hill stream adaptions

Unit-4
- migration in fishes
- Sexual cycle and fecundity
- parental care in fishes
- Early development and hatching
- Poisonous and venomous fishes.

M.Sc Zoology
Semester-IV

Paper- III B (Optional)
Cell Biology

Unit-1
- Molecular organization of eukaryotic chromosomes : structure of nucleosome particles and higher order compectionof mitotic chromosomes, chromatin remodeling
- specialized chromosomes:structural organization and functional significance of polytene chromosomes
- DNA methylation and DNA Aase-1 Hypersensitivity in relation to gene activity and chromatin organization.
- specialized chromosomes II : structural organization and functional significance of lampbrush chromosome.
- Organisation and significance of heterochromatin.

Unit-2
- Structural organization of Eukaryotic genes, interrupted genes and overlapping genes and their evolution
- Gene families: organization, evolution and significance
- Transposable genetic elements of prokaryotes and eukaryotes Gene imitation

and molecular mechanism of occurrence of mutation repair mechanism
- Organisation of eukaryotic transcriptional machinery promoter enhancers transcription factors polymerase activators and repressors.
- DNA binding domains of transcription apparatus zinc finger steroid receptors hemeo domains HILIX-loop, Helix and Leucine Zipper.

Unit-3
- Eukaryotic transcription of Eukaryotic transcriptional control.
- Environmental modulation of gene activity (stress response) stress genes and stress proteins
- Molecular basis of thalasemias muscular dystrophy cystic fibrosis
- DNA rearrangement

- Amplification during development with special response to
- Ciliates
- Chlorine gene
- 58 RNA genes

Unit-4
- Drosophila development
- Cleavage
- Grastrulation

Origin of Anterior –Posterior (Maternal effect genes ans segmentation genes
- Drosophila development II origin of dordal ventral polarity
- Basic idea of homoetic selector genes and homeotic mutation
- Basic idea of organization of homeoboxes
- Evolutionary significance of homeoboxes

Suggested Reading Materials:
- Robertis, De and Robertis Cell and molecular biology Lea and Febiger.
- Watson Hopkis Roberts Steitz Weiner, Molecular Biology of the Gene the Benjamin, Cummings Publishin Company inc.
- Bruce A; berts Bray ewis Raff Roberts Watson Molecular Biology of the Cell,Garland Publishing inc.
- Watson Gilman Witkowski Zoller Recombinant DNA Scientific American Books.
- Karp Gerald Cell Biology.
- Lewin B., Genes VII.
- King Cell Biology.
- Kaniel L. Hartl, Elizabeth W. Jones. Genetics Principals and Analysis, Jones and Bartlett Publishers.
- Kuby, Immunology, W.H. Freeman and Company.
- Roitt Male Snustad Immunology.

M.Sc. Zoology Semester-IV
Paper- III C (Optional)
Entomology

Unit-1
- Insect head types and modification as per their habit and habitat
- Modification of mouth parts and feeding behaviour
- Structure types and function of antennae
- Hypothetical wing venation
- Structure of cuticle and pigment

Unit-2
- Sclerotisation and tanning of the cuticle
- Structure of alimentary canal and Physiology of digestion
- Malphighian tubules – anatomical organization , Transport mechanism

- Structure of circulatory system
- Cellular elements in the haemolymph

Unit-3
. Cell mediated and humoral immunity
Structure of compound eye and Physiology of Vision
- Sound Production in insect
- Structure and function of endocrine glands
- Pheromones

Unit-4

- Embryonic membranous up to the formation of blastoderm
- Metamorphosis
- Insecticide effects on CNS
- Important pest of Soybean Modern

concept of pest management

Suggested Reading Materials:
- The Insect: Structure and function by R.F. Chapman
- Comparative Insect physiology, Biochemistry and Pharmacology .Vol :1-13.

Edited by G.A. Kerkut and L.I. Gilbert.
- Entomophagous Insect by Clausen
- Entomology bu Gilbert
- Principles of Insect Physiology by Wigglesworth.
- Fundamentals of Entomology by Elzinga
- Hand book of economic Entomology for South India by Ayyar.
- Insect cytogenetics by R.E.F.Symposium.
- Insects and plants by Sting, Lawton and southwood.
- Insect and hygiene by Busvine.
- Insect Physiology by Wigglesworth.
- Insect morphology by Mat Calf and Flint
- Applied Agricultural Entomology by Dr. Lalit Kumar Jha

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M.Sc Zoology
Semester-IV

Paper- III D (Optional)

Wild Life Conservation

Unit-1

- Wild life -
- Values of wild life - positive and negative.
- Our conservation ethics.
- Importance of conservation.
- Causes of depletion.
- World conservation strategies.
- Habitat analysis, Evaluation and management of wild life.
- Physical parameters - Topography, Geology, Soil and water.
- Biological Parameters - food, cover, forage, browse and cover estimation.
- Standard evaluation procedures - remote sensing and GIS.
- Management of habitats -
- Setting back succession.
- Grazing logging.
- Mechanical treatment.
- Advancing the successional process.
- Cover construction.
- Preservation of general genetic diversity.

Unit-2

- Population estimation.
- Population density, Natality, Birth rate, Mortality, fertility schedules and sex ratio computation.
- Faecal analysis of ungulates and carnivores - Faecal samples, slide preparation,Hair identification, Pug marks and census method.
- National Organization.
- Indian board of wild life.
- Bombay Natural History Society.
- Voluntary organization involed in wild life conservation.
- Wild life Legislation - Wild Protection act - 1972, its amendments and implementation.
- Management planning of wild life in protected areas.
- Estimation of carrying capacity

Unit-3

- Eco tourism / wild life tourism in forests.
- Concept of climax persistence.
- Ecology of perturbence.
- Management of excess population & translocation.
- Bio- telemetry.
- Care of injured and diseased animal.

Unit-4
- Quarantine.
- Common diseases of wild animal.
- Protected areas National parks & sanctuaries, Community reserve.
- Important features of protected areas in India.
- Tiger conservation - Tiger reserve in M.P, in India.
- Management challenges in Tiger reserve.

Suggested Reading Materials:

- Gopal Rajesh : Fundamentals of wild life management
- Agrawal K.C : Wild life India
- Dwivedi A.P (2008) : Management wild life in India
- Asthana D.K : Envionment problem and solution
- Rodgers N.A & Panwar H.S : Planning of wild life / Protected area Network in India vol. the report, wild life Institute of India Dehradun.
- Odum E.P : Fundamentals of Ecology
- Saharia V.B : Wild life in India
- Tiwari S.K : Wild life in Central India
- E.P Gee : Wild life of India
- Negi S.S : Wild life conservation (Natraj Publishers)

M.Sc Zoology
Semester-IV

Paper- III E (Optional)
Biology of vertebrate immune system

Unit-1
- Tissues of Immune system- Primary lymphoid organs, structure and functions (Thymus and Bursa of Fabricius)
- tissues of Immune system- Secondary lymphoid organs, structure and functions (Spleen, lymphnode and Payers patches)
- Antigen processing
- Antigen presentation

Unit-2
- T-cell lineage and receptors
- T-cell activation

- B-cell lineage and receptors
- B-cell activation
- Immunoglobulin structure, Biological and physical properties of immunoglobulin
- Gene model for Immunoglobulin gene structure

Unit-3
- Generation of antibody diversity (Light and heavy chain)
- Immunization
- Immediate type of hypersensitivity reaction of Anaphylectic type-1.
- Antibody dependent cytotoxic type II reaction.

. Complex mediated type III reaction

Unit-4
- Delayed type cell mediated hypersensitivity type IV reaction.
- Enzyme linked immunosorbent assay (ELISA) technique and its applications.
- Immunofluorescence technique (Direct & Indirect and Sandwich antibody labelling techniques .
- Immunodiffusion techniques (Mancini and oucheterlony immunodiffusion techniques)Monoclonal antibody technology (Hybridoma technology)

M.Sc Zoology
Semester-IV

Paper- IV A (Optional)
Pisci Culture and Economic Importance of Fishes (Icthyology)

Unit-1
- Collection of fish seed from natural resources and transportation of fish seed.
- Breeding in fish, Bundh breeding and Induced breeding.
- Types of ponds required for fresh water fish culture farms.
- Management of fish farm.
- Physiochemical factors of freshwater for fish farming.

Unit-2
- Composite fish culture
- Prawn culture and pearl industries in India.
- Fisheries resources of C.G.
- Riverine fishries.

Unit-3
- Costal fishries in India
- Offshore and deep sea fishery's in India

- Role of fishries in rural development
- Sewage fed fishries

Unit-4
- Methods of fish preservation
- Marketing of fish in India.
- Economic importance and by product of fishes

- Fish disease.

Suggested Reading Materials:
Paper III A & IV A

- JR. Norman - The History of fishes.
- Nagaraja Rao - An introduction to fisheries.
- Lagler Ichthyology.
- Herclen Jones Fish migration.
- Marshal The life of fishes.
- Thomas - Diseases of fish.
- Greenwood - Inter relationship of fishes.
- Gopalji, Srivastava - Freshwater fishes of U.P. and Bihar.
- Brown -Physiology of fishes Vol. I & II.
- Hoar and Randall -Fish physiology of fishes Vol. 1 & IX.
- Gunther Sterba C.N.H.-Freshwater fishes of the world
- W. Lanharn -The Fishes.
- G.V. Nikolsky -The ecology of Fishes,
- Borgstram -Fish as food Vol. I & II.
- Nilsson -Fish physiology -Recent Advances.
- P.B. Myle and J.J. Cech Fishes An Introduction to Ichthyology.
- Carl E. Bond -Biology of fishes.
- M. Jobling -Environmental Biology of fishes.
- Santosh Kumar & Manju Ternbhre -Fish and Fisheries.
- S.K. Gupta -Fish and Fisheries
- K.P. Vishwas -Fish and Fishries.
- Jhingaran -Fish and Fishries.

M.Sc Zoology
Semester-IV

Paper- IV B (Optional)
Cellular Organization and Molecular Organization.

Unit-1

- General organization and characterizes of viruses (Examples SV 40 and HIV).

- Yeast : Structure, reproduction and chromosome organization: Basic ides of its applications as vectors for gene cloning.
- Molecular organization of reoiratory chain assemblies, ATP / ADP Translocase and F0F1 AT pase.
- Cell cycle: Cell cycle control in mammalian cells and xenopus.
- Cytochemistry of Golgin complex and its role in cell seretion.,

Unit-2

- Peroxisomes and training of paroxysmal proteins.
- Nucleolus: Structure and Biogenesis and functions of lysosomes.
- Intracellular digestion : Ultra structure and function of lysosomes.
- Synthesis and targeting of mitochondrial proteins.
- Secretary pathways and translocation of secretary proteins across the EPR membrane.

Unit-3

- Genome complexity: C- value [paradox and cot value].
- DNA sequences of different complexity.
- Difference between normal cells and cancer cells.
- Biochemical changes.
- Cytoskeleton changes.
- Cell surface changes.
- Genetic basis of human cancer

Unit-4

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- Chromosomal abnormalities in human cancer.

- General idea of onchogens and proto onchogens.
- Onchogence and cancer.
- Transforming Agents.
- Tumor Supressor geanes.
- Receptor – Ligand interaction and signal transduction.

Cross – talk among various signaling pathways.

Suggested Reading Materials:

- DeRobertis and De Robertis Cell and Molecular Biology. Lea and Febiger.
- We Watson Hopking reberts steits, Weiner molecular biology of the gene, the Benjamin / Cummings Publishin Company Inc.
- Bruce alberts, Bray, Lewis, Raff, Roberts, Watson molecular Biology of the cell garland publishing inc.
- P.K. Gupta, Molecular Cell Biology Rastogi Publication.
- Watson Gilman Witkowski, Zoller Recomdinant D.N.A. scientific American Books.
- Gerald Karp. Cell Biology.
- Lewin B. Genes VII.

- King Cell Biology.
- Baniel L. HArtl Elizabeth W. Jones, Genetics Principles and analysis . Jones and Bartlett Publisher.
- Lodish, Berk Zipursky, Matsudaira Baltimore Dernell Molecular Cell Biology W.H.Freeman and company.
- J. Travers Immunology current Biology limited.

- Kubey Immunology W.H. Freeman and Company.
- Riott, Male snustad Principles of genetics john weley and sons Inc.

M.Sc Zoology
Semester-IV

Paper- IV C (Optional)

Applied Entomology

Unit-1
Classification according to imms
- Classification of apterygota upto families.
- Classification of following insect orders

(a) orthoptera (b) hemiptera (c) diptera.
- Classification of following insect order

(a) hymenoptera (b) lepidoptera (c) coleoptera
- Collection and preservation of insects.

Unit-2
- Insect pest-Management strategies and tools
- Biological control, Genetic control, Chemical control
- Pests of Cotton
- Pests of sugarcane
- Pests of paddy
- Pests of stored food grains
- Pests of citrus fruits and mango
- Pests of pulses
- House hold insect pests

Unit-3
- Insects in relation to forensic science
- Insects migration, population fluctuation and factors
    - Insects of medical and veterinary importance
- Ecological factors affecting the population and development of

Insects

Unit-4
- Mulberry and non mulberry sericulture
- Apiculture
- Lac culture

- Insects as human food for future.

M.Sc Zoology Semester-IV

Paper- IV D (Optional)

Environment & Biodiversity Conservation

Unit I

• Basic concept of Environmental Biology Scope and Environmental Science
• Biosphere and Biogeochemical cycles.
• Environmental monitoring and impact assessment.
• Environmental and sustainable development.
• Water conservation, rain water harvesting, water shed management.

Unit II

• Cause, effects and remedial measure of Air pollution, Water pollution.
• Noise. radioactive and thermal pollution.
• Agriculture pollution
• Basic concepts of Bioaccumulation.
• Solid waste management.

Unit III

Global warming and disaster management

• Cause of global warming
• Impact of global warming – acid rains and ozone depletion, green house effect.
• Control measures of global warming
• Afforestation (b) reduction in the use of CFCS
• Disaster management -floods, earthquake, Cyclones landslides.
• Environmental legislation.

Unit IV

Natural Resources:- Forest

-

• Use and over exploitation of forests.
• Timber extraction.

Land

• Land degradation. Landslides.
• Soil-ersion and desertification.

Water

• Use and over utilization of surface and ground

water

• Floods. Drought dams- benefits and problems
Mineral
• Use and exploitation ,
• Environmental effect of extracting and using
mineral resources
Food
• World food problem
• Effects of modern agriculture and overgrazing
Energy
• Conventional and nonconventional energy resources.
• Using of alternate energy sources
- Role of an individual in conservation of natural resources
Equitable use of resources for sustainable life
• Biodiversity crisis – habitat degradation poaching of wild life.
• Socio economic and political causes of loss of biodiversity.
• In situ and exsitu conservation of biodiversity
• Value of biodiversity.

Suggested Reading Materials:
Paper III D & IV D

- Arora : Fundamentals of environmental biology
- Anathakrishnan : Bioresources ecology
- Bottain : Environmental studies
- Bouhey : Ecology of populations
- Clark : Elements of ecology
- Dowdoswell : An introduction to animal ecology
- Goldman : Limnology
- Kormondy : Concepts of ecology
- May : Model ecosystems
- Odum : Ecology
- Perkins : Ecology
- Simmons : Ecology of estuaries and costal water
- Pawlosuske : Physico-chemical methods for water
- South Woods : Ecological methods
- Trivedi and Goel : Chemical and biological methods for water pollution studies
- Willington : Fresh water biology
- Wetzal : Limnology
- Welch : Limnology Vols. I-II

M.Sc Zoology
Semester-IV

Paper- IV E (Optional)

Molecular Endocrinology and Reproductive Technology

UNIT-1

- Definition and scope of molecular endocrinology.
- Chemical nature of Hormones-
- Protein & polypeptides.
- Amino acid derivative
- Steroids
- Phospholipids derivative
- (tissue hormones)
- Purification and characterization of Hormones.

UNIT-2

- Receptor.
- Membrane Receptor.
- Nuclear Receptor.
- Orphan Receptor
- G-Protein
- Nuclear Receptor

UNIT-3

- Hormone – Transduction
- G-Protein & Cyclic Nucleosides.
- Calcium calmoduline & phospholipids.
- Miscellaneous Second Messengers.
- Phosphorylation & other non transcriptional effect of Hormones.
- Genetic control of formation of Hormone.
- Transcription.
- Post transcription.
- Translation.
- Post translation
- Secretion of Hormone.

UNIT-4

- Multiple ovulation and embryo transfer Technology.
- Study of estrous cycle by vaginal smear technology
- Surgical technique-

- Castration
- Ovariectomy
- Vasectomy
- Tuectomy
- Laprotomy.

Suggested Reading Materials:

- Benjamin Lewim – Genes VII/ VIII, oxford University press.
- Lodish etal- Molecular Cell Biology.
- Zarrow, M.X., Yochin J.M. and Machrthy, J.L. – Experimental Endocrinology.
- Chatterji C.C.- Human Physiology (Vol- II).
- Bentley, P.J. – Comparative Vertebrate endocrinology.
- Hadley Mac. E.- Endocrinology.
- Chinoy, N.J. Rao, M.V., Desarai, K.J. and High land, H.N. – Essential techniques in reproductively physiology and Endocrinology.
- Norris, D.O. – Vertebrate Endocrinology.

M.Sc. ZOOLOGY – IV SEMESTER
LAB COURSE-I (COMPULSARY)

PAPER- I BIOCHEMSTRY

1. Estimation of antioxidant enzymes.
2. Estimation of amylase.
3. Estimation of protein by Lowry method.
4. Estimation of Oil in seeds.
5. Estimation of Carbohydrate by anthrone reagent.
6. Other exercise related to theory paper.

PAPER- II NEUROPHYSIOLOGY

1. Study of slides of nervous system.
2. Neck nerve of squirrel by using alternate methods like clay modeling.
3. Study of Brain through MODAL.
4. Study of Cranial nerve of Bird, Amphibian, Reptile and Mammals by using alternate methods like clay modeling.
5. Other exercise related to theory paper.

EXAMINATION SCHEME

Based on paper I	35 marks

Based on paper II	35 marks
Viva	10 marks
Sessional (Internal)	20 mark
Total	**80+20 (100)**

M.Sc. SEMESTER-IV
LAB COURSE-II
OPTIONAL (SPECIAL PAPER) GROUP 1

PAPER-III(A) FISH (ICHTHYOLOGY) STRCTURE AND FUNCTION

1. Anatomy of various organ systems and mounting of fish materials
2. Cranial nerves of teleost fishes: *Wallago , Mystus, Labeo* and other fishes by using alternate methods like clay modeling
3. Osteology of fish: Scoliodon, carps, catfishes, murrels etc.
4. Accessory respiratory organs of air breathing fish by using alternate methods like clay modeling
5. Study of histological (permanent) slides
6. Study of museum specimens of the concerned group
7. Other exercise related to theory paper.

PAPER –III(B) CELL BIOLOGY

1. Study of mitosis from onion root tip.
2. Study of meiosis in grasshopper testis.
3. Study of polytene chromosome in Dipteran Larvae.
4. Demonstration of Barr-Body in Human Check cell.
5. Estimation of DNA.
6. Estimation of RNA.
7. Other exercise related to theory paper.

PAPER –III(C) ENTOMOLOGY

1. Anatomy of common grasshopper, cockroach, honey bee, wasp and dysdercus, mylabris, belestoma (Giant water Bugs) by using alternate methods like clay modeling.
2. Dissection by using alternate methods like clay modeling and exposure of:
(i) Sting apparatus of honey bee and wasp.
(ii) Tympanal organs of grasshoppers.
(iii) Testes of cockroach
(iv) Aristae of house fly.
(v) Different types of mouthparts of insects.

(vi) Different types of wings and antennae of insects.
(vii) Tentorium of grasshoppers.
3. Identification and comment on insects of different orders and families.
4. Identification with the help of keys of common insects from different orders and families.
9.Other exercise related to theory paper.

PAPER-III(D) WILD LIFE CONSERVATION

1. Anatomy of (by using alternate methods like clay modeling):
(a) Toad / Frog.
(b) Lizard / Snake / Turtle.
(c) Pigeon / Parrot.
(d) Rat / Squirrel.
2. Ecological survey of National Parks and Sanctuaries.
3. Mounting : Permanent preparation of parts of internal organs.
4. Study of slides of different microscopic structure.
5. Identification of wild animal species as objects of museum and zoo and specimens of photographs.
6. Osteology of wild animals.
7. Ecological comments on wild species of different niche and habits. Candidates would be required to keep records of exercise in laboratory, field types, sanctuaries and parks of importance and collections.
8. Other exercise related to theory paper.

PAPER-III(E) BIOLOGY OF VERTEBRATE IMMUNE SYSTEM

1. Dissection by using alternate methods like clay modeling of primary and secondary immune organs from mice:
a. Preparation of single cell suspension from bone marrow and spleen (spleenocytes) of mice.
b. Cell counting and viability testing of the spleenocytes prepared.

2. Preparation and study of phagocytosis by spleenic/peritoneal macrophages.

3. Raising polyclonal antibody in mice, serum collection and estimating antibody titre in serum by following methods:

a. Ouchterlony (double diffusion) assay for Antigen -antibody specificity and titre.
b. ELISA

4. Antibody purification from the serum collected from immunized mice: affinity purification/chromatography.

5. Immunoelectrophoresis.

6. Demonstration of Western blotting:
a. Protein estimation by Lowry's method /Bradford's method
b. SDS-PAGE.
c. Immunoblot analysis.

7.Other exercise related to theory paper

OPTIONAL (SPECIAL PAPER) GROUP 2

PAPER –IV(A) PISCI CULTURE AND ECONOMIC IMPORTANCE OF FISH (ICTHYOLOGY)

1. Systematic identification of freshwater fishes with particular reference to C.G.
2. Age determination with the help of scales / otolith
3. Pigmentary behaviour in fish
4. Qualitative zooplankton analysis
5. Nutrient analysis of water
6. Analysis of gut contents
7. Microtomy of fish materials
8.Other exercise related to theory paper

PAPER-IV(B) CELLULAR ORGANIZATION AND MOLECULAR ORGANIZATION

1. Histochemical demonstration of Mitochondria
2. Histochemical demonstration of Golgi complex
3. Histochemical demonstration of Lactate dehydrogenase
4. Histochemical demonstration of Succinate dehydrogenase
5. Isolation and characterization of Nuclei from liver
6. Isolation and characterization of Mitochondria
7. Isolation of DNA from any tissue
8. Separation of lipids using thin layer chromatography
9. Separation of various proteins using column chromatography
10. Study of metaphase chromosomes from rat bone marrow
11. G banding of metaphase chromosomes
12. C- banding of metaphase chromosomes
13. Estimation of Mitotic Index
14. Measurement of cell size using oculometer.
15.Other exercise related to theory paper

PAPER- IV(C) APPLIED ENTOMOLOGY

1. Insect collection and preservation for systematic studies
2. Identification of different insects upto orders
3. Identification of insects upto families of economically important insect orders
4. Identification of insects upto species: Mosquitoes, honeybees, stored grain beetles, aquatic insects, important crop and household pests
5. Analysis of honey and its quality control
6. Field studies of insects to understand their habit, habitat environmental impact, beneficial and harmful activities etc.
7. Study of beneficial insects, benefits derived from them and useful products
8. Study of destructive insects, damage caused by them and damaged products
9. Study of insecticidal formulations and insect control appliances

10. Experiments on insect control like LC-50 /LD-50, knock down and recovery effect, repellency/antifeedance tests, percentage damage tests for leaf eating insects, and stored grain pests
11.Other exercise related to theory paper

PAPER- IV(D) ENVIRONMENT AND BIODIVERSITY CONSERVATION

(i) Environmental hazards, destruction of habitat and extrication of species causes and preventive measures.
(ii) Environmental planning of rural and urban development.
(iii) Management of soil resources.
(iv) UNESCO's role in ecology, earth summit, SARC, ED trust fund.
(v) Biodiversity, its significance and conservation measures.
(vi) Role of biodiversity in species development.
VII.Other exercise related to theory paper

PAPER- VI(E) MOLECULAR ENDOCRINOLOGY AND REPRODUCTIVE TECHNOLOGY

1.Chromatography method (separation of Androgen & Progesterone).
2. Bioassay of α-Ketosteroids.
3. Bioassay of Gonadotropins.
4. Study of slide related to endocrine glands.
5. Estimation of cholesterol.
6. Estimation of catecholamine.
7. Dissection by using alternate methods like clay modeling of endocrine glands.
8. Other exercise related to theory paper.

EXAMINATION SCHEME

Based on paper III	35 marks
Based on paper IV	35 marks
Viva	10 marks
Sessional (Internal)	20 mark
Total	**80+20 (100)**

SYLLABUS

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SYLLABUS FOR 2016-17

M. Sc. ZOOLOGY

Semester	Paper	Title	External marks	Internal marks	Credit
First JULY-DEC, 2016	I	Biosystematics, Taxonomy and Biodiversity	**80**	**20**	4
	II	Structure and Function of Invertebrates	**80**	**20**	4
	III	Population Genetics and Evolution	**80**	**20**	4
	IV	Tools & Techniques in Biology	**80**	**20**	4
	LC-I	Lab Course I (Based on paper I & II)	**80**	**20**	2
	LC-II	Lab Course II (Based on paper III & IV)	**80**	**20**	2
Second JAN-JUNE, 2017	I	Molecular Cell Biology and Biotechnology	**80**	**20**	4
	II	General Physiology and Endocrinology	**80**	**20**	4
	III	Development Biology	**80**	**20**	4
	IV	Quantitative Biology and Computer Application	**80**	**20**	4
	LC-I	Lab Course I (Based on paper I & II)	**80**	**20**	2
	LC-II	Lab Course II (Based on paper III & IV)	**80**	**20**	2
Third JULY-DEC, 2017	I	Comparative Anatomy of Vertebrates	**80**	**20**	4
	II	Animal Behaviour	**80**	**20**	4
	III	Environment Physiology and Population Ecology	**80**	**20**	4
	IV	Immunology and	**80**	**20**	4

		Parasitism			
	LC-I	Lab Course I (Based on paper I & II)	**80**	**20**	2
	LC-II	Lab Course II (Based on paper III & IV)	**80**	**20**	2
	Compulsory				
Fourth JAN-JUNE, 2018	I	Biochemistry	**80**	**20**	4
	II	Neurophysiology	**80**	**20**	4
	Optional papers (Group I)*				
	I	Fish (ichthyology) structure and function	**80**	**20**	4
	II	Cell biology	**80**	**20**	4
	III	Entomology	**80**	**20**	4
	IV	Wild life conservation	**80**	**20**	4
	V	Biology of Vertebrate immune system	**80**	**20**	4
	Optional paper (Group II)*				
	I	Pisciculture and economic importance of fishes (Icthyology)	**80**	**20**	4
	II	Cellular organization and molecular organization	**80**	**20**	4
	III	Applied entomology	**80**	**20**	4
	IV	Environment and Biodiversity conservation	**80**	**20**	4
	V	Molecular endocrinology and reproductive technology	**80**	**20**	4
	LC-I	Lab Course I (Based on paper I & II)	**80**	**20**	2
	LC-II	Lab Course I (Based on paper III & IV)	**80**	**20**	2
Total			**1920**	**480**	**80**

* Student has choice to opt. for one paper each (special paper) from group I & group II.

*Each theory paper will have 5 questions of equal marks. First question will encompass all the four units without any internal choice, whereas rest questions will be unit wise with internal choice.

UGC guideline should be strictly followed for animal dissections. Animal dissections can be performed by using alternate methods like clay modeling.

**The respective teachers on each paper will ensure the internal evaluation by a class test and a seminar/ poster presentation of 10 marks each and submit the foil and counter foil to the HOD by the end the activity.

M. Sc. ZOOLOGY FIRST SEMESTER

PAPER – I
BIOSYSTEMATICS, TAXONOMY AND BIODIVERSITY

(There will be 5 questions of equal marks. First question will encompass all the four units without any internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Definition and basic concepts of biosystematics and taxonomy.
    - Historical resume of systematics.
    - Importance and applications of biosystematics in biology

Trends in biosystematics concepts of different conventional and newer aspects

- Chemotaxonomy
- Cytotaxonomy
- Molecular taxonomy

UNIT-II

Dimensions of speciation and taxonomic characters

- Mechanisms of speciation in panmictic and apomictic species
- Species concepts and species category.
- Theories of biological classification.
- Taxonomic characters and different kinds.

UNIT-III

- Procedure keys in taxonomy.
    - Taxonomic procedures-taxonomic collections, preservation, curetting
    - Taxonomic keys-different kinds of taxonomic keys, their merits and demerits.
    - Process of typification and different Zoological types.
    - International code of Zoological Nomenclature (ICZN)

UNIT-IV

- Biodiversity

- Types of Biodiversity
- Hot spots of Biodiversity
- Threats to Biodiversity
- Conservation of Biodiversity

- Evaluation of biodiversity indices

  6.1 Shannon-Weiner index.

<u>SUGGESTED READING MATERIALS</u> - (ALL LATEST EDITION)

- **Biosystematics & Taxonomy**

  Dr.R.C.Tripathi, University Book House JAIPUR.

- **Theory & Practice of Animal Taxonomy**
  V.C. Kapoor, 5th Edition Oxford & IBH Publishing Co.
- **Principle of Animal Taxonomy**
  G.G. Simpson, Oxford & IBH Publishing Co.
- **Elements of Taxonomy**
  Earnst Mayer
- **Biodiversity**
  E.O. Vilson, Acadmic Press Washington
- **The Biology of Biodiversity M. Kato,**
  Springer
- **Molecular Markers - Natural History & Evolution J.C. Avise**

M.Sc. ZOOLOGY FIRST SEMESTER

PAPER-II: STRUCTURE & FUNCTION OF INVERTEBRATES

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Organization of coelom
  - Acoelomates and Pseudocoelomates
  - Coelomates: Protostomia and Deuterostomia.
- Locomotion

- Flagellar and cilliary movement in Protozoa.
- Hydrostatic movement in Coelenterata, Annelida and Echinodermata.

UNIT-II

- Nutrition and Digestion
  - Patterns of feeding and digestion in Protozoa
  - Filter feeding in polychaeta.
- Respiration
  - Organs of respiration Gills, lungs and trachea.
  - Respiratory pigments.

UNIT-III

- Excretion
  - Organs of excretion.
  - Excretion and osmoregulation
- Nervous System
  - Primitive nervous system: Coelenterata and Echinodermata.
  - Advanced Nervous system: Annelida, Arthropoda (Crustacea and insecta) and Mollusca (Cephalopoda)

UNIT-IV

- Invertebrate larvae
- Larval forms of free-living and parasitic invertebrates
- Minor Phyla
  - Organization and general characters of (Ctenophore, Rotifera, Ectoprocta, Endoprocta)

SUGGESTED READING MATERIALS (ALL LATEST EDITION)

- **Invertebrate Structure and function:-**
  E.J.W. Barrigton English language Book society UK.
- **Invertebrate Zoology:**
  Robert Barnes IVth Edition Holt Saunders International Edition Japan.
- **The Cambrige Natural History Vol 1 - 9.**
  S F Harmer, A.E. Shipley.
  Todays & Tomorrows Book agency, New Delhi India.
- **A Text book of Zoology Invertebrate:**
  Parker Hasvell, Marshall & Williams. AITBS Publishing & Distributers, Delhi
- **The Invertebrates Vol. 1 - 9**
  Libbic Henrietta Hyman, McGraw Hill Book Company

M. Sc. ZOOLOGY FIRST SEMESTER

PAPER-III: POPULATION GENETICS & EVOLUTION

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Concepts of evolution and theories of organic evolution: Lamarckism, Darwinism and Synthetic theory of evolution
- Evidences of evolution: anatomical, embryological, palaentological, physiological and Bio-chemical

Unit-II

- Hardy-Weinberg law of genetic equilibrium
- Detailed account of destabilizing forces.
- Natural selection
    - Mutation
    - Genetic drift
    - Meiotic drive
- Phenotypic variation

UNIT-III

- Patterns and mechanisms of reproductive isolation
- Phylogenetic and biological concepts of species
- Gene Evolution, Evolution of gene families
- Factors affecting human disease frequency

UNIT-IV

- Origin of higher categories
- Micro-and Macro-evolution
- Evolution of horse, elephant, camel, man

SUGGESTED READING MATERIALS - (ALL LATEST EDITION)

- **Gene & Evolution**
  Jha A.P. John Publication, New Delhi
- **Evolution & Genetics**
  Merrel D.J. Holt rinchert & Wiston INC.
- **The Genetics & Origin of Species**
  Dobzhansky, Columbia University Press.
- **Evolution**

Dobzhansky, Ayala F.J., Stebbins G.L. & Valentine J.M. Surjeet Publication New Delhi.

- **Species Evolution - The Role of Chromosomal Change**
  King M. Cambridge University Press.Cambridge
- **A Primer of Population Genetics**
  Hartl D.L. Suinaer Associates INC, Massachusetts
- **Evolutionary Genetics**
  Smith J.M. Oxford University Press, NewYork
- **Evolutionary Biology**
- Futuyama D.J. Suinaer Associates INC publishers, Dunderland
- **Evolution**
  Strikberger M.W. Johns & Bartett Publishers, Boston London

M. Sc. ZOOLOGY FIRST SEMESTER

PAPER-IV: TOOLS & TECHNIQUES IN BIOLOGY

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Principles and application of
  - Ultracentrifugation
  - Electrophoresis
  - Chromatography (various types)
  - Lambert-Beers Law and colorimetry and spectrophotometry
  - Flow cytometry.

UNIT-II

- Principles and Application of
  - Light Microscopy and micrometry
  - Phase Contrast microscopy
  - Interference microscopy
  - Fluorescence microscopy
  - Transmission Electron microscopy.
  - Scanning Electron microscopy.

UNIT-III

- Assay
- Chemical assays
- Biological assays-in vivo and in vitro

- Principles of cytological and cytochemical techniques
    - Fixation: chemical basis of fixation by formaldehyde, gluteraldehyde, chromium salts, mercury salts, osmium salts, alcohol and acetone
    - Chemical basis of staining of carbohydrate, protein lipids and nucleic acids.

UNIT-IV

- Principle and techniques of
    - Nucleic acid hybridization and cot curve
    - Sequencing of proteins and nucleic acids
- Freeze techniques
- Media preparation and sterilization
- Inoculation and growth monitoring

SUGGESTED READING MATERIALS - (ALL LATEST EDITION)

- **Introduction to Instrumental Analysis**
    - **Robert Braun,** McGraw Hill International Edition
- **A biologist guide to principles and techniques of practical biochemistry**
    - **K Wilson and K. H. Goulding** ELBs Edition
- **Instrumentation**
    - **Upadhyay and Nath,** Meerut Publications
- **Instrumentation and Techniques**
    - **R.C. Bajpayee,** Himalayan Publications

M. Sc. ZOOLOGY FIRST SEMESTER

LAB COUSE-I: (PRACTICAL BASED ON PAPER I & II)

- **Biosystematics and Taxonomy**

- Study of biodiversity among various invertebrates and vertebrates (Listing of all the animals found in and around your house and also try to find out their Zoological names).
- Collection of various insect species.
- Visits to a local animal park or zoo to identify and study the captive fauna and preparation of report.
- Study of adaptive characteristics of various invertebrates and vertebrates in different climate.
- Taxonomic key formation and conversion.
- Study of biodiversity in grassland and pond water by using Shannon -Weiner index

- Other exercise related to theory paper

- **Structure and function of invertebrates**
  - Identification, classification and study of distinguishing features of important representatives from various groups (Protozoa to Hemichordata)**.**
  - Study of permanent prepared slides (from Protozoa to Hemichordata).
  - Dissection by using alternate methods like clay modeling : Reproductive, Excretory, nervous and haemocoelomic systems of leech.
  - Dissection by using alternate methods like clay modeling: Reproductive system of cockroach; general anatomy, nervous and reproductive systems of grasshopper; nervous system of crab; nervous and reproductive systems of scorpion.
  - Dissection by using alternate methods like clay modeling: Nervous system of Mytilus, Sepia and Aplysia, general anatomy of Aplysia.
  - Study of sections of the arm of a starfish; general anatomy of a Holothurian; Aristotle's lantern of a sea urchin complete as well as disarticulated parts of the Aristotle's lantern.
  - Permanent preparations of different materials to be provided for study.
  - Wonder invertebrates
  - Other exercise related to theory paper.

* UGC guideline should be followed.

EXAMINATION SCHEME

Based on paper I	35 marks
Based on paper II	35 marks
Viva	10 marks
Sessional (Internal)	20 mark
Total	**80+20 (100)**

M. Sc. ZOOLOGY FIRST SEMESTER
LAB COUSE-II: (PRACTICAL BASED ON PAPER III & IV)

- **Population genetics and evolution**

  - Problems on genetics (complete and incomplete linkage; dominance, sex-linked inheritance) Demonstration of Hardy-Weinberg law
  - Preparation of human chromosomes map, demonstration of chromosomal deficiencies.
  - Experiments based on population genetics, pedigree analysis.
  - Study of evolution of horse by way of models.
  - Study of evolution through homologous and analogous organs.
  - Other exercises related to theory paper.

- **Tools and techniques in biology**

  - Parts study, principles and use of following instruments for different techniques:
    - pH meter: Determination of pH of different soil and water samples.
    - Spectrophotometer: Preparation of absorption spectrum.
    - Chromatography: Paper and thin layer chromatography.
    - Centrifuge: Extraction proteins and carbohydrates from tissues.
    - Electrophoresis: Paper and gel electrophoresis.
    - Microscope: Parts study and principles of various microscopes.
    - Demonstration of cryostat.
    - Other exercise related to theory paper.

EXAMINATION SCHEME

Based on paper III	35 marks
Based on paper IV	35 marks
Viva	10 marks
Sessional (Internal)	20 Mark
Total	**80+20 (100)**

M. Sc. ZOOLOGY SECOND SEMESTER

PAPER – I: MOLECULAR CELL BIOLOGY AND BIOTECHNOLOGY

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Biomembranes
  - Molecular composition and arrangement
    Transport across membrane
  - Structure and
    function
    Mitochondria
  - Golgi complex
    Lysosome
    Ribosome

UNIT-II

- DNA replication
- Transcription
- Translation
  - Genetic code
  - Mechanisms of initiation, elongation and termination
  - Regulation of translation

UNIT-III

- Genome organization
  - Chromosomal organization: morphological and structural types.
  - Non-coding DNA
- Molecular mapping of genome
  - Genetic and physical maps
  - Polymerase Chain Reaction (PCR) and blotting techniques
  - Molecular markers in genome analysis.

UNIT-IV

- Transgenic animals and knock-outs
  - Production and applications
  - Embryonic stem cells
- Application of genetic engineering
  - Medicine
  - Agriculture
  - Industry

SUGGESTED READING MATERIALS - (ALL LATEST EDITION)

- **MOLECULAR CELL BIOLOGY**

  Lodish, W.H. Freeman & Co. NewYork
- **Lehninger PRINCIPLES OF BIOCHEMISTRY,**

  Fourth Edition - David L [1]. Nelson, Michael M. Cox
- **MOLECULAR CELL BIOLOGY**

  Lodish M. Baltimore, Scientific American books
- **ESSENTIALS OF CELL & MOLECULAR BIOLOGY**

Roberties & Roberties, Halt Saunders International Edition.

- **CELL & MOLECULAR CELL BIOLOGY**

Gerald Karp, Willey & Sons Co.

- **MEDICAL CELL BIOLOGY**

Flickinger E.J. Brown J.C. Halt Saunders International Edition.

- **CELL BIOLOGY**

Powar C.B. Himalaya Publishing House

M. Sc. ZOOLOGY SEMESTER - II

PAPER – II: GENERAL PHYSIOLOGY AND ENDOCRINOLOGY

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Digestion and Metabolism
    - General organization of alimentary canal
    - Mechanism of digestion
    - Mechanism of absorption
- Gas Exchange and Acid-base Balance
    - Oxygen and Carbon dioxide transport in blood
    - The role of hemoglobin
    - Regulation of body pH

UNIT-II

- Muscle Function and Movement
    - Anatomy of muscle
    - Mechanism of muscle contraction
    - Regulation of muscle contraction
- Nervous System
    - Neurons and membrane excitation
    - Action potentials

- Synapses and neurotransmitters

UNIT III

- Sensory Transduction
    - Auditory receptors
    - Chemoreceptor: taste and smell
    - Vision and Photoreception
- Thermoregulation and Cold Tolerance
    - Heat balance and exchange
    - Endotherms Vs Ectotherms
    - Torpor, hibernation and aestivation

UNIT-IV

- Endocrinology
    - Structure and functions of endocrine glands (Pituitary, pineal, pancreas, adrenal, thyroid etc.)
    - Biosynthesis of hormones (thyroid and gonadal)
    - Hormones and Reproduction

SUGGESTED READING MATERIALS - (ALL LATEST EDITION)

- Comparative vertebrate Endocrinology – by **Gorbman & Bern**
- Human Physiology – by **Dr. C. C. Chatterjee**
- Comparative Endocrinology – by **Barrington**
- Applied Animal Endocrinology – by **Squires**
- **Endocrinology –** Basic & Clinical principles - by **Melmed & Cohn**

M. Sc. ZOOLOGY SEMESTER - II

PAPER – III: DEVELOPMENT BIOLOGY

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Oogenesis
    - Differentiation and growth of oocytes.
    - Organization of egg cytoplasm and egg cortex.
    - Vitellogenesis
- Spermatogenesis
    - Differentiation and ultra structure of sperm
    - Capicitation

UNIT-II

- Fertilization
    - Biological role of fertilization.
    - Basic requirements of fertilization.
    - Activation of egg metabolism
    - Biochemistry of fertilization
- Cleavage
    - Characteristics and mechanisms of cleavages

UNIT-III

- Formative movements
- Fate maps
    - Utility and comparative topographical relationship of the

      Presumptive areas in early embryos of
        - Amphioxus
        - Fishes
        - Amphibian
        - Birds
- Differentiation

UNIT-IV

- Cell and tissue interactions in development
    - Primary embryonic induction

- Competence
- Concept of organizer

- Metamorphosis

- Teratology

SUGGESTED READINGS MATERIALS

- **Animal Gametes** –

  Vishmanath, Asia Publishing House
- **Foundation Of Embrology** –

  Bradley M.Patten, McGrow Publication
- **Fertilization In Animals** –

  Brain Dale, Arlond Heiniman, Gulab Vazerani Publication
- **Development Biology** -

  N.J. Berril, Tata McGraw Hill Publication N. Delhi
- **Embryology Of Vertebrates** -

  Nelson

M. Sc. ZOOLOGY SEMESTER - II

PAPER – IV: QUANTITATIVE BIOLOGY AND COMPUTER APPLICATION

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Introduction to digital computer and application
  - Basic knowledge of hardware and software
  - CPU (Central Processing Unit)
  - Input and Output devices
  - Auxiliary storage system

- Operating system and Binary number system

UNIT-II

- Computer application
    - Introduction to MS office
        - Word
        - Excel
        - Power point
- Computer application in biostatistics
- Simple computation and elementary knowledge of flow chart

UNIT-III

- Types of biological data
- Representation of data
- Sample and sampling
- Measures of central tendency
- Measures of dispersion
- Hypothesis testing: Null and alternate hypothesis

UNIT-IV

- Tests of significance
    - Chi-square test

    . Student's t-test
- Analysis of Variance
- Simple linear regression
- Correlation
- Probability distribution: normal and binomial

SUGGESTED READING MATERIALS

Bataschelet. E. Introduction to mathematics for site scientist springer-verlag, berling
-Lenderen D. Modelling in behavioral ecology. Chapman & Hall London U.K.
• Snedecor, G.W. and W.G. cochran, statical methods, Affilited East, West Press New Delhi (Indian ed.)
• Muray , J.D. Methamatical Biology, Springer Verlag Berlin
• Pelon, E.C. The interpretation of ecological data : A promer on classification and ordivation.
A. lewis . Biostatics
• B.K. Mahajan Methods in Biostatics
• J.D. Murrey Mathematical Biology
• Georgs & Wilians Startical method

M. Sc. ZOOLOGY SEMESTER – II
LAB COURSE – I: (PRACTICAL BASED ON PAPER I & II)

- **Molecular biology and Biotechnology**
  - Isolation of DNA/RNA
  - Study of mitochondria from buccal epithelium by staining with supravital stains.
  - Culture of amoeba, paramecium, euglena.
  - Study of cell division mitosis/meiosis by squash and smear preparation of root tip and cockroach/grasshopper testis.
  - Study of giant chromosome in the salivary gland of Chironomous larvae or Drosophila. .
  - Study of Barr body and human chromosome.
  - Culture and study of drosophila.
  - Preparation of culture media and culture of bacteria.
  - Other exercise related to theory paper.

- **General physiology and endocrinology**
  - Estimation of RBC, hemoglobin, hematocrit/PVC, blood group and Rh factor blood clotting time.
  - Determine the blood pressure of man.
  - Determination of urea, glucose and ketone bodies in urine.
  - Demonstration of osmosis.
  - Dissection by using alternate methods like clay modeling and exposure of major endocrine glands in an experimental animals.
  - Study of histology of endocrine glands in different animal types through permanent slides and microtomy.
  - Other exercise related to theory paper.

EXAMINATION SCHEME

Exercise based on paper I	35 marks

Exercise based on paper II	35 marks
Viva	10 marks

Sessional (Internal)	20 Mark
Total	**80+20 (100)**

M. Sc. ZOOLOGY SEMESTER – II
LAB COURSE-II: (PRACTICAL BASED ON PAPER III & IV)

- **Development biology**

  - Study of slides of development of frog.
  - Study of development of Hen's egg, by cover glass window method, staining and mounting of blastodisc.
  - Study of caudal regeneration in Teleost (Meal time effect).
  - Study of embryological slides: spermatogenesis, oogenesis, histology of gonads.
  - Study of effect of NaF/urea on growth of fish fingerlings.
  - Study of effect of thyroid hormone on metamorphosis of tadpole
  - Other exercises related to theory paper

- **Quantitative biology and computer application**

  - Preparation of frequency tables and graphs.
  - Calculation of standard deviation, variance and standard error of mean.
  - Calculation of probability and significance between means using t-test,Chi-square test, ANOVA
  - Calculation of correlation, regression and probability distribution.
  - Computer software use for computational tasks, data presentation, design task and communication
  - Other exercises related to theory paper.

EXAMINATION SCHEME

Exercise based on paper III	35 mark
Exercise based on paper IV	35 mark
Viva	10 mark
Sessional (Internal)	20 Mark
Total	**80+20 (100)**

M. Sc. ZOOLOGY SEMESTER - III

PAPER-I: COMPARATIVE ANATOMY OF VERTEBRATES

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise) with internal choice.

UNIT-I

- Origin of Chordates
- Amphibians, Reptiles, Birds and Mammals.
- Classification of Vertebrates
  - Amphibians
  - Reptiles
  - Birds
  - Mammals.

UNIT-II

- Vertebrate integument and its derivatives.
  - General structure and functions of Integument.
  - Structure and functions of glands, scales, horns, claws, nails, hoof, feather and hair.

. Skeletal system in vertebrates.

.Comparative account of (i) Jaw suspensorium, (ii) Limbs and Girdles.

UNIT-III

. Respiration in Vertebrates.

.Comparative account of respiratory organs (structure and functions).

- Circulation in Vertebrates.
  - Structure and function of blood.
  - Evolution of heart.
  - Evolution of aortic arches.

UNIT-IV

. Nervous System – Central, Peripheral and Autonomic.

- Sense organs.

. Comparative account of Sensory Receptors.

- Evolution of Urinogenital system in vertebrates.

SUGGESTED READING MATERIALS - (ALL LATEST EDITION)

- **Vertebrate life** :– William N. Ferland, F. Harvey pough, Tom J Gode, John B. Heiser
- Collier MacNillem International edition
- **Chordate morphology** :–Malcom Jollie
- Reinhold Publishing Corporation NewYork
- **Chordate –Structure & Function** :- Arnold G. Khage, B.E. Fry Johanson
- Mc Millan Publishing Co. INC. NewYork
- **Comparative Animal Physiology** :- Orosser
- Satish Book Enterprises, Agra
- **The Vertebrate Body** :- Alfred Sherwood Romer
- Vakils, Feffer & Simons Publications Ltd.

M. Sc. ZOOLOGY SEMESTER – III

PAPER-II: ANIMAL BEHAVIOUR

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise) with internal choice.

UNIT- I

. Historical perspectives- Ethology

- Behavioural patterns
- Innate behaviour
- Biological rhythms
  - Types of biological rhythm
  - Biological clock

UNIT- II

- Communications
  - Auditory
  - Visual
  - Chemical
- Learning and Memory

- Conditioning
- Habituation
- Reasoning
- Reproductive behaviour.

UNIT-III

Orientation

- Echolocation in bats
- Bird migration and navigation.
- Fish migration.

- Neural and hormonal control of behaviour

UNIT-IV

.Hormonal effect on behavioural patterns.

- Social behaviour
  - Social organization in insects and primates
  - Schooling in fishes and Flocking in birds
  - Homing, territoriality, dispersal
  - Altruism
  - Host–parasite relation

SUGGESTED READING MATERIALS - (ALL LATEST EDITION)

- **ANIMAL BEHAVIOR – Mc Farland** (English Language Book Society)
- **ANIMAL BEHAVIOR – Arora M.P.** (Himalaya Publishing House, Mumbai)
- **ANIMAL BEHAVIOR - Reena Mathur** (Rastogi Publications, Meerut)

M. Sc. ZOOLOGY SEMESTER – III

PAPER – III: ENVIRONMENT PHYSIOLOGY AND POPULATION ECOLOGY

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT – I

Population dynamics:

- Demography, life table, reproductive rates, reproductive values

- Population growth, exponential, non overlapping
- Stochastic and time lag models of population growth
- Population density
- Population evolution
- Community dynamics:Characteristics, development and classification

UNIT-II

- Adaptations
    - Levels of adaptation.
    - Mechanisms of adaptation.
- Adaptations to different environments.
    - Marine, shores and estuaries.
    - Freshwater.

- Terrestrial Life.

UNIT-III

- Stress Physiology

  Basic concepts of environmental stress and strain, Concept of elastic and plastic strain.
    - Stress avoidance, stress tolerance and stress resistance.
    - Acclimatization, acclimation and adaptation.
    - Endothermic and physiological mechanism of regulation of body temperature.

UNIT -IV

- Stress physiology in different conditions
    - Osmoregulation in aqueous and terrestrial habitats.
    - Physiological response to oxygen deficient stress.
    - Physiological response to body exercise.
    - Effect of meditation and yoga

SUGGESTED READING MATERIALS - (ALL LATEST EDITION)

ECOLOGY with special reference to animal & man

S. Charles, Kendeigh Prentice hall of India Pvt. Ltd. New Delhi

- **ELEMENTS OF TROPICAL ECOLOGY**

  - **Yanney Ewusie** (English language Book Society, Heine mann educational book publication)

- **FUNDAMENTALS OF ECOLOGY**

  - **Odum P.**

- **ANIMAL PHYSIOLOGY, MECHANISM AND ADAPTATION -**

  Eckert, R., W,H, Freeman and Co.

- **BIOCHEMICAL ADAPTATION -**

  Hochachka, P.W, and Somero S.N, Princeton, New Jersey

- **ANIMAL PHYSIOLOGY: ADAPTATION AND ENVIRONMENT.-**

  Schiemidt Nielsen, Cambridge

- **GENERAL & COMPARATIVE ANIMAL PHYSIOLOGY**

  Hoar W.S. Princeton Hall of India

- **ENVIRONMENTAL PHYSIOLOGY**

  Willmer, P.G. Stone & Johansan I, Blackwell Science Oxford

M. Sc. ZOOLOGY SEMESTER – III

PAPER – IV: IMMUNOLOGY AND PARASITISM

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise with internal choice).

UNIT-I

- Cells of immune system
- B-Lymphocytes, T-lymphocytes, Null Cells

- Mononuclear cells
- Granulocytic cells (Neutrophils, Eosinophils and Basophils)
- Mast cells
- Dendritic cells
- Organs of immune system
- Primary lymphoid organs (Thymus, bone marrow)
- Secondary lymphoid organs (Lymph nodes, spleen, mucosal associated lymphoid tissue, cutaneous associated lymphoid tissue)

UNIT-II

- Immunoglobulin structure and function
- Molecular structure of Ig, Light chain and Heavy chain
- Immunoglobulin classes
- lgG
- lgM
- IgE
- lgD

Monoclonal antibodies

UNIT-III

- Antigens

Immunogenicity

- Contribution of the immunogens.
- Contribution of Biological system.
- Antigen - Antibody Interaction
- Antibody affinity and activity
- Cross reactivity
- Agglutination reactions

- Precipitation Reaction
    - Vaccine
- Active and passive immunization
- Whole organism vaccine
- Recombinant vector vaccines
- DNA vaccines

UNIT-IV

- Immune system in Health disease
- Immune response to infectious disease
- Immune response in cancer
    - Pathophysiology of parasitic infection
        - Viral infections
        - Bacterial infection
        - Helminths infection
- AIDS

SUGGESTED READING MATERIALS

- **Immunology**
    - **Kuby,** W.H. Froeman USA
- **Fundamental of Immunology**
    - **W. Paul,**
- **Essential Immunology**
    - **I.M. Roitt,** ELBs Edition
- **Immunology**
    - **Richard M. Hyde, Robert A. Patnode,** A Wiley Medical Publications

- **Reproductive Physiology**
    - **Gayton,**

M. Sc. ZOOLOGY SEMESTER – III

LAB COURSE-I: (PRACTICAL BASED ON PAPER I & II)

- **Comparative anatomy of Vertebrates**
- Identification, classification and study of distinguishing features of important representatives, museum specimens and slides (Protochordates and Chordates)
- Comparative studies of integumentary, skeleton and reproductive system of major vertebrate classes.
- Dissections by using alternate methods like clay modeling: fowl/snake cranial nerves
- Wonder vertebrates
- Other exercise related to theory paper.

- **Animal Behaviour**
- To study the phototactic response in earthworm or grain/pulse pest.

- To study the geotaxis behaviour of earthworm.
- To study the food preference and cleaning behaviour of housefly.
- To study the food preference in tribolium or grain/pulse pests.
. To study the web construction and habituation in spider.
- Estimation of body temperature and pulse rate on daily time scale.
- Estimate the time perception among various individuals at two different time points on daily time scale.
- Determination of effect of time on schooling behaviour in fish.
- Toxicological response of fish opercular and surfacing activity.

EXAMINATION SCHEME

Based on paper I	35 mark
Based on paper II	35 mark
Viva	10 mark
Sessional (Internal)	20 Mark
Total	**80+20 (100)**

M. Sc. ZOOLOGY SEMESTER – III

LAB COURSE-II: (PRACTICAL BASED ON PAPER III & IV)

- **Immunology and Parasitism**

- Dissection of primary and secondary immune organs from fish/fowl- Preparation and study of cell suspension from spleen (spleenocytes) of fish / fowl.
- Total and differential counting of leucocytes.
- Protein estimation by Lowry's method in normal and infected blood sample.
- Determination of Blood group.
- Study of permanent slides (for spotting); thymus, lymph nodes, spleen, bone marrow, types of cells squamous, cuboidal, columnar, epithelial cells, blood cells, nerve cells, muscles cells, connective tissue of various types, adipose tissue, mitotic and meiotic chromosomes and their different phases cancer cells of various types etc.
- Study of parasites in fish
- Study of various parasites through slides and specimen.
- Other exercises related to theory paper.

- **Environmental Biology, Population ecology**
- Study of biotic community in a pond/grassland ecosystem.
- Study of population growth rate (curve) in protozoan culture.
- Population dynamics of *Tribolium* sp.
- Study of biogeochemical cycles by way of models.

- Visit to some natural habitats and man made habitats to study the human impact on environment.
- Water analysis for fresh and waste water (Dissolve oxygen and chloride).
- Other exercises related to theory paper.

EXAMINATION SCHEME

Based on paper III	35 mark
Based on paper IV	35 mark
Viva	10 mark
Sessional (Internal)	20 Mark
Total	**80+20 (100)**

M. Sc. ZOOLOGY SEMESTER – IV

PAPER– I (Compulsory)
BIOCHEMISTRY

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise) with internal choice.

UNIT-I

- Properties of Proteins
  - Structure and properties of amino acids.
  - Classification of proteins.
  - Structure of proteins.
  - Biological Functions of Proteins.
  - Protein Metabolism.

UNIT-II

- Carbohydrates
  - Classification of carbohydrates.
  - Structure and Functions of Carbohydrates.
  - Carbohydrate metabolism.
- Lipid
  - Lipid structure and functions
  - Lipid metabolism.

UNIT-III

- Vitamins
  - Water and Fat soluble vitamins,
  - Chemistry, occurrence and physiological role.
- Enzymes
  - Classification and nomenclature.
  - Mechanism of action
  - Regulation of enzyme activity and functions of Co-enzymes.

UNIT-IV

- Nucleic acid
  - Chemistry of DNA.
  - Chemistry of RNA.
  - Biological importance of nucleic acids.
  - Nucleoproteins.
  - Metabolism of nucleic acids.

Suggested Reading

Lehninger Principles of Biochemistry, Fourth Edition

David L. Nelson, Michael M. Cox
Publisher: W. H. Freeman

- **Biochemistry**
  Donald Voet, Hardcover: 1616 pages,
  Publisher: Wiley; 3 edition

- **Principles of Biochemistry With a Human Focus**
  Reginald H. Garrett, Charles M. Grisham

  Publisher: Brooks Cole

- **The Molecular Basis of Cell Cycle and Growth Control**

  Gary S. Stein (Editor), Renato Baserga, Antonio Giordano, David T. Denhardt,
  Publisher: Wiley-Liss

- **Experiments in Biochemistry: A Hands-On Approach**
  Shawn O. Farrell, Ryan T. Ranallo,
  Publisher: Brooks Cole

M. Sc. ZOOLOGY SEMESTER – IV

PAPER II (Compulsory)
NEUROPHYSIOLOGY

(There will be 5 questions of equal marks. First question will be based on complete syllabus with no internal choice, whereas rest questions will be unit wise) with internal choice.

UNIT - I

- Physiological role of neurosecretory cells
- Histological structure of neurons and neuroglial cells

- Physiological properties of neural fibres
- Synapsis and synaptical transmission
- Myoneural junction and neuromuscular transmission
- Degeneration and regeneration of nerve fibre

UNIT - II

- Nerve fibre, peripheral nerves, receptors and effector endings, dermatomes and muscle activity

- The spinal cord and the ascending and descending tracts
- The cranial and spinal nerves

UNIT - III

- The fore brain, brain stem, the cerebellum
- The meninges and cerebrospinal fluid
- Peripheral nervous system

UNIT - IV

- Autonomic nervous system; sympathetic and para-sympathetic nervous system with special comparison to hormonal mechanism of transmission through autonomic nervous system

- Reflex action; verities, characteristics, unconditional reflex, electrophysiology of spinal reflexes

- Sensation
- Electro encephalography and its physiological basis.

Suggested Reading

- The Brain: Our Nervous System by Seymour Simon
- Mass Action in the Nervous System by Walter J. Freeman

- Human Anatomy and Physiology with Interactive Physiology 10-System Suite, 8th Edition by Elaine N. Marieb and Katja N. Hoehn (Jan 10, 2010)

- Neuroanantomy by H.G.Snell

- Clinical Neurophysiology-Guide for Authors - Elsevier
- Foundations of Cellular Neurophysiology (Bradford Books): Daniel Johnston,

M.Sc. ZOOLOGY SEMESTER – IV

Optional papers

- The following optional papers are being suggested as below

- OPTIONAL (SPECIAL PAPER) GROUP 1

• Fish (ichthyology) structure and function
Or
• Cell Biology
Or
• Entomology
Or
• Wild life conservation
Or

- Biology of vertebrates immune system

OPTIONAL (SPECIAL PAPER) GROUP 2

- Pisci culture and economic importance of fishes (Icthyology)

Or

- Cellular organization and molecular organization

Or

- Applied entomology

Or

- Environment and Biodiversity conservation

Or

- Molecular endocrinology and reproductive technology

** Student has choice to opt for one paper each (special paper) from group 1 and group 2

M.Sc Zoology
Semester-IV

Paper- III A (optional paper)
Icthyology (Fish) Structure and Function

Unit-1

- Origin and evolution of fishes
- Classification of fishes as proposed by Berg
- Fish integument
- Locomotion
- Alimentary canal and digestion

- Unit-2

- Accessary respiratory organs
- Air bladder and its functions
- Weberian ossicles their homologies and functions
- Excretion and osmoregulation
- Acoustico-lateral line system

Unit-3

- Luminous organs
- Colouration in fishes
- Sound producing organs
- Deep sea adaptions
- Hill stream adaptions

Unit-4
- migration in fishes
- Sexual cycle and fecundity
- parental care in fishes
- Early development and hatching
- Poisonous and venomous fishes.

M.Sc Zoology
Semester-IV

Paper- III B (Optional)
Cell Biology

Unit-1
- Molecular organization of eukaryotic chromosomes : structure of nucleosome particles and higher order compectionof mitotic chromosomes, chromatin remodeling
- specialized chromosomes:structural organization and functional significance of polytene chromosomes
- DNA methylation and DNA Aase-1 Hypersensitivity in relation to gene activity and chromatin organization.
- specialized chromosomes II : structural organization and functional significance of lampbrush chromosome.
- Organisation and significance of heterochromatin.

Unit-2
- Structural organization of Eukaryotic genes, interrupted genes and overlapping genes and their evolution
- Gene families: organization, evolution and significance
- Transposable genetic elements of prokaryotes and eukaryotes Gene imitation

and molecular mechanism of occurrence of mutation repair mechanism
- Organisation of eukaryotic transcriptional machinery promoter enhancers transcription factors polymerase activators and repressors.
- DNA binding domains of transcription apparatus zinc finger steroid receptors hemeo domains HILIX-loop, Helix and Leucine Zipper.

Unit-3
- Eukaryotic transcription of Eukaryotic transcriptional control.
- Environmental modulation of gene activity (stress response) stress genes and stress proteins
- Molecular basis of thalasemias muscular dystrophy cystic fibrosis
- DNA rearrangement

- Amplification during development with special response to
- Ciliates
- Chlorine gene
- 58 RNA genes

Unit-4
- Drosophila development
- Cleavage
- Grastrulation

Origin of Anterior –Posterior (Maternal effect genes ans segmentation genes
- Drosophila development II origin of dordal ventral polarity
- Basic idea of homoetic selector genes and homeotic mutation
- Basic idea of organization of homeoboxes
- Evolutionary significance of homeoboxes

Suggested Reading Materials:
- Robertis, De and Robertis Cell and molecular biology Lea and Febiger.
- Watson Hopkis Roberts Steitz Weiner, Molecular Biology of the Gene the Benjamin, Cummings Publishin Company inc.
- Bruce A; berts Bray ewis Raff Roberts Watson Molecular Biology of the Cell,Garland Publishing inc.
- Watson Gilman Witkowski Zoller Recombinant DNA Scientific American Books.
- Karp Gerald Cell Biology.
- Lewin B., Genes VII.
- King Cell Biology.
- Kaniel L. Hartl, Elizabeth W. Jones. Genetics Principals and Analysis, Jones and Bartlett Publishers.
- Kuby, Immunology, W.H. Freeman and Company.
- Roitt Male Snustad Immunology.

M.Sc. Zoology Semester-IV
Paper- III C (Optional)
Entomology

Unit-1
- Insect head types and modification as per their habit and habitat
- Modification of mouth parts and feeding behaviour
- Structure types and function of antennae
- Hypothetical wing venation
- Structure of cuticle and pigment

Unit-2
- Sclerotisation and tanning of the cuticle
- Structure of alimentary canal and Physiology of digestion
- Malphighian tubules – anatomical organization , Transport mechanism

- Structure of circulatory system
- Cellular elements in the haemolymph

Unit-3
. Cell mediated and humoral immunity
Structure of compound eye and Physiology of Vision
- Sound Production in insect
- Structure and function of endocrine glands
- Pheromones

Unit-4

- Embryonic membranous up to the formation of blastoderm
- Metamorphosis
- Insecticide effects on CNS
- Important pest of Soybean Modern

concept of pest management

Suggested Reading Materials:
- The Insect: Structure and function by R.F. Chapman
- Comparative Insect physiology, Biochemistry and Pharmacology .Vol :1-13.

Edited by G.A. Kerkut and L.I. Gilbert.
- Entomophagous Insect by Clausen
- Entomology bu Gilbert
- Principles of Insect Physiology by Wigglesworth.
- Fundamentals of Entomology by Elzinga
- Hand book of economic Entomology for South India by Ayyar.
- Insect cytogenetics by R.E.F.Symposium.
- Insects and plants by Sting, Lawton and southwood.
- Insect and hygiene by Busvine.
- Insect Physiology by Wigglesworth.
- Insect morphology by Mat Calf and Flint
- Applied Agricultural Entomology by Dr. Lalit Kumar Jha

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M.Sc Zoology
Semester-IV

Paper- III D (Optional)

Wild Life Conservation

Unit-1

- Wild life -
- Values of wild life - positive and negative.
- Our conservation ethics.
- Importance of conservation.
- Causes of depletion.
- World conservation strategies.
- Habitat analysis, Evaluation and management of wild life.
- Physical parameters - Topography, Geology, Soil and water.
- Biological Parameters - food, cover, forage, browse and cover estimation.
- Standard evaluation procedures - remote sensing and GIS.
- Management of habitats -
- Setting back succession.
- Grazing logging.
- Mechanical treatment.
- Advancing the successional process.
- Cover construction.
- Preservation of general genetic diversity.

Unit-2

- Population estimation.
- Population density, Natality, Birth rate, Mortality, fertility schedules and sex ratio computation.
- Faecal analysis of ungulates and carnivores - Faecal samples, slide preparation,Hair identification, Pug marks and census method.
- National Organization.
- Indian board of wild life.
- Bombay Natural History Society.
- Voluntary organization involed in wild life conservation.
- Wild life Legislation - Wild Protection act - 1972, its amendments and implementation.
- Management planning of wild life in protected areas.
- Estimation of carrying capacity

Unit-3

- Eco tourism / wild life tourism in forests.
- Concept of climax persistence.
- Ecology of perturbence.
- Management of excess population & translocation.
- Bio- telemetry.
- Care of injured and diseased animal.

Unit-4
- Quarantine.
- Common diseases of wild animal.
- Protected areas National parks & sanctuaries, Community reserve.
- Important features of protected areas in India.
- Tiger conservation - Tiger reserve in M.P, in India.
- Management challenges in Tiger reserve.

Suggested Reading Materials:

- Gopal Rajesh : Fundamentals of wild life management
- Agrawal K.C : Wild life India
- Dwivedi A.P (2008) : Management wild life in India
- Asthana D.K : Envionment problem and solution
- Rodgers N.A & Panwar H.S : Planning of wild life / Protected area Network in India vol. the report, wild life Institute of India Dehradun.
- Odum E.P : Fundamentals of Ecology
- Saharia V.B : Wild life in India
- Tiwari S.K : Wild life in Central India
- E.P Gee : Wild life of India
- Negi S.S : Wild life conservation (Natraj Publishers)

M.Sc Zoology
Semester-IV

Paper- III E (Optional)
Biology of vertebrate immune system

Unit-1
- Tissues of Immune system- Primary lymphoid organs, structure and functions (Thymus and Bursa of Fabricius)
- tissues of Immune system- Secondary lymphoid organs, structure and functions (Spleen, lymphnode and Payers patches)
- Antigen processing
- Antigen presentation

Unit-2
- T-cell lineage and receptors
- T-cell activation

- B-cell lineage and receptors
- B-cell activation
- Immunoglobulin structure, Biological and physical properties of immunoglobulin
- Gene model for Immunoglobulin gene structure

Unit-3
- Generation of antibody diversity (Light and heavy chain)
- Immunization
- Immediate type of hypersensitivity reaction of Anaphylectic type-1.
- Antibody dependent cytotoxic type II reaction.

. Complex mediated type III reaction

Unit-4
- Delayed type cell mediated hypersensitivity type IV reaction.
- Enzyme linked immunosorbent assay (ELISA) technique and its applications.
- Immunofluorescence technique (Direct & Indirect and Sandwich antibody labelling techniques .
- Immunodiffusion techniques (Mancini and oucheterlony immunodiffusion techniques)Monoclonal antibody technology (Hybridoma technology)

M.Sc Zoology
Semester-IV

Paper- IV A (Optional)
Pisci Culture and Economic Importance of Fishes (Icthyology)

Unit-1
- Collection of fish seed from natural resources and transportation of fish seed.
- Breeding in fish, Bundh breeding and Induced breeding.
- Types of ponds required for fresh water fish culture farms.
- Management of fish farm.
- Physiochemical factors of freshwater for fish farming.

Unit-2
- Composite fish culture
- Prawn culture and pearl industries in India.
- Fisheries resources of C.G.
- Riverine fishries.

Unit-3
- Costal fishries in India
- Offshore and deep sea fishery's in India

- Role of fishries in rural development
- Sewage fed fishries

Unit-4
- Methods of fish preservation
- Marketing of fish in India.
- Economic importance and by product of fishes

- Fish disease.

Suggested Reading Materials:
Paper III A & IV A

- JR. Norman - The History of fishes.
- Nagaraja Rao - An introduction to fisheries.
- Lagler Ichthyology.
- Herclen Jones Fish migration.
- Marshal The life of fishes.
- Thomas - Diseases of fish.
- Greenwood - Inter relationship of fishes.
- Gopalji, Srivastava - Freshwater fishes of U.P. and Bihar.
- Brown -Physiology of fishes Vol. I & II.
- Hoar and Randall -Fish physiology of fishes Vol. 1 & IX.
- Gunther Sterba C.N.H.-Freshwater fishes of the world
- W. Lanharn -The Fishes.
- G.V. Nikolsky -The ecology of Fishes,
- Borgstram -Fish as food Vol. I & II.
- Nilsson -Fish physiology -Recent Advances.
- P.B. Myle and J.J. Cech Fishes An Introduction to Ichthyology.
- Carl E. Bond -Biology of fishes.
- M. Jobling -Environmental Biology of fishes.
- Santosh Kumar & Manju Ternbhre -Fish and Fisheries.
- S.K. Gupta -Fish and Fisheries
- K.P. Vishwas -Fish and Fishries.
- Jhingaran -Fish and Fishries.

M.Sc Zoology
Semester-IV

Paper- IV B (Optional)
Cellular Organization and Molecular Organization.

Unit-1

- General organization and characterizes of viruses (Examples SV 40 and HIV).

- Yeast : Structure, reproduction and chromosome organization: Basic ides of its applications as vectors for gene cloning.
- Molecular organization of reoiratory chain assemblies, ATP / ADP Translocase and F0F1 AT pase.
- Cell cycle: Cell cycle control in mammalian cells and xenopus.
- Cytochemistry of Golgin complex and its role in cell seretion.,

Unit-2

- Peroxisomes and training of paroxysmal proteins.
- Nucleolus: Structure and Biogenesis and functions of lysosomes.
- Intracellular digestion : Ultra structure and function of lysosomes.
- Synthesis and targeting of mitochondrial proteins.
- Secretary pathways and translocation of secretary proteins across the EPR membrane.

Unit-3

- Genome complexity: C- value [paradox and cot value].
- DNA sequences of different complexity.
- Difference between normal cells and cancer cells.
- Biochemical changes.
- Cytoskeleton changes.
- Cell surface changes.
- Genetic basis of human cancer

Unit-4

.

- Chromosomal abnormalities in human cancer.

- General idea of onchogens and proto onchogens.
- Onchogence and cancer.
- Transforming Agents.
- Tumor Supressor geanes.
- Receptor – Ligand interaction and signal transduction.

Cross – talk among various signaling pathways.

Suggested Reading Materials:

- DeRobertis and De Robertis Cell and Molecular Biology. Lea and Febiger.
- We Watson Hopking reberts steits, Weiner molecular biology of the gene, the Benjamin / Cummings Publishin Company Inc.
- Bruce alberts, Bray, Lewis, Raff, Roberts, Watson molecular Biology of the cell garland publishing inc.
- P.K. Gupta, Molecular Cell Biology Rastogi Publication.
- Watson Gilman Witkowski, Zoller Recomdinant D.N.A. scientific American Books.
- Gerald Karp. Cell Biology.
- Lewin B. Genes VII.

- King Cell Biology.
- Baniel L. HArtl Elizabeth W. Jones, Genetics Principles and analysis . Jones and Bartlett Publisher.
- Lodish, Berk Zipursky, Matsudaira Baltimore Dernell Molecular Cell Biology W.H.Freeman and company.
- J. Travers Immunology current Biology limited.

- Kubey Immunology W.H. Freeman and Company.
- Riott, Male snustad Principles of genetics john weley and sons Inc.

M.Sc Zoology
Semester-IV

Paper- IV C (Optional)

Applied Entomology

Unit-1
Classification according to imms
- Classification of apterygota upto families.
- Classification of following insect orders

(a) orthoptera (b) hemiptera (c) diptera.
- Classification of following insect order

(a) hymenoptera (b) lepidoptera (c) coleoptera
- Collection and preservation of insects.

Unit-2
- Insect pest-Management strategies and tools
- Biological control, Genetic control, Chemical control
- Pests of Cotton
- Pests of sugarcane
- Pests of paddy
- Pests of stored food grains
- Pests of citrus fruits and mango
- Pests of pulses
- House hold insect pests

Unit-3
- Insects in relation to forensic science
- Insects migration, population fluctuation and factors
    - Insects of medical and veterinary importance
- Ecological factors affecting the population and development of

Insects

Unit-4
- Mulberry and non mulberry sericulture
- Apiculture
- Lac culture

- Insects as human food for future.

M.Sc Zoology Semester-IV

Paper- IV D (Optional)

Environment & Biodiversity Conservation

Unit I

• Basic concept of Environmental Biology Scope and Environmental Science
• Biosphere and Biogeochemical cycles.
• Environmental monitoring and impact assessment.
• Environmental and sustainable development.
• Water conservation, rain water harvesting, water shed management.

Unit II

• Cause, effects and remedial measure of Air pollution, Water pollution.
• Noise. radioactive and thermal pollution.
• Agriculture pollution
• Basic concepts of Bioaccumulation.
• Solid waste management.

Unit III

Global warming and disaster management

• Cause of global warming
• Impact of global warming – acid rains and ozone depletion, green house effect.
• Control measures of global warming
• Afforestation (b) reduction in the use of CFCS
• Disaster management -floods, earthquake, Cyclones landslides.
• Environmental legislation.

Unit IV

Natural Resources:- Forest

-

• Use and over exploitation of forests.
• Timber extraction.

Land

• Land degradation. Landslides.
• Soil-ersion and desertification.

Water

• Use and over utilization of surface and ground

water

• Floods. Drought dams- benefits and problems
Mineral
• Use and exploitation ,
• Environmental effect of extracting and using
mineral resources
Food
• World food problem
• Effects of modern agriculture and overgrazing
Energy
• Conventional and nonconventional energy resources.
• Using of alternate energy sources
- Role of an individual in conservation of natural resources
Equitable use of resources for sustainable life
• Biodiversity crisis – habitat degradation poaching of wild life.
• Socio economic and political causes of loss of biodiversity.
• In situ and exsitu conservation of biodiversity
• Value of biodiversity.

Suggested Reading Materials:
Paper III D & IV D

- Arora : Fundamentals of environmental biology
- Anathakrishnan : Bioresources ecology
- Bottain : Environmental studies
- Bouhey : Ecology of populations
- Clark : Elements of ecology
- Dowdoswell : An introduction to animal ecology
- Goldman : Limnology
- Kormondy : Concepts of ecology
- May : Model ecosystems
- Odum : Ecology
- Perkins : Ecology
- Simmons : Ecology of estuaries and costal water
- Pawlosuske : Physico-chemical methods for water
- South Woods : Ecological methods
- Trivedi and Goel : Chemical and biological methods for water pollution studies
- Willington : Fresh water biology
- Wetzal : Limnology
- Welch : Limnology Vols. I-II

M.Sc Zoology
Semester-IV

Paper- IV E (Optional)

Molecular Endocrinology and Reproductive Technology

UNIT-1

- Definition and scope of molecular endocrinology.
- Chemical nature of Hormones-
- Protein & polypeptides.
- Amino acid derivative
- Steroids
- Phospholipids derivative
- (tissue hormones)
- Purification and characterization of Hormones.

UNIT-2

- Receptor.
- Membrane Receptor.
- Nuclear Receptor.
- Orphan Receptor
- G-Protein
- Nuclear Receptor

UNIT-3

- Hormone – Transduction
- G-Protein & Cyclic Nucleosides.
- Calcium calmoduline & phospholipids.
- Miscellaneous Second Messengers.
- Phosphorylation & other non transcriptional effect of Hormones.
- Genetic control of formation of Hormone.
- Transcription.
- Post transcription.
- Translation.
- Post translation
- Secretion of Hormone.

UNIT-4

- Multiple ovulation and embryo transfer Technology.
- Study of estrous cycle by vaginal smear technology
- Surgical technique-

- Castration
- Ovariectomy
- Vasectomy
- Tuectomy
- Laprotomy.

Suggested Reading Materials:

- Benjamin Lewim – Genes VII/ VIII, oxford University press.
- Lodish etal- Molecular Cell Biology.
- Zarrow, M.X., Yochin J.M. and Machrthy, J.L. – Experimental Endocrinology.
- Chatterji C.C.- Human Physiology (Vol- II).
- Bentley, P.J. – Comparative Vertebrate endocrinology.
- Hadley Mac. E.- Endocrinology.
- Chinoy, N.J. Rao, M.V., Desarai, K.J. and High land, H.N. – Essential techniques in reproductively physiology and Endocrinology.
- Norris, D.O. – Vertebrate Endocrinology.

M.Sc. ZOOLOGY – IV SEMESTER
LAB COURSE-I (COMPULSARY)

PAPER- I BIOCHEMSTRY

1. Estimation of antioxidant enzymes.
2. Estimation of amylase.
3. Estimation of protein by Lowry method.
4. Estimation of Oil in seeds.
5. Estimation of Carbohydrate by anthrone reagent.
6. Other exercise related to theory paper.

PAPER- II NEUROPHYSIOLOGY

1. Study of slides of nervous system.
2. Neck nerve of squirrel by using alternate methods like clay modeling.
3. Study of Brain through MODAL.
4. Study of Cranial nerve of Bird, Amphibian, Reptile and Mammals by using alternate methods like clay modeling.
5. Other exercise related to theory paper.

EXAMINATION SCHEME

Based on paper I	35 marks

Based on paper II	35 marks
Viva	10 marks
Sessional (Internal)	20 mark
Total	**80+20 (100)**

M.Sc. SEMESTER-IV
LAB COURSE-II
OPTIONAL (SPECIAL PAPER) GROUP 1

PAPER-III(A) FISH (ICHTHYOLOGY) STRCTURE AND FUNCTION

1. Anatomy of various organ systems and mounting of fish materials
2. Cranial nerves of teleost fishes: *Wallago , Mystus, Labeo* and other fishes by using alternate methods like clay modeling
3. Osteology of fish: Scoliodon, carps, catfishes, murrels etc.
4. Accessory respiratory organs of air breathing fish by using alternate methods like clay modeling
5. Study of histological (permanent) slides
6. Study of museum specimens of the concerned group
7. Other exercise related to theory paper.

PAPER –III(B) CELL BIOLOGY

1. Study of mitosis from onion root tip.
2. Study of meiosis in grasshopper testis.
3. Study of polytene chromosome in Dipteran Larvae.
4. Demonstration of Barr-Body in Human Check cell.
5. Estimation of DNA.
6. Estimation of RNA.
7. Other exercise related to theory paper.

PAPER –III(C) ENTOMOLOGY

1. Anatomy of common grasshopper, cockroach, honey bee, wasp and dysdercus, mylabris, belestoma (Giant water Bugs) by using alternate methods like clay modeling.
2. Dissection by using alternate methods like clay modeling and exposure of:
(i) Sting apparatus of honey bee and wasp.
(ii) Tympanal organs of grasshoppers.
(iii) Testes of cockroach
(iv) Aristae of house fly.
(v) Different types of mouthparts of insects.

(vi) Different types of wings and antennae of insects.
(vii) Tentorium of grasshoppers.
3. Identification and comment on insects of different orders and families.
4. Identification with the help of keys of common insects from different orders and families.
9.Other exercise related to theory paper.

PAPER-III(D) WILD LIFE CONSERVATION

1. Anatomy of (by using alternate methods like clay modeling):
(a) Toad / Frog.
(b) Lizard / Snake / Turtle.
(c) Pigeon / Parrot.
(d) Rat / Squirrel.
2. Ecological survey of National Parks and Sanctuaries.
3. Mounting : Permanent preparation of parts of internal organs.
4. Study of slides of different microscopic structure.
5. Identification of wild animal species as objects of museum and zoo and specimens of photographs.
6. Osteology of wild animals.
7. Ecological comments on wild species of different niche and habits. Candidates would be required to keep records of exercise in laboratory, field types, sanctuaries and parks of importance and collections.
8. Other exercise related to theory paper.

PAPER-III(E) BIOLOGY OF VERTEBRATE IMMUNE SYSTEM

1. Dissection by using alternate methods like clay modeling of primary and secondary immune organs from mice:
a. Preparation of single cell suspension from bone marrow and spleen (spleenocytes) of mice.
b. Cell counting and viability testing of the spleenocytes prepared.

2. Preparation and study of phagocytosis by spleenic/peritoneal macrophages.

3. Raising polyclonal antibody in mice, serum collection and estimating antibody titre in serum by following methods:

a. Ouchterlony (double diffusion) assay for Antigen -antibody specificity and titre.
b. ELISA

4. Antibody purification from the serum collected from immunized mice: affinity purification/chromatography.

5. Immunoelectrophoresis.

6. Demonstration of Western blotting:
a. Protein estimation by Lowry's method /Bradford's method
b. SDS-PAGE.
c. Immunoblot analysis.

7.Other exercise related to theory paper

OPTIONAL (SPECIAL PAPER) GROUP 2

PAPER –IV(A) PISCI CULTURE AND ECONOMIC IMPORTANCE OF FISH (ICTHYOLOGY)

1. Systematic identification of freshwater fishes with particular reference to C.G.
2. Age determination with the help of scales / otolith
3. Pigmentary behaviour in fish
4. Qualitative zooplankton analysis
5. Nutrient analysis of water
6. Analysis of gut contents
7. Microtomy of fish materials
8.Other exercise related to theory paper

PAPER-IV(B) CELLULAR ORGANIZATION AND MOLECULAR ORGANIZATION

1. Histochemical demonstration of Mitochondria
2. Histochemical demonstration of Golgi complex
3. Histochemical demonstration of Lactate dehydrogenase
4. Histochemical demonstration of Succinate dehydrogenase
5. Isolation and characterization of Nuclei from liver
6. Isolation and characterization of Mitochondria
7. Isolation of DNA from any tissue
8. Separation of lipids using thin layer chromatography
9. Separation of various proteins using column chromatography
10. Study of metaphase chromosomes from rat bone marrow
11. G banding of metaphase chromosomes
12. C- banding of metaphase chromosomes
13. Estimation of Mitotic Index
14. Measurement of cell size using oculometer.
15.Other exercise related to theory paper

PAPER- IV(C) APPLIED ENTOMOLOGY

1. Insect collection and preservation for systematic studies
2. Identification of different insects upto orders
3. Identification of insects upto families of economically important insect orders
4. Identification of insects upto species: Mosquitoes, honeybees, stored grain beetles, aquatic insects, important crop and household pests
5. Analysis of honey and its quality control
6. Field studies of insects to understand their habit, habitat environmental impact, beneficial and harmful activities etc.
7. Study of beneficial insects, benefits derived from them and useful products
8. Study of destructive insects, damage caused by them and damaged products
9. Study of insecticidal formulations and insect control appliances

10. Experiments on insect control like LC-50 /LD-50, knock down and recovery effect, repellency/antifeedance tests, percentage damage tests for leaf eating insects, and stored grain pests
11.Other exercise related to theory paper

PAPER- IV(D) ENVIRONMENT AND BIODIVERSITY CONSERVATION

(i) Environmental hazards, destruction of habitat and extrication of species causes and preventive measures.
(ii) Environmental planning of rural and urban development.
(iii) Management of soil resources.
(iv) UNESCO's role in ecology, earth summit, SARC, ED trust fund.
(v) Biodiversity, its significance and conservation measures.
(vi) Role of biodiversity in species development.
VII.Other exercise related to theory paper

PAPER- VI(E) MOLECULAR ENDOCRINOLOGY AND REPRODUCTIVE TECHNOLOGY

1.Chromatography method (separation of Androgen & Progesterone).
2. Bioassay of α-Ketosteroids.
3. Bioassay of Gonadotropins.
4. Study of slide related to endocrine glands.
5. Estimation of cholesterol.
6. Estimation of catecholamine.
7. Dissection by using alternate methods like clay modeling of endocrine glands.
8. Other exercise related to theory paper.

EXAMINATION SCHEME

Based on paper III	35 marks
Based on paper IV	35 marks
Viva	10 marks
Sessional (Internal)	20 mark
Total	**80+20 (100)**

PT. RAVISHANKAR SHUKLA UNIVERSITY, RAIPUR (C.G.)

POST GRADUATE DIPLOMA IN COMPUTER APPLICATION, 2016-2017
[DURATION - ONE YEAR - FULL TIME]

The duration of the course shall be one year consisting of two semesters. There shall be three theories and two practical courses in the each semester.

FIRST SEMESTER

PGDCA-101 : Introduction to software organization
PGDCA-102 : Programming in "C"
PGDCA-103 : Office Automation & Tally
PGDCA-104 : Practical based on PGDCA-103.
PGDCA-105 : Practical based on PGDCA-102.

PGDCA-101

INTRODUCTION TO SOFTWARE ORGANISATION

UNIT – I : Introduction to Computers

Computers – Introduction, Computer System Characteristics, Strength and Limitations of Computer, Development of Computers, Types of Computers, Generations of Computers.
Introduction to Personnel Computers – Uses of PC's, Components of PC's, Evolution of PC's, Developments of Processors, Architecture of Pentium IV, Configuration of PC's; Input Device; Output Devices.

UNIT – II : Computer Organization

Central Processing Unit – Arithmetic Logic Unit, Control Unit, Registers, Instruction Set, Processor speed. Storage Devices – Storage and its need, Storage Evaluation Units, Primary Storage, Secondary Storage, Data Storage and Retrieval Systems, SIMM, DIMM, Types of Storage Devices.

UNIT – III : Computer Software

Basics of Software – needs of Software, Types of Software; Free Domain Software; Open Source Software; Compiler, Interpreter and Assembler; Linker and Loader; Debugger; Integrated Development Environment; Operating System – Introduction, Uses of OS, Functions of OS, Booting process, Types of Reboot, Booting from different OS, Types of OS, DOS, Windows, Linux.

UNIT – IV : Programming Languages – Introduction, Comparison between Human and Computer Language; Program; Data, Information and Knowledge; Characteristics of Information; Types of Programming Languages; Generations of Languages; Program Development Steps; Programming Paradigms; Object-Oriented Programming; Structured Programming, Functional Programming, Process Oriented Programming.

UNIT – V : Communication, Networks and Internet

Communication – Introduction, Communication process, Communication Types, Communication Protocols, Communication Channels/Media. Networks – Introduction; Types of Network; Topology; Media - NIC, NOS, Bridges, HUB, Routers, Gateways. Internet – Introduction, Growth of Internet, Owner of Internet, Internet Service Provider, Anatomy of Internet, ARPANET and Internet History of World Wide Web, Services Available on Internet - File Transfer Protocol, Gopher, E-mail, Telnet, Newsgroups, WWW, Applications of Internet.

Books Recommended

1. Using IT : Williams T M Hill
2. Essentials of Information Technology : A. Mansoor, Prgya Publications
3. IT : Curtin T M Hill
4. Fundamental of Information Technology : Chetan Shrivastava_Kalyani Publishers
5. Computer Fundamentals : P.K Sinha BPB Pubications
6. Fundamental of Computer : V.Rajaraman
7. Computer today : Sanders D.H

PGDCA-102

PROGRAMMING IN 'C'

UNIT – I : Introduction :

Introduction Character set, Identifiers and Keywords, Variables, Displaying variables, Reading Variables, Character and Character String, Qualifiers, Type define Statements, Value initialized variables, Constants, Constant Qualifier, Operators and Expressions, Operator Precedence and Associativity, Basic input output: Single Character I/O, Types of Characters in format string, Scanf with specifier.

UNIT – II : Control Structures -

Control Structure: If - statement, If -else statement, Multi decision, Compound Statement, Loops: For - loop, While -loop, Do-While loop, Break statement, Switch statement, Continue statement, Go to statement.

UNIT – III : Functions & Arrays -

Functions : Function main , Functions accepting more than one parameter, User defined and library functions, Concept associatively with functions, function parameter, Return value, recursion comparisons of Iteration and recursion variable length argument list.

Arrays : Scope and Extent, Multidimensional Arrays, Array of Strings, Function in String, passing arrays to functions, accessing array inside functions.

UNIT – IV Pointes

Pointers: Definition and use of pointer, address operator, pointer variable, referencing pointer, void pointers, pointer arithmetic, pointer to pointer, pointer and arrays, pointer and functions, , pointers and two dimensional arrays, array of pointers, pointers constants, pointer and strings.

UNIT – V : Structure and Union -

Declaring and using Structure, Structure initialization, Structure within Structure, Operations on Structures, Array of Structure, Array within Structure, Creating user defined data type, pointer to Structure and function. Union, difference between Union and Structure, Operations on Union, Scope of Union.

Suggested Books :-

1. Let us C - Yashwant Kanetkar.
2. Programming in C - E. Balaguruswamy

PGDCA-103

OFFICE AUTOMATION & TALLY

UNIT – I : Windows Concept

Windows Concepts, Features, Structure, Desktop, Icons, Taskbar, Start Menu, My Computer, Recycle Bin, My document, creating shortcut. Accessories : Calculator, Notepad, Paint, WordPad, Character Map. Windows Explorer : Creating files & folders and other Explorer facilities, Object Linking & Embedding. Communication : Dialup Networking, Phone Dialer. Difference among windows versions.

UNIT – II : Word Processing & Spreadsheet

Word **:** Creating, Editing, & Previewing Documents, Formatting, Advanced Features, Using Thesaurus, Mail Merge, Table & Charts, Handling Graphics, Converting Word Documents into other Formats.
Excel : Worksheet Basics, Creating, Opening, & Moving in Worksheet, Working with Formula & Cell referencing, Absolute & Relative addressing, Working with Ranges, Formatting of Worksheet, Graphs & Charts, Database, Function, and Macros.

UNIT – III : Power Point & FoxPro

Power Point **:** Creating a presentation, Modifying visual Elements, Adding objects, Applying Transitions, animations and linking, Preparing handouts, presenting a slide show.
FoxPro : Preparing Database files, access & retrieval of records in a data base file, inserting & deleting of records. Programming preliminaries. Sorting & Indexing. Development of programs LOOPING, Branching, report making.

UNIT – VI : Access

Introduction to MS Access, The Tables of a Database, Introduction to the Record of a Table, Introduction to Controls Design, Details on Controls Design, The Characteristics of a Table, The Characteristics of a Form, The Characteristics of a Window Control, Data Controls, Introduction to Data Expressions, Getting Assistance With Data Entry, Database Strings, Database Numeric Values, Database Conditional Values, Database Date and Time Values, Creating Reports, Characteristics of Reports.

UNIT – V : Tally

Setting up Ledger & Groups. Study of recording of transactions in the 'Voucher'. (According to Golden rules). Study of 'Final A/C preparation & displaying in different mode/format'. Study of alteration & Deletion of ledger/Groups. Study of cash & fund flow, day book, sales register, purchase register, bills receivable/Payable etc. Study of data security & backing up data. Outline of entry for Income Tax, ED, VAT, ST/CST, PF, Gratuity, Bonus, Loans & Depreciation etc.

PGDCA-104 : Practical based on PGDCA-103

1. Scheme of Examination: -

Practical examination will be of 3 hours duration. The distribution of practical marks is as follows :

Question 1 (Word)	-	10
Question 2 (Excel/ Power point)	-	10
Question 3 (FoxPro)	-	15
Question 4 (Access)	-	10
Question 5 (Tally)	-	15
Viva-Voice	-	20
[Practical Copy + Internal Record]	-	20
Total	-	**100**

2 In every program there should be comment for each coded line or block of code.

3 Practical file should contain printed programs with name of author, date, path of program, unit no. and printed output.

4 All the following programs or a similar type of programs should be prepared.

List of Practical

1. At least 10 practical Questions in Word
2. At least 10 practical Questions in Excel
3. At least 5 practical Questions in Power point
4. At least 10 practical Questions in Access
5. At least 10 practical Questions in FoxPro
6. At least 5 practical Questions in Tally

PGDCA-105 : Practical based on PGDCA-102

1 Scheme of Practical Examination:-

Practical examination will be of 3 hours duration. All programe with flowchart & algorithms. The distribution of practical marks is as follows and

Question 1 (with flowchart & algorithms)	-	20
Question 2 (with flowchart & algorithms)	-	20
Question 3 (with flowchart & algorithms)	-	20
Viva-Voice	-	25
[Practical Copy + Internal Record]	-	15
Total	-	**100**

2 Practical file should contain printed programs with name of author, date, path of program, unit no. and printed output.

3 In every program there should be comment for each coded line or block of code.

4 All the programs or a similar type of programs should be prepared as per the practical list.

List of Practical

INPUT AND OUTPUT, FORMATTING

1. Write a program in which you declare variable of all data types supported by C language. Get input from user and print the value of each variable with alignment left, right and column width 10. For real numbers print their values with two digits right to the decimal.

LOOPS, DECISIONS

2. Write program to print all combination of 1 2 3.
3. Write program to generate following pattern

a)
```
* * * * *
 * * * *
  * * *
   * *
    *
```

c)
```
        *
      * *
    * * *
  * * * *
* * * * *
```

b) 1

2 3

4 5 6

7 8 9 10

d)

1

2 1 2

3 2 1 2 3

4 3 2 1 2 3 4

4. Write main function using switch…case, if..else and loops which when called asks pattern type; if user enters 11 then first pattern is generated using for loop. If user enters 12 then first pattern is generated using while loop. If user enters 13 then first pattern is generated using do-while loop. If user enters 21 then a second pattern is generated using for loop and so on.
5. Write program to display number 1 to 10 in octal, decimal and hexadecimal system.
6. Write program to display number from one number system to another number system. The program must ask for the number system in which you will input integer value then the program must ask the number system in which you will want output of the input number after that you have to input the number in specified number system and program will give the output according to number system for output you mentioned.
7. Write a program to perform following tasks using switch…case, loops, and conditional operator (as and when necessary).

   a) Find factorial of a number

   b) Print fibonacci series up to n terms and its sum.

   c) Print sin series up to n terms and its sum.

   d) Print prime numbers up n terms.

   e) Print whether a given year is leap or not.
8. Write program no. 6 but use library function to perform above tasks.

ARRAY

9. Create a single program to perform following tasks using switch, if..else, loop and single dimension character array without using library function:

   a) To reverse the string.
   b) To count the number of characters in string.
   c) To copy the one string to other string;
   d) To find whether a given string is palindrome or not.
   e) To count no. of vowels, consonants in each word of a sentence and no. of punctuation in sentence.
   f) To arrange the alphabets of a string in ascending order.
10. Create a single program to perform following tasks using switch, if..else, loop and single dimension integer array:

    a) Sort the elements.
11. Write a program that read the afternoon day temperature for each day of the month and then report the month average temperature as well as the days on which hottest and coolest days occurred.
12. Create a single program to perform following tasks using switch, if..else, loop and double dimension integer array of size 3x3:

    a) Addition of two matrix.

    b) Subtraction of two matrix.

    c) Multiplication of two matrix.
13. Create a single program to perform following tasks using switch, if..else, loop and double dimension character array of size 5x40:

    a) Sorting of string.

FUNCTIONS

14. Write program using the function power (a, b) to calculate the value of a raised to b.
15. Write program to demonstrate difference between static and auto variable.
16. Write program to demonstrate difference between local and global variable.
17. Write a program to perform following tasks using switch…case, loops and function.

    a) Find factorial of a number

b) Print Fibonacci series up to n terms and its sum.

18. Write a program to perform following tasks using switch…case, loops and **recursive** function.

    a) Find factorial of a number

    b) Print Fibonacci series up to n terms and its sum.

19. Write a function to accept 10 characters and display whether each input character is digit, uppercase letter or lower case letter.

STRUCTURE & UNION

20. Create a structure Student having data members to store roll number, name of student, name of three subjects, max marks, min marks, obtained marks. Declare a structure variable of student. Provide facilities to input data in data members and display result of student.

21. Create a structure Date with data member's dd, mm, yy (to store date). Create another structure Employee with data members to hold name of employee, employee id and date of joining (date of joining will be hold by variable of structure Date which appears as data member in Employee Structure). Store data of an employee and print the same.

22. Create a structure Student having data members to store roll number, name of student, name of three subjects, max marks, min marks, obtained marks. Declare array of structure to hold data of 3 students. Provide facilities to display result of all students. Provide facility to display result of specific student whose roll number is given.

23. Write program to create structure complex having data members to store real and imaginary part. Provide following facilities:

    a) Add two complex nos. using structure variables.

    b) Subtract two complex nos. using structure variables.

Use structure as argument to function and function returning structure.

POINTER

24. Define union Emp having data members:-one integer, one float and one single dimension character array. Declare a union variable in main and test the union variable.

25. Define an enum Days_of_Week members of which will be days of week. Declare an enum variable in main and test it.

26. Write a program of swapping two numbers and demonstrates call by value and call by reference.

27. Write program to sort strings using pointer exchange.

28. Write a program in c using pointer and function to receive a string and a character as argument and return the no. of occurrences of this character in the string.

29. Create a program having pointer to void to store address of integer variable then print value of integer variable using pointer to void. Perform the same operation for float variable.

30. Write program to find biggest number among three numbers using pointer and function.

31. Write program to Create a structure Employee having data members to store name of employee, employee id, salary. Use Pointer to structure to store data of employee and print the stored data-using pointer to structure.

32. Write program to Create a structure Employee having data members to store name of employee, employee id, salary. Use Pointer to structure to simulate dynamic array of structure store data of n employees and print the stored data of n employees using pointer to structure.

33. Write a program to sort a single dimension array of integers of n elements simulated by pointer to integer. Use function for sorting the dynamic array.

34. Write a program to sum elements of a double dimension array of integers of m rows and n columns simulated by pointer to pointer to integer. Use function for sum the elements of the dynamic array.

35. Write program to demonstrate difference between character array and pointer to character.

36. Write program to demonstrate difference between constant pointer and pointer to constant.

37. Write program to demonstrate pointer arithmetic.

38. write program to demonstrate function-returning pointer.

Pt. RAVISHANKAR SHUKLA UNIVERSITY, RAIPUR (C.G.)

POST GRADUATE DIPLOMA IN COMPUTER APPLICATION, 2016-2017

[DURATION - ONE YEAR - FULL TIME]

The duration of the course shall be one year consisting of two semesters. There shall be three theory and two practical course in the each semester.

Second Semester : **PGDCA-106 : GUI - Programming in Visual Basic.**
PGDCA-107 : Database Management System
PGDCA-108 : Essential of E –Commerce & HTML .
PGDCA-109 : Practical based on PGDCA106, PGDCA107 & PGDCA-108
PGDCA-110 : Project

PGDCA-106
GUI - PROGRAMMING IN VISUAL BASIC

UNIT – I

Introduction to visual Basic - Editions of Visual Basic, Event Driven Programming, Terminology, Working environment, project and executable files ,Understanding modules, Using the code editor window, Other code navigation features, Code documentation and formatting, environment options, code formatting option, Automatic code completion features.

Creating Programs - Introduction to objects, Controlling objects, Properties, methods and events, Working with forms, Interacting with the user: MsgBox function, InputBox function, Code statements, Managing forms, Creating a program in Visual Basic, Printing.

UNIT – II

Variable and Procedures - Overview of variables, Declaring, Scope, arrays, User-defined data types, constants working with procedures, Working with dates and times, Using the Format function, Manipulating text strings.

Controlling Program Execution - Comparison and logical operators, If…Then statements, Select Case Statements looping structures, Using Do…Loop structures, For…Next statement, Exiting a loop.

UNIT – III

Working with Controls - Types of controls, Overview of standard controls, ComboBox and ListBox, OptionButton and Frame controls Menu, Status bars, Toolbars, Advanced standard controls, ActiveX controls, Insertable objects, Validation.

Error Trapping & Debugging - Overview of run-time errors, error handling process, The Err object, Errors and calling chain, Errors in an error-handling routine, Inline error handling, Error-handling styles, General error-trapping options Type of errors, Break mode Debug toolbar, Watch window, Immediate window, Local window, Tracing program flow with the Call Stack.

UNIT – IV

Sequential and Random Files - Saving data to file,basic filling, data analysis and file, the extended text editor, Random access file,The design and codeing.

Data Access Using the ADO Data Control - Overview of ActiveX data Objects, Visual Basic data access features, Relational database concepts Using the ADO Data control to access data, Overview of DAO, RDO, Data Control, structured query language (SQL), Manipulating data Using Data Form Wizard.

UNIT – V

Report Generation - Overview of Report, Data Report, Add groups, Data Environment, Connection to database Introduction to Crystal Report Generator.

Advances Tools - Overview of drag and drop, Mouse events, Drag-and drop basics, Date Time Control, Calendar, Print Dialog, MDI(Multiple Document Interface).

BOOK RECOMMENDED:

Mastering Visual Basic 6 Fundamentals – By Microsoft
Mastering in Visual Basic – By BPB Publications.
Introduction to VB Programming – V. K. Jain

PGDCA-107
Database Management System

UNIT – I : Introduction To DBMS

Data, Information and knowledge, concept of DBMS, Advantages of DBMS, data independence, database administration roles, DBMS architecture, different kinds of DBMS users, importance of data dictionary, contents of data dictionary, types of database languages. Data models: network, hierarchical, relational, Introduction to ODBC concept.

UNIT – II : E-R Model

Entity - Relationship model as a tool for conceptual design-entities, attributes and relationships. ER diagrams; Concept of keys; Case studies of ER modeling Generalization; specialization and aggregation.

UNIT – III : Relational Model

Structure to Relational Database, Relational Algebra, Extended Relational- Algebra Operation, Simple and complex queries using relational algebra, The Domain Relational Calculus, Tuple relational calculus.

UNIT – IV : Relational Database Design

Pitfalls in Relational Database Design, Decomposition, Functional Dependencies, Normalization: 1NF, 2NF, BCNF, 3NF, 4NF, 5NF.

UNIT – V : Structured Query Language :

DDL and DML: Creating Table, Specify Integrity Constraint, Modifying Existing Table, Dropping Table, Inserting, Deleting and Updating Rows in as Table, Where Clause, Operators, ORDER BY, GROUP Function, SQL Function, JOIN, Set Operation, SQL Sub Queries. Views: What is Views, Create, Drop and Retrieving data from views. **Security**: - Management of Roles, Changing Password, Granting Roles & Privilege, with drawing privileges.

Suggested Books :

1. Data base system : Korth & Silberschatz.
2. Data Base Management System : Alexies & Mathews
3. An Introduction to Data base System : C.J. Date
4. Data Base Management System : Raguramakrishnan.
5. Data Base Management System : Elmasri & Nawathe.

PGDCA-108
ESSENTIALS OF E –COMMERCE & HTML

UNIT – I

Introduction to Electronic Commerce –The scope of E-commerce; Size, growth and future projection of E-commerce market Worldwide and in India; Internet and its impact on traditional businesses; Definition of E-commerce; Business models in E –Commerce environment; Case studies. *Emergence of E-commerce* - E-commerce on private networks, Electronic Data Interchange (EDI), What is EDI, EDI in action, EDI basics, EDI standards, financial EDI, FEDI for international trade transaction, FEDI payment system within the US, ACH credit transfer payment system FEDI, application of EDI, benefits of EDI, Electronics Payment system, E-commerce on the web, E-commerce in India,

UNIT – II

Internet, Security and E-Commerce: Security of Data/Information in Internet/web environment; Client security, Network security; Virus protection and Hacking; Security Measures: Authentication, Integrity, Privacy, Non-repudiation; Public information, Private information, firewall tunnels, encryption,

secret key encryption, public key encryption, digital signature. Business–to-Business (B2B), Business-to-Consumer (B2C); Business-to-Business-to-Consumer (B2B2C) and Consumer-to-Consumer (C2C) E-Commerce

UNIT – III

HTML Basics & Web Site Design Principles –Concept of a Web Site, Web Standards, What is HTML? HTML Versions, Naming Scheme for HTML Documents , HTML document/file, HTML Editor , Explanation of the Structure of the homepage , Elements in HTML Documents ,HTML Tags, Basic HTML Tags, Comment tag in HTML, Viewing the Source of a web page, How to download the web page source? XHTML, CSS, Extensible Markup Language (XML), Extensible Style sheet language (XSL), Some tips for designing web pages, HTML Document Structure. HTML Document Structure-Head Section, Illustration of Document Structure,<BASE> Element,<ISINDEX> Element,<LINK> Element ,META ,<TITLE> Element,<SCRIPT> Element ,Practical Applications, *HTML Document Structure-Body Section:*-Body elements and its attributes: Background; Background Color; Text; Link; Active Link (ALINK); Visited Link (VLINK); Left margin; Top margin ,Organization of Elements in the BODY of the document: Text Block Elements; Text Emphasis Elements; Special Elements -- Hypertext Anchors; Character-Level Elements; Character References ,Text Block Elements: HR (Horizontal Line); Hn (Headings) ; P (Paragraph); Lists; ADDRESS ; BLOCKQUOTE; TABLE; DIV (HTML 3.2 and up) ; PRE (Preformatted); FORM ,Text Emphasis Elements, Special Elements -- Hypertext Anchors ,Character-Level Elements: line breaks (BR) and Images (IMG),Lists ,ADDRESS Element, BLOCKQUOTE Element, TABLE Element ,COMMENTS in HTML ,CHARACTER Emphasis Modes, Logical & Physical Styles ,Netscape, Microsoft and Advanced Standard Elements List, FONT, BASEFONT and CENTER.

UNIT – IV

Image, Internal and External Linking between WebPages - Netscape, Microsoft and Advanced Standard Elements List, FONT, BASEFONT and CENTER. Insertion of images using the element IMG (Attributes: SRC (Source), WIDTH, HEIGHT, ALT (Alternative), ALIGN),IMG (In-line Images) Element and Attributes; Illustrations of IMG Alignment, Image as Hypertext Anchor, Internal and External Linking between Web Pages. Hypertext Anchors ,HREF in Anchors ,Links to a Particular Place in a Document ,NAME attribute in an Anchor ,Targeting NAME Anchors ,TITLE attribute, Designing Frames in HTML.

UNIT – V

Creating Business Websites with Dynamic Web Pages – Concept of static web pages and dynamic web pages. Hosting & promotion of the web site, Domain Name Registration, Web Space allocation, Uploading / Downloading the website- FTP, cute FTP. Web Site Promotion Search Engines, Banner Advertisements.

Recommend Books –

1. Business on the net - by Kamlesh N. Agarawala , Amit Lal & Deeksha Agarawal (Macmillan India Ltd.).
2. Introduction to HTML by Kamlesh N. Agarwala, O.P.Vyas, Prateek A. Agarwala. (Kitab Mahal Publications).
3.. ASP Developer's Guide – by Greg Buczek (TATA McGraw Hill).
4. Information Technology Act 2000: www.mit.gov.in/it-bill.htm

PGDCA-109 : Practical based on PGDCA106, PGDCA107 & PGDCA108

1 Scheme of Examination:-
Practical examination will be of 3 hours duration. The distribution of practical marks will be as follows

Question 1 (VB)	-	15
Question 2 (VB)	-	15
Question 3 (SQL)	-	15
Question 4 (HTML/Web Design)	-	15
Viva	-	25
[Practical Copy + Internal Record]	-	15
Total	-	**100**

2 In every program there should be comment for each coded line or block of code

3 Practical file should contain printed programs with name of author, date, path of program, unit no. and printed output.

4 All the following programs or a similar type of programs should be prepared

List of Practical of Visual Basic

1. WAP to perform arithmetic operation **using command buttons**. (**Declare variables globally**).
2. WAP to take input of principal, rate & time and calculate simple interest & compound interest.
3. Write a program to take input of x and print table of x in the following format.

   X * 1 = X
   X * 2 = 2X

   X * 10 = 10*X
4. Design an interface, which will appear like marksheet. It will take input of marks in five subjects and calculate total marks and percentage then provide grade according to following criteria. (**Using nested if**) (Use tab index property to move focus).

If %	Then Grade
> = 90	A+
> = 75 & < 90	A
> = 60 & < 75	B
> = 45 & < 60	C
Otherwise	F

5. WAP to create a simple calculator (**Using control array)**
6. Write a program to check whether an centered no. is prime or not. **(Using for loop & Exit for)**
7. Write a program which will count all vowels, consonants, digits, special characters and blank spaces in a sentences (Using **select case**)
8. WAP to illustrate all functionalities of **listbox** and **combobox**.
9. WAP using **check boxes** for following font effects.
   Bold
   Italic
   Underline
   Increase font size
   Decrease font size
   Font color
10. WAP for temperature conversion using **option button**.
11. WAP to launch a rocket using **pictures box** and **timer control**.
12. WAP to change back color of any control (label, textbox) using **scroll box**.
13. WAP to search an element for a **one dimension static array**.
14. WAP to sort a dynamic array of
    (a)n numbers
    (b)n strings (Input array size at run time)
15. WAP to take input of two matrices and perform their addition, subtraction and multiplication using **menu editor**.
17. WAP to illustrate **call by value and call by reference** (to swap to values)
18. Write a program to calculate factorial of a number using **user defined function.**
19. Take input of a word and WAP to check whether it is a palindrome or not. **(Without using structure fun)**
20. WAP to find smallest among given three numbers using **user defined procedures**.
21. WAP to generate, print and find sum of first n elements of fibonacci series using **recursion**.

22. WAP to perform read write operations in a **sequential file**.
23. Create a **user defined data type** having fields name (as string of length 20 bytes), Rollno (as integer), class (as string of 10 bytes). WAP to create a **random access file** to store above data and perform following operations in this file.

(a) Write new record (b) Read / display existing record (c) Delete any record
(d)Search any record (f) List selected records (e) close the file

24. WAP to display records of a table using **DAO & bound control** code for buttons to move at first record, next record, previous record, last record in the table.
25. Create a table using **visual data manager** and write a program using **RDO** & **advanced bound control** to add, delete, edit & navigate records.
26. WAP to access a database using **ADO &** display a key column in the combo box or list box when an item is selected in it, its corresponding records is shown in **MSH flex grid.**
27. Using **Data Environment** create a program to display records of any table.
28. WAP to generate marksheet of students in a class through **data report**.
29. WAP to illustrate various **key board and mouse events**.
30. Using **drive, directory and file list box** (it will show only .bmp files). Let the user select the bmp files, which will appear in picture box as user click on any item in list box.
31. Using **toolbar** design an interface for string manipulation. Toolbar should have tabs to
    (a) Find length of string (b) No of blank spaces in sting (c) Reverse the string
    Also show current date & time in **status bar.**

List of Practical of SQL

1. Using the following database,
   Colleges (cname, city, address, phone, afdate)
   Staffs (sid, sname, saddress, contacts)
   StaffJoins (sid, cname, dept, DOJ, post, salary)
   Teachings (sid, class, paperid, fsession, tsession)
   Subjects (paperid, subject, paperno, papername)

Write SQL statements for the following –

a. Create the above tables with the given specifications and constraints.
b. Insert about 10 rows as are appropriate to solve the following queries.
c. List the names of the teachers teaching computer subjects.
d. List the names and cities of all staff working in your college.
e. List the names and cities of all staff working in your college who earn more than 15,000
f. Find the staffs whose names start with 'M' or 'R' and ends with 'A' and/or 7 characters long.
g. Find the staffs whose date of joining is 2005.
h. Modify the database so that staff N1 now works in C2 College.
i. List the names of subjects, which T1 teaches in this session or all sessions.
j. Find the classes that T1 do not teach at present session.
   a. Find the colleges who have most number of staffs.
   b. Find the staffs that earn a higher salary who earn greater than average salary of their college.
   c. Find the colleges whose average salary is more than average salary of C2
   d. Find the college that has the smallest payroll.
   e. Find the colleges where the total salary is greater than the average salary of all colleges.
   f. List maximum, average, minimum salary of each college

   a. List the names of the teachers, departments teaching in more than one department.
   b. Acquire details of staffs by name in a college or each college.
   c. Find the names of staff that earn more than each staff of C2 College.
   d. Give all principals a 10% rise in salary unless their salary becomes greater than 20,000 in such case give 5% rise.
   e. Find all staff that do not work in same cities as the colleges they work.
   f. List names of employees in ascending order according to salary who are working in your college or all colleges.
      a. Create a view having fields sname, cname, dept, DOJ, and post
      b. Create a view consisting of cname, average salary and total salary of all staff in that college.
      c. Select the colleges having highest and lowest average salary using above views.
      d. List the staff names of a department using above views.

2. Create the following database,
   Enrollment (enrollno, name, gender, DOB, address, phone)

Admission (admno, enrollno, course, yearsem, date, cname)
Colleges (cname, city, address, phone, afdate)
FeeStructure (course, yearsem, fee)
Payment (billno, admno, amount, pdate, purpose)

a. Create the above tables with the given specifications and constraints.
b. Insert about 10 rows as are appropriate to solve the following queries.
c. Get full detail of all students who took admission this year class wise
d. Get detail of students who took admission in Bhilai colleges.
e. Calculate the total amount of fees collected in this session
   i) By your college ii) by each college iii) by all colleges
   a. List the students who have not payed full fee
      i) in your college ii) in all colleges
   b. List the number of admissions in your class in every year.
   c. List the students in the session who are not in the colleges in the same city as they live in.
   d. List the students in colleges in your city and also live in your city.

3. Create the following database,
   Subjects (paperid, subject, paper, papername)
   Test (paperid, date, time, max, min)
   Score (rollno, paperid, marks, attendence)
   Students (admno, rollno, class, yearsem)
   a. Create the above tables with the given specifications and constraints.
   b. Insert about 10 rows as are appropriate to solve the following queries.
   c. List the students who were present in a paper of a subject.
   d. List all roll numbers who have passed in first division.
   e. List all students in BCA-II who have scored higher than average
      i) in your college ii) in every college
   f. List the highest score, average and minimum score in BCA-II i) in your college ii) in every college

4. Using the following database
   Colleges (cname, city, address, phone, afdate)
   Staffs (sid, sname, saddress, contacts)
   StaffJoins (sid, cname, dept, DOJ, post, salary)
   Teachings (sid, class, paperid, fsession, tsession)
   Subjects (paperid, subject, paperno, papername)

   Write SQL statements for the following –
   a. Create the above tables with the given specifications and constraints.
   b. Insert about 10 rows as are appropriate to solve the following queries.
   c. List the names of the teachers teaching computer subjects.
   d. List the names and cities of all staff working in your college.
   e. List the names and cities of all staff working in your college who earn more than 15,000

5. Using the following database
   Colleges (cname, city, address, phone, afdate)
   Staffs (sid, sname, saddress, contacts)
   StaffJoins (sid, cname, dept, DOJ, post, salary)
   Teachings (sid, class, paperid, fsession, tsession)
   Subjects (paperid, subject, paperno, papername)

   a. Find the staffs whose names start with ‘M’ or ‘R’ and ends with ‘A’ and/or 7 characters long.
   b. Find the staffs whose date of joining is 2005.
   c. Modify the database so that staff N1 now works in C2 college.
   d. List the names of subjects which T1 teaches in this session or all sessions.

6. Using the following database
   Colleges (cname, city, address, phone, afdate)
   Staffs (sid, sname, saddress, contacts)
   StaffJoins (sid, cname, dept, DOJ, post, salary)
   Teachings (sid, class, paperid, fsession, tsession)
   Subjects (paperid, subject, paperno, papername)

a. Find the classes that T1 do not teach at present session.
b. Find the college who have most number of staffs.
c. Find the staffs who earn a higher salary who earn greater than average salary of their college.
d. Find the colleges whose average salary is more than average salary of C2
e. Find the college that has the smallest payroll.
f. Find the colleges where the total salary is greater than the average salary of all colleges.
g. List maximum, average, minimum salary of each college

7. Using the following database
Colleges (cname, city, address, phone, afdate)
Staffs (sid, sname, saddress, contacts)
StaffJoins (sid, cname, dept, DOJ, post, salary)
Teachings (sid, class, paperid, fsession, tsession)
Subjects (paperid, subject, paperno, papername)

a. Find the classes that T1 do not teach at present session.
b. List the names of the teachers, departments teaching in more than one departments.
c. Acquire details of staffs by name in a college or each college.
d. Find the names of staff who earn more than each staff of C2 college.
e. Give all principals a 10% rise in salary unless their salary becomes greater than 20,000 in such case give 5% rise.
f. Find all staff who donot work in same cities as the colleges they work.
g. List names of employees in ascending order according to salary who are working in your college or all colleges.

8. Using the following database
Colleges (cname, city, address, phone, afdate)
Staffs (sid, sname, saddress, contacts)
StaffJoins (sid, cname, dept, DOJ, post, salary)
Teachings (sid, class, paperid, fsession, tsession)
Subjects (paperid, subject, paperno, papername)

a. Find the classes that T1 do not teach at present session.
b. Create a view having fields sname, cname, dept, DOJ, and post
c. Create a view consisting of cname, average salary and total salary of all staff in that college.
d. Select the colleges having highest and lowest average salary using above views.
e. List the staff names of a department using above views.

9. Enrollment (enrollno, name, gender, DOB, address, phone)
Admission (admno, enrollno, course, yearsem, date, cname)
Colleges (cname, city, address, phone, afdate)
FeeStructure (course, yearsem, fee)
Payment (billno, admno, amount, pdate, purpose)
a. Create the above tables with the given specifications and constraints.
b. Insert about 10 rows as are appropriate to solve the following queries.
c. Get full detail of all students who took admission this year classwise
d. Get detail of students who took admission in Bhilai colleges.
e. Calculate the total amount of fees collected in this session
i) by your college ii) by each college iii) by all colleges

10. Enrollment (enrollno, name, gender, DOB, address, phone)
Admission (admno, enrollno, course, yearsem, date, cname)
Colleges (cname, city, address, phone, afdate)
FeeStructure (course, yearsem, fee)
Payment (billno, admno, amount, pdate, purpose)
a. List the students who have not payed full fee
i) in your college ii) in all colleges
b. List the number of admissions in your class in every year.
c. List the students in the session who are not in the colleges in the same city as they live in.
d. List the students in colleges in your city and also live in your city.

11. Subjects (paperid, subject, paper, papername)
Test (paperid, date, time, max, min)
Score (rollno, paperid, marks, attendence)
Students (admno, rollno, class, yearsem)

a. Create the above tables with the given specifications and constraints.
b. Insert about 10 rows as are appropriate to solve the following queries.
c. List the students who were present in a paper of a subject.
d. List all roll numbers who have passed in first division.
e. List all students in MCA-II who have scored higher than average
i) in your college ii) in every college
f. List the highest score, average and minimum score in MCA-II
i) in your college ii) in every college

List of Practical of HTML

At least 10 practical of HTML & Web Designing

PGDCA-110 : Project

1. Scheme of Examination:- The Project should be done by individual student.

Practical examination will be of 3 hours duration. The distribution of practical marks will be as follows

Software Demonstration	-	40
Project Report (Hard Copy + Soft Copy)	-	20
Project Demonstration/Presentation	-	20
Project Viva	-	20
Total	-	**100**

2. Format of the student project report on completion of the project

- Cover page as per format
- Certificate of Approval
- Certificate of project guide/Center Manager
- Certificate of the company/Organization
- Certificate of Evaluation
- Declaration / Self Certificate
- Acknowledgement

In the "Acknowledgement" page, the writer recognizes his /her indebtedness for guidance and assistance of the thesis/report adviser and other members of the faculty. Courtesy demands that he/she also recognize specific contributions by other persons or institutions such as libraries and research foundations. Acknowledgements should be expressed simply, tastefully, and tactfully.

- Synopsis of the project
- Main Report
  - ✓ Objectives & Scope of the project
  - ✓ Theoretical Background of Project
  - ✓ Definition of problem
  - ✓ System Analysis & Design
  - ✓ System Planning (PERT Chart)
  - ✓ Methodology adopted, system Implementation & Detail of Hardware & Software used
  - ✓ System maintenance & Evaluation
  - ✓ Cost and benefit Analysis
  - ✓ Detailed Life Cycle of the project
    - o ERD,DFD
    - o Input and Output Screen Design
    - o Process involved
    - o Methodology used for testing
    - o Test Report, Printout of the code sheet
  - ✓ User/Operational Manual- including security aspects, access rights, back up, Controls etc.
  - ✓ Conclusion
  - ✓ References
  - ✓ Soft copy of the project on CD

Formats of various certificates and formatting styles are as:

1. **Project report Cover Format**:

A
Project Report
On

Title of the Project Report

(Times New Roman.Italic, Font Size=24)
Submitted in partial fulfillment of the requirements for the award of degree
Post Graduate Diploma in Computer Application
From
Pt.Ravishankar Shukla University Raipur (C.G.)
(Bookman Old Style, 16 Point, Center)
Year : xxxx

Logo of college

Guide
(Guide Name)

Submitted by:
(Student's Name)
Roll No:

Submitted to
(College Name)
Pt.Ravishankar Shukla University Raipur (C.G.)

2. Certificate of Approval by Head of the Department in letter head

CERTIFICATE OF APPROVAL

This is to certify that the Project work entitled " _____" is carried out by Mr/Ms/Mrs _____ , a student of PGDCA at (**College Name)** is hereby approved as a credible work in the discipline of Computer Science & Information Technology for the award of degree of **Post Graduate Diploma in Computer Application** during the year _____ **from Pt. Ravishankar Shukla University, Raipur (CG).**

(Head Name)

2. Certificate from the Guide in letter head

CERTIFICATE

This is to certify that the Project work entitled " _____" Submitted to the **(College Name)** by Mr/Ms/Mrs _____ Roll No_____, in partial fulfillment for the requirements relating to nature and standard of the award of **Post Graduate Diploma in Computer Application** degree by **, Pt. Ravishankar Shukla University, Raipur (CG)** for the academic year 20___ - 20___ .

This project work has been carried out under my guidance.

(Guide Name)

3. Certificate of the Company or Organisation from where the Project is done from the Project Manager or Project guide.

4. Certificate of evaluation in the department letter head

CERTIFICATE OF EVALUATION

This is to certify that the Project work entitled " _____" is carried out by Mr/Ms/Mrs _____ , a student of PGDCA at (**College Name),** after proper evaluation and examination, is hereby approved as a credible work in the discipline of Computer Science & Information Technology and is done in a satisfactory manner for its acceptance as a requisite for the award of degree of **Post Graduate Diploma in Computer Application** during the year _____ from **Pt. Ravishankar Shukla University, Raipur (CG).**

Internal Examiner **External Examiner**

5. Declaration of Student / Self Certificate

DECLARATION

This to certify that the project report entitled "_____", which is submitted by me in the partial fulfillment for the award of the degree of **Post Graduate Diploma in Computer Application, (College Name),** comprises the original work carried out by me.

I further declare that the work reported in this project has not been submitted and will not be submitted, either in part or in full for the award of any other degree or diploma in this Institute or any other Institute or University.

Place : (Name)
Date : (Roll No)