

दुर्ग विश्वविद्यालय, दुर्ग (छ.ग.)



पाठ्यक्रम

परीक्षा – 2017–18

बी.ए.-1 (कोड-101) B.A.-I (Code- 101)

INDEX			
1.	Revised Ordinance No. 11		03
2.	Scheme of Examination		05
3.	Environmental Studies		07
4.	Foundation Course:		10
5.	Hindi Litreture		12
6.	English Litreture		14
7.	Psychology		16
8.	History		18
9.	Economics		20
10.	Philosophy		22
11.	Sanskrit		24
12.	Geography		25
13.	Sociology		27
14.	Political Science		28
15.	Music		30
16.	Management		32
17.	Anthropology		34
18.	Maths		36
19.	Linguistics		39
20.	वृत्य		40
21.	Statistics		41
22.	Ancient Indian History		44
23.	Defence Study		46
24.	Urdu		49
25.	Home science		51
26.	Insurance		54
27.	Functional English		54
28.	Drawing &Painting		55
29.	Educations		56

REVISED ORDINANCE NO.11
(As per State U.G.C. Scheme)
BACHELOR OF ARTS

- 1 The three year course has 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, C.G. or any other examination recognized by the University or C.G. Board of Secondary Education as equivalent there to, has attended 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 recognized by the University as equivalent there to has attended 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-college students can also be eligible for admission to other examination as per provisions of Ordinance N. 6 relating to Examinations (General). Provided that non-college students can also be permitted to offer only such subjects/paper 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 following six groups:
 - 1 Sociology / Ancient Indian History/Anthropology
 - 2 Political Science/Home Science / Drawing & Painting / Vocational Course.
 - 3 Hindi Literature/ Sanskrit Literature/Urdu Literature/Mathematics.
 - 4 Economics/Music/Defense Studies/Linguistics/ Urdu;
 - 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 subject 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. Successful candidate will be given a certificate to that effect.
- 8 In order to pass 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 the theory and practical part so 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 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 only the total aggregate marks being carried over for determining the division shall include the actual mark so obtained in the subject in which he appeared at the supplementary examination.
- 10 Successful examinee at the Part-III examination obtaining 60% or more marks shall be placed in the First division, those obtain less than 60% but not less than 45% marks in the Second division and other successful examinees in the third division.

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	50
	II	75	
9. Sociology	I	75	50
	II	75	
10. Geography	I	50	33
	II	50	
11. Mathematics	Practical	50	17
	I	50	50
	II	50	
12. Statistics	III	50	33
	I	50	
	II	50	
	Practical	50	17

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

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, $\frac{1}{x}$, square, reciprocal, exponential, log, square root, trigonometric functions, sine, cosine, tangent etc. factorial summation, xy, yx and in the light of objective approval of merits and demerits of the viva only will be allowed.

Part - I

SYLLABUS FORENVIRONMENTAL STUDIES AND HUMAN RIGHTS

(Papercode-0828)

MM. 75

इन्वारमेंटल साईसे 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 अंकक्षेत्रीय 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: (तीस 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 अधीक्षक, 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, dam's 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 an 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.

(12Lecture)

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.

(12Lecture)

(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- International 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, Clarendon 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 Development, Environment & Security. Stockholm Eng. Institute. Oxford University, Press. m473p.
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 Hindu (M)
25. Townsend C. Harper J. And Michael Begon, Essentials of Ecology, Blackwell Science (TB)
26. Trivedi R.K. Handbook of Environment Laws, Rules, Guidelines, Compliances and Standards, Vol I and 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 के होगा ।
2. प्रश्न पत्र अनिर्वाय होगा ।
3. इसके अंक श्रेणी निर्धारण के लिये जोड़े जावेंगे
4. प्रत्येक इकाई के अंक समान होंगे ।

पाठ्य विषय—

- इकाई –1 पल्लवन, पत्राचार तथा अनुवाद एवं परिभाषा शब्दावली ।
इकाई –2 मुहावरे—लोकोक्तियां, शब्दशुद्ध, वाक्य शुद्धि, शब्द ज्ञान—पर्यायवाची, विलोम, अनेकार्थी, समश्रुत (समानोचित) 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 ।

पाठ्यक्रम के लिये पुस्तकें—

1. भारतीयता के स्वर साधन धनंजय वर्मा — म.प्र. ग्रंथ अकादमी ।
2. नगरी लिपि और हिन्दी — अनंत चौधरी—ग्रंथ अकादमी पटना ।
3. कम्प्यूटर और हिन्दी — हरिमोहन — तक्षशीला 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 simply 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 Grant Academy Bhopal.

Dr. M. Chakraborty

Dr. S. Gupta

DR. MERILY ROY

हिन्दीसाहित्य
प्रथम-प्रश्न पत्र
(प्राचीन हिन्दी काव्य)
(पेपर कोड- 0103)

अंक 75

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, रासा, फागु, चरित, सुभाषित आदि विविध। किव्यारूपों में अभिव्यंजित है। मध्यकालीन साहित्य की पृष्ठभूमि के रूप में इसे प्रतिष्ठापित किया जाता है।

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

पाठ्य विषय-

1. कबीर (कबीर-कांतिकुमार जैन प्रारंभिक 50 साखियां)
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 अयोण्याकाण्ड से प्रारंभिक 25 दोहे चौपाई, छंद सहित।
5. घनानन्द (घनानन्द- सत्र विश्वनाथ प्रसाद मिश्र) प्रारंभिक 25 छंद द्रुत पाठ हेतु निम्नांकित तीन कवियों का अध्ययन किया जावेगा - जिसमें से किन्हीं दो पर लघूत्तरीय प्रश्न पुछे जायेंगे


1. विद्यापति
2. रहीम
3. रसखान

अंक विभाजन -

1. 3 व्याख्याएं	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)
(पेपर कोड- 0103)

अंक 75

उद्देश्य एवं प्रस्तावना—

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

पाठ्य विषय —

व्याख्या एवं आलोचनात्मक प्रश्नों के लिए एक 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.	फणीश्वरनाथ रेणु	—	टेस
	4.	मेहन राकेश	—	मलवे का मालिक
	5.	भीष्म साहनी	—	चीफ की दावत
	6.	राजेन्द्र यादव	—	बिरादरी बाहर
	7.	रागेय राघव	—	गदल

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

1. उपेन्द्रनाथ अशक, 2. बाल शौरि रेड्डी 3. शिवनी

अंक विभाजन —	3/ व्याख्याएं	30 प्रतिशत
	2/ आलोचात्मक प्रश्न	30 प्रतिशत
	5/ लघुत्तरीय प्रश्न	20 प्रतिशत
	20/ वस्तुनिष्ठ प्रश्न	20 प्रतिशत







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 paper. Each question carries the marks according to the scheme mentioned in each paper.

ENGLISH LITERATURE
PAPER - I

LITERATURE IN ENGLISH - 1550-1750 (Paper Code-0105)

M.M.75

(i) Unit-1 of annotation is compulsory, and passages to be set from Units (II to V), at least 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 set at least 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 Thief 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 Essay on Criticism (True case in writing....) and the world's Victor stood subdued 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

Shakespeare - 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. Petrarchism 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 Periodical Essay

BOOKS RECOMMENDED for Unit VII in Papers I and II

Edward Albert	-	A History of English Literature.
Ifor Evans	-	A short History of English Literature.
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

Dr. M. C. Chakraborty

Dr. S. Gupta

DR. MERILY ROY

**ENGLISH LITERATURE
PAPER - II**

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

Note-

- i. Unit-1. of annotation is compulsory, 6 passages beset from Units (II to IV) at least 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 I to VI-8 questions to be set at least 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) Browning - Prospice.

UNIT-4 PROSE

- a) Lamb - Dream Children : A Reverie
- b) Hazlitt - 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.

- i. The Reform Acts.
- ii. The Impact of Industrialization.
- iii. Colonialism and Imperialism.
- iv. Scientific Discoveries and Discoveries.
- v. Faith and Doubt.
- vi. Classical and Romantic Concepts of Imagination.
- vii. Varieties of Romantic and Victorian Poetry.
- viii. The Victorian Novel.
- ix. Realism and the Novel.
- x. Aestheticism.

Dr. M. C. Chakraborty

Dr. S. Gupta

DR. MERILY ROY

PSYCHOLOGY

Pape	Name of the		Max. Marks	Dur
I	Basic	Processe	50	3hrs.
II	Psychopathology		50	3hrs.
III	Practical		50	4

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 Behaviours :Genes and Behaviour, 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 Percptron; Attentional Processes: Definition, types and determinants; Principles of Perceptual organisation; Thinking process : Nature and types.

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

UNIT-5 Cognitiveand 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 – अरुण कुमार सिंह, बनारसीदास प्रकाशन
2. प्रीति वर्मा – आधुनिक सामान्य मनोविज्ञान
3. Balon R.A.,Barne D.A - Understanding behaviour Tokyo HaltSounders
4. Zimbardo PG.& - Psychology New York Haper Collings college publishers Walser AL 1997
5. Lefton, L.A. 1985 - Psychology Bosten-Allyn &Baron

U. Chhabra
1.8.17

1/8/17

1.8.17

PAPER II
PSYCHOPATHOLOGY(PAPERCODE-0120)

M.M.50

This paper consists of 5 units.

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

- UNIT-1** Introduction: the concept of normality and abnormality; models of psychopathology: Psychodynamic, behavioral and cognitive.
- UNIT-2** Assessment of psychopathology :- diagnostic tests, rating scales, clinical interview, projective tests.
- UNIT-3** Anxiety disorders :panic disorder, phobias, obsessive compulsive disorder, anxiety disorder, dissociative disorder.
- UNIT-4** Mood and personality disorders - manic - 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. Johnwilcy
4. लाभ सिंह तथा तिवारी – असामान्य मनोविज्ञान – आगरा विनोद पुस्तक भण्डार
5. कपिल एच के. – आसामान्य मनोविज्ञान – हरप्रसाद भार्गव, आगरा।

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 emotions 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 intelligence test/ performance tests.
- (ii) E.P.I.
- (iii) Anxiety test.
- (iv) Depression Scale
- (v) Adjustment inventory.
- (vi) Achievement motivation.
- (vi) Stress tolerance test.

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

DISTRIBUTION OF MARKS

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

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

U. K. K. K.
1.5.17

T. K.
1/8/17

[Signature]
1.8.17

इतिहास
प्रथम पत्र – प्रथम
(भारत का इतिहास प्रारंभ से 1206 ई. तक)

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

उद्देश्य—इस पाठ्यक्रम का उद्देश्य 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 इतिहासों के स्रोतों का सर्वेक्षण।
2. भारत की भौगोलिक विशेषताएं
3. प्रागैतिहासिक – पुरु पाषाण से नवपाषाण युग तक सभ्यता एवं संस्कृति
4. हड़प्पा सभ्यता— निर्माता, प्रसार, नगर योजना, राजनीतिक, सामाजिक, आर्थिक संरचना

इकाई-2

1. ऋग्वैदिक काल – राजनीतिक, आर्थिक, धार्मिक।
2. उत्तर वैदिक काल –राजनीतिक, सामाजिक, आर्थिक, धार्मिक।
3. महाकाव्य काल –सभ्यता एवं संस्कृति।
4. ईसा पूर्व छठवीं शताब्दी का भारत तथा बौद्ध एवं जैन धर्म

इकाई-3

1. मगध साम्राज्य का उदय।
2. सिकन्दर का आक्रमण और उसका प्रभाव।
3. मौर्य साम्राज्यकी स्थापना – चन्द्रगुप्त मौर्य एवं अशोक के धम्म।
4. मौर्यकालिन प्रशासन अर्थव्यवस्था एवं कला तथा संस्कृति।

इकाई-4

1. मौर्योत्तरकाल— शुंग, मुषाण एवं सातवाहन।
2. संगमयुग— साहित्य, संस्कृति।
3. चौल एवं पाण्ड्य।
4. गुप्त साम्राज्य— प्रशासन, आर्थिक, सामाजिक दशा

इकाई-5

1. पल्लव, चालुक्य, वर्धन, वाकाटक, गुर्जर—प्रतिहार, पाल, सेन, राष्ट्रकूट।
2. भारत का दक्षिण पूर्व 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

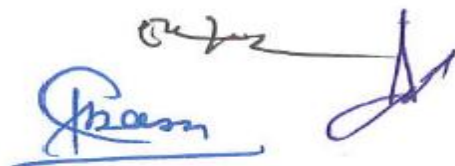
Navroop
2017/17

Prashant

संदर्भ ग्रंथ –

- | | |
|--|--|
| 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.लुनिया | – प्राचीन भारतीय संस्कृति |
| 6. एस.आर.शर्मा | – प्राचीन भारत प्रगैतिहासिक युग से 1200ई. तक |
| 7. K.L Khurana | – Ancient India from Earliest Time to 1206 A.D. |
| 8. K.L Khurana | – History of India Form Earliest Time to 1526 A.D. |
| 9. Vincent Smith | – Oxford History of India. |
| 10. भार्गव | – प्राचीन भारत |
| 11. L. Prasad
Civilization to 1200 A.D. | – Ancient India- India's Volley |

NAHAR
2017/17



इतिहास
प्रश्न पत्र – द्वितीय
विश्व का इतिहास (1453 सं 1789 ई. तक)
(पेपर कोड-0110)

इकाई- 1

1. सामान्तवाद का पतन एवं आधुनिक युग का प्रारंभ
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. आधुनिक पाश्चात्य जगत के आर्थिक आधार
2. वाणिज्यवाद एवं व्यापारिक क्रान्ति
3. औद्योगिक क्रान्ति
4. उपनिवेशवाद का प्रारंभ

इकाई- 4

1. इंग्लैण्ड में गृह युद्ध : घटनाएं
2. इंग्लैण्ड में गृह युद्ध : कारण एवं परिणाम
3. गौरव पूर्ण क्रान्ति (1688)
4. केमलीन का शासन

इकाई- 5

1. लुई चतुर्दश : गृह नीति
2. लुई चतुर्दश : विदेश नीति
3. अमेरीका का स्वतंत्रता संग्राम
4. फ्रांस की क्रांति के कारण एवं नेशनल असेम्बली

संदर्भ ग्रंथ –

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

Naraj
20/7/17

Sham

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), Giffen 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 Theory, Interest Classical and Keynesian Theories, Modern Theory, Profits - Innovation, Risk bearing and Uncertainty theories.

UNIT-5 Welfare 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 Irwin, 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.

Handwritten signatures and initials in blue ink at the bottom of the page. From left to right: a signature that appears to be 'D. C. AS', initials 'Jmmi', a signature 'L. K. Bhowmik', a signature 'Rajy (R. D. Umare)', and a signature 'Sharma'.

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 growth 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, Allocation 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 industrialization.

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 Environment 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 Cambridge Economic History of India, Volume II. 1957-1970. Orient Longman Ltd. Hyderabad.
5. Misra, S. K. and v. K. Puri (2001), Indian Economy - Its Development Experience, Himalaya Publication House, Mumbai.

Handwritten signatures and initials at the bottom of the page, including 'D. C. S.', 'J. M.', 'C. K. Bhattacharya', 'Rajy (R. D. W. S.)', and 'D. S. M.'.

दर्शन शस्त्र

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

प्रथम-प्रश्न पत्र
भारतीय दर्शन की रूपरेखा
(पेपर कोर्ड – 0127)

इकाई- 1

1. भारतीय दर्शन- परिचय एवं मुख्य विशेषताएं
2. वेद उपनिषद् – ब्रम्हा, आत्मा, ऋतू
3. चार्वाक दर्शन- तत्व मीमांसा

इकाई- 2

1. जैन दर्शन- स्वादवाद, जीव,
2. बौद्ध दर्शन- चार आग्र सत्य, अनात्मवाद

इकाई- 3

1. न्याय दर्शन – प्रमाण (प्रमाण 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 – ब्रम्हा, आत्मा, माया
2. श्रीमानुज का विशिष्टाद्वैत – ब्रम्हा, जीव, भक्ति एवं प्रपत्ति

11/8/17
Dr. S. S. S. S.

ENGLISH VERSION
OUTLINES OF INDIAN PHILOSOPHY
(Paper Code-0127)

UNIT-1

1. Indian Philosophy- Introduction and main characteristics
2. Veda and Upanisada - Brahman, Atman, Rta.
3. Carvaka Darshan - Metaphysics

UNIT-2

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

UNIT-3

1. Nyaya Darshan-Pratya and Anuman, God
2. Vaisheshika Darshan- Paramanuvada.

UNIT-4

1. Sankhya Darshan- Prakriti, Purusa, Evolutionism
2. Yoga Darshan-Eightfold path

UNIT-5

1. Advaita Darshan of Sankaracharya-Brahman, Atma, Maya
2. Visistadvait-Brahman, Jiva, Bhakti and Prapatti

SUGGESTED BOOKS

1. M.Hiriyanna : Outlines of Indian Philosophy
2. C.D.Sharma : A Critical Survey of Indian Philosophy
3. दत्त एवं चटर्जी : भारतीय दर्शन का परिचय
4. श्रीमती शोभा : भारतीय दर्शन
5. संगमलाल पांडेय : भारतीय दर्शन
6. बी.एन. सिंह : भारतीय दर्शन
7. सिंह एवं सिंह : भारतीय दर्शन

Handwritten signature and date:
11/8/17
Dr. H. S. Sharma

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 विद्धांत

इकाई- 2

1. थाम एक्वीनास— ईश्वर के अस्तित्व के प्रमाण
2. डेकार्ट – संदेहवादी पद्धती, आत्मा का अस्तित्व, द्वैतवाद (मैं सोचता हूं अतः मैं हूँ)।

इकाई- 3

1. स्पिनोजा – द्रव्य, गुण, पर्याय
2. लाइब्निज – चिद्बिन्दुवाद

इकाई- 4

1. लॉक – सहज प्रत्यसों 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

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11/8/17
Dr. H. S. R. G. R.

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-Proofs for the Existence of God
2. Descartes-Method of Doubt,Existence of Soul (Cogitoergosum) Dualism

UNIT-3

1. Spinoza-Substance,attributesandmodes.
2. Leibnitz-Monadology

UNIT-4

1. Locke-RefutationofinnateIdeas
-Substance : Primay and Secondary qualities
2. Berkeley-Rejection of the distinction between primary and Secondary qualities

UNIT-5

1. Hume-ImpresionandIdeas,Scepticism,RejectionofSelf
2. Kant-Criticism

SUGGESTED BOOKS-

- | | | |
|----------------------|---|--|
| 1. W.T. Stace | - | A Certifical History of Greek Philosophy |
| 2. श्रीमती शोभा निगम | - | ग्रीक एवं मध्ययुगीन दर्शन |
| 3. A.K. Rogers | - | A Studetn'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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11/8/17
Dr. H.S. ...

संस्कृत
प्रथम प्रश्न पत्र
नाटक, व्याकरण और अनुवाद
(पेपर कोड – 0125)

पूर्णांक : 75

- इकाई-1** स्वप्नवासवदत्तम् – अंक 15
- इकाई-2** समीक्षात्मक प्रश्न – अंक 15
- इकाई-3** सुबन्त (शब्द) राम, गति, भानु, पितृ, करिन् भूभूत्, कर्तृ, चंद्रमस्, भगवत्, आत्मन् लता, मनि, नदी, धेनु, वधु, मातृ, फल, वारि, वाच्, रात्रि, सर्व, तद्, एतद्, यद्, इदम्, तथा युष्मद् एक, द्वि. त्रि. चतुर वचन तिङन्त (धातु रूप) भ्वादि, दिवादि, तुदादि, चुरादि, इन चार वर्णों के धातुओं के लट्, लाट्, लङ्. और विधिलिङ्लकारों के रूप एवं अस कृ धातुओं के भी लकार के अंक 20
- इकाई-4** प्रत्याहार, संज्ञा तथा संधि 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 व्यावहारिका स्वरूपम् – डॉ. नरेन्द्र, श्री अरविन्द आश्रम,
 3. संस्कृतस्य व्याकरण – डॉ. धर वसिष्ठ
 4. शुकनासोपदेश- मोती लाल बनारसीदास
 5. संस्कृत में अनुवाद कैसे करें – उमाकान्त मिश्र सास्त्री, भारती ढावन पहना. 1971
 6. साधुबोध व्याकरणम् – डॉ. श्रीमती पुष्पा दीक्षित, यन्त्रस्थ – पाणिनीय शोध संस्थान तेलीपारा बिलासपुर (छ.ग.)
 7. लघु सिद्धांत कौमुदी – श्री शारदा रज्जन राँय – 1954
 8. संस्कृत निबन्ध रत्नाकर – डॉ. शिव प्रसाद भारद्वाज, अशोक प्रकाशन दिल्ली – 1977 द्वितीय संस्करण

Dr. Sushma Tiwari *Dr. Dnyanesh Deshpande*

संस्कृत
द्वितीय प्रश्न पत्र
गद्य, कथा एवं साहित्येतिहास

पूर्णांक

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(पेपर कोड 0126)

इकाई- 1 शुकनायोपदेश (व्याख्या)	अंक 20
इकाई- 2 हितोपदेश (मित्रलाभ) (व्याख्या)	अंक 20
इकाई- 3 शुकनायोपदेश व हितोपदेश के समीक्षात्मक प्रश्न	अंक 10
इकाई- 4 संस्कृत, नाट्य एवं कथा साहित्य का इतिहास	अंक 15

- इकाई-5 प्रमुख कवियों का प्रमुख परिचय : 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


Dr. Sushma Tiwari


Dr. Divya Deshpande.

G E O G P A P H Y

1. The B.A. Part-I 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 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 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 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 urbanisation.



PAPER - II
INTRODUCTION TO GEOGRAPHY AND HUMAN GEOGRAPHY M.M. : 50
(Paper Code-0118)

- UNIT-1** The Nature 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** Delimitation 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 pattern - physical, economic and social factors influencing spatial distribution, concept of overpopulation under population and optimum population. Migration - internal and international Settlements - Types and patterns of settlements.
- 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

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 of Sociological Study. Basic concepts - Society, Community, institution, association, group social structure, status and role.

UNIT-2 Institution, Family and Kinship, religion, Education, 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 applied 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., Introductory Sociology, Madras Macmillan India 1988.
4. Johnson Harry M., Sociology of systematic Introduction New Delhi Allied Publishers 1995.

PAPER - II
FOUNDATIONS OF SOCIOLOGICAL THOUGHT **M.M. : 75**
(Paper Code-0116)

UNIT-1 The Pioneers : emergence of Sociology.

Comle : Positivism - Spencer - Social Darwinism, 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 trends. New Delhi Vistaar 1986.

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

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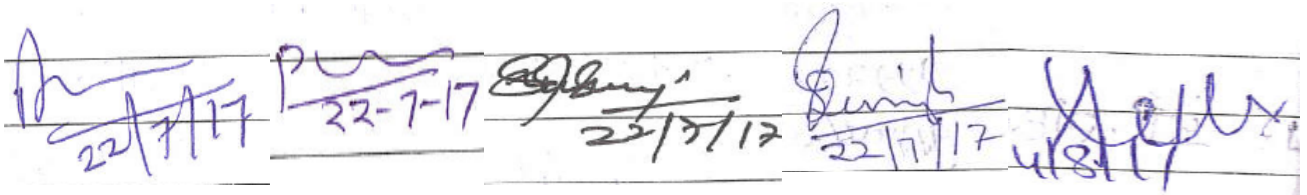
राजनीति विज्ञान
प्रथम प्रश्न पत्र
राजनीति सिद्धांतपूर्णांक
(पेपर कोड – 0113)

75

- इकाई –1 राजनीति विज्ञान – परिभाषा प्रकृति, क्षेत्र, अध्ययन पद्धतियां, परम्परागत और व्यवहार परक स्वरूप राजनीति सिद्धांत, महत्व।
सत्ता एवं प्रधिकार – अर्थ, परिभाषा, विशेषताएं एवं संबंध।
- इकाई –2 राज्य– अर्थ, आवश्यक तत्व, राज्य की उत्पत्ति के विभिन्न सिद्धांत।
राज्य– एक प्रभारी परिपक्ष्य में।
- इकाई –3 सम्प्रभुता, अर्थ, विशेषताएं, सिद्धांत, महत्व।
नागरीकता, अधिकार, स्वतंत्रता–अर्थ, परिभाषा, विशेषताएं एवं सिद्धांत।
- इकाई –4 समानता एवं न्याय – अर्थ, परिभाषा, विशेषताएं एवं संबंध।
- इकाई –5 विकास एवं कल्याणकारी राज्य – अवधारणा, विशेषताएं, कार्य, उपलब्धियां, चुनौतियां।
सामाजिक परिवर्तन के सिद्धांत– अर्थ, परिभाषा, विशेषताएं।

अनुगंसित पुस्तकें –

1. जी.एन.सिंह– फंडामें. प्लस ऑफ पोलिटिकल साइंस एण्ड आर्गेनाइजेशन।
2. डी.हेल्ड – मॉडल्स ऑफ डेमोक्रेमी पोलिटिकल थ्योरी एवे मार्डन ट्रेड
3. आगी वाईम ई. – पोलिटिकल थ्योरी
4. डी. मिलर – सोशल जस्टिस, सिटीजनशिप एण्ड नेइनल आइडेन्टिटीज
5. एस.एम. ओकिन – जस्टिस जेंडर एण्ड दी फ़ैमली
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 एण्ड कांसेप्ट



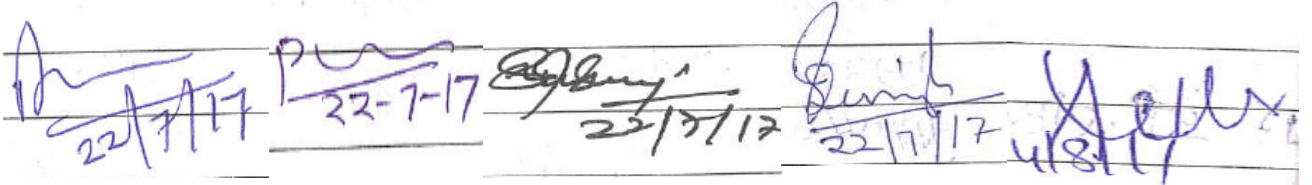
द्वितीय प्रश्न पत्र
राज्य शासन एवं राजनीति
(पेपर कोड – 0114)

अंक 75

- इकाई –1** भारतीय संविधान का निर्माण एवं स्रोत – भारतीय संविधान की आधारभूत विशेषताएं, प्रस्तावना ।
मूल अधिकार, मौलिक कर्तव्य एवं राज्य के नीति निर्देशक तत्व ।
- इकाई– 2** **केन्द्रीय शासन** – राष्ट्रपति, संसद, मंत्री मंडल एवं प्रधान मंत्री, गठन, नियुक्ति, अधिकार, शक्तियां एवं वास्तविक स्थिति ।
- इकाई– 3** **राज्य शासन** –राज्यपाल, मंत्री परिषद् एवं मुख्य मंत्रर नियुक्ति, गठन, अधिकार, शक्तियां एवं वास्तविक स्थिति केन्द्र राज्य संबंध – प्रशासनिक, न्यायिक एवं आर्थिक
- इकाई– 4** सर्वोच्च न्यायालय एवं संवैधानिक प्रक्रिया ।
गठन, क्षेत्रियकार वर्तमान परिपेक्ष्य में बदलता स्वरूप
राजनीतिक दल – राष्ट्रीय एवं क्षेत्रीय अर्थ, परिभाषा, विशेषताएं एवं प्रकार
निर्वाचन आयोग एवं निर्वाचकीय सुधार एवं अध्ययन ।
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 – फेडररॉज्म इन इंडिया द स्टडी ऑफ यूनियन स्टेट रिलेशन
4. बी. गल. पाड़िया– स्टेट पालिटिल्स इन इंडिया
5. एस. कश्यप – अवर पार्लियामेंट
6. रजनी काठारी –राज्यों की राजनीति
7. डी. सी. जौहरी – भारतीय शासन एवं राजनीति
8. जैन फाड़िया– भारतीय शासन एवं राजनीति
9. वीरकेशवर प्रसाद सिंह – भारतीय शासन
10. वी. कुप्पुग्याकी– सोशल चेंज इन इंडिया
11. इकबाल नारायण – स्टेट पॉलिटिक्स इन इंडिया ।



MUSIC

Note : 1. B. A.(General) three year degree course with the relative weight of practical and theory being in the proportion 50 and 50 respectively (Model curriculum, page No.21A) courses. Hence the Central Board of Studies decide 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 internal sessional work.
B.A. General (as one of the optional objects).
Hindustain Music (Vocal +Instrumental..)

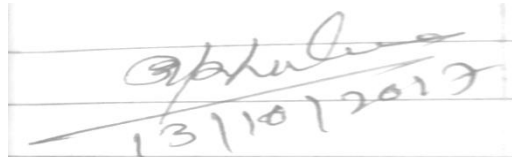
THEORY

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

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THEORY
PAPER – II
(Paper Code-0132)

M.M. : 50

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

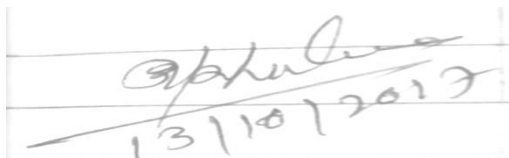
PRACTICAL

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.

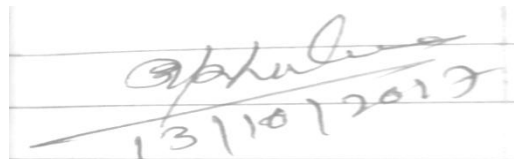
INTERNAL SCSSIONAL WORK -

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


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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 Pooovale
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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M A N A G E M E N T
Paper - I
PRINCIPLE OF MANAGEMENT
(Paper Code-0135)

Time : 3 HoursMax.

Marks : 75

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

- Industrial Revolution - 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.
Definition, Nature and purpose nature and process of
- Planning - forecasting.
 - Basic objective & - Objectives long and short range criteria of sound objectives.
- Types of Plan
- 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 steps 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 of Double Entry, its object and advantages.

Journal Simple journal entries, compound journal entries rules for recording journal.

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

Accommodation Bill

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

and revenue expenditure. **UNIT-5 Final**

Accounts:

1. Manufacturing account trading
2. Profit and loss account
3. Balance Sheet.

BOOKS RECOMMENDED:

1. M.M. Shah : Double entry Bookkeeping
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



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.

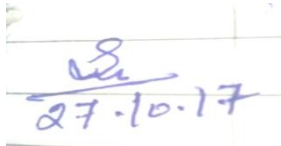
- (a) Human Evolution
- (b) Human Variation
- (c) Human Genetics
- (d) Human Growth and Development.

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 evolution : Broad outlines of cultures.
- (c) Chronology.


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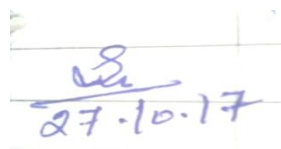
PAPER - II
INTRODUCTION TO PHYSICAL ANTHROPOLOGY
(Paper Code-0142)

- 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 / Fungi - material.....	06
2. Bryophyta / pteridophyta material	06
3. Disease Symptoms (path) / Gram's staining.....	03
4. Cytology / Genetics	15
5. Spores - (1-5).....	10
6. Viva voce.....	05
7. Sessional.....	05


27.10.17

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 modolor 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 equation 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 A_n . Cayley's theorem. Introduction to rings, subrings, integral domains and fields. Characteristic of a ring.

TRIGONOMETRY :

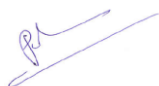
UNIT-5 De Moivre's theorem and its applications. Direct, inverse circular and hyperbolic functions. Logarithm of a complex quantity. Expansion of trigonometrical functions. Gregory's series. Summation of series.

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, Basic Abstract Algebra (2nd 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-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. Differentiability. Successive differentiation. Leibniz 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 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 Prasad, 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 Dekker, 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.
P. K. Jain and S. K. Kaushik, An Introduction to Real Analysis, S. Chand & Co. New Delhi, 2000.

4. Gorakh Prasad, Differential Calculus, Pothishala Private Ltd. Allahabad.
5. Gorakh Prasad, Integral Calculus, Pothishala Private Ltd., Allahabad.
6. D. A. Murray, Introductory Course in Differential Equations, Orient Longman (India), 1967.
7. G. F. Simmons, Differential Equations, Tata McGraw Hill, 1972.
9. E. A. Coddington, An Introduction to ordinary differential Equations, Prentice Hall of India, 1961.
10. H. T. H. Piaggio, Elementary Treatise on Differential Equations 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.

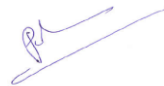
TEXT BOOKS :

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 Com-pany, New York.
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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.



भाषाविज्ञान
प्रथम प्रश्न पत्र
भाषा की प्रकृति
(पेपर कोड – 0107)

1. भाषा—मानव एवं मानवेत्तर, संप्रेषण, परिभाषा, विशेषताएं, भाषा विज्ञान की उपयोगिता, भाषा विज्ञान की विभिन्न शाखाएं, भाषा विज्ञान का अन्य विषयों के साथ संबंध ।
2. भाषा सीखने की प्रक्रिया – मौखिक एवं लिखित भाषा के विविध रूप, भाषा बोली के भाषा बन जाने के कारण, भाषाई परिवर्तन के प्रकार एवं कारण ।
3. मनोभाषाविज्ञान –भाषा एवं मस्तिष्क, मस्तिष्क में भाषा के अवयव, स्थानीयकरण, भाषित व्यक्तिक्रम अस्पष्टार्थकता, अनकार्थकता ।
4. भाषा एवं विचार – भाषा – सामर्थ्य एवं भाषा—व्यवहार, सहजात परिकल्पना, निश्चयवाद – अनुभववाद ।
5. हिन्दी भाषा का उद्भव और विकास, हिन्दी की उपभाषाएं तथा विविध बोलियां छत्तीसगढ़ी की विशेषताएं ।

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 and – S. Chopman, Routledge, London.
- 9- An Introduction to Language and – A. Akimajian (etal.)
- 10- Communication – Met Press Massachusetts, 1990/1996

(Indian Reprint] Prentice Hall] 1996)

द्वितीय प्रश्न पत्र
ध्वनि और शब्द अभिरचना
(पेपर कोड – 0108)

1. ध्वनि विज्ञान –स्वरूप एवं शाखाएं, 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 संध्यक्षर (संयुक्त स्वर)
3. व्यंजन– वर्गीकरण के विभिन्न आधार, संयुक्त व्यंजन, अंतर्राष्ट्रीय ध्वन्मात्मक प्रतिलिपि चिह्न (आई.पी.ए.)
4. अक्षर एवं ध्वनि गुण – मात्रा, बलाघात, सुर अनुतान (सुर लहर), संग्रम, व्यतिरेकी विवरण, परिपूरक विवरण सह स्वनों का निर्धारण ।
5. शब्द परिभाषा, वर्गीकरण, हिन्दी में आगत शब्दावली, शब्द समूह में परिवर्तन –कारण एवं दिशाएं (प्रकार)

निर्धारित पुस्तकें –

1. ध्वनि विज्ञान – गोलोक बिहारी धल
2. स्वन विज्ञान – चतुर्भुज सहाय
3. भाषा विज्ञान – 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 (end al.), Cambridge University Press, 1999
7. A Course in Phonetics - P. Lodefoged, Hardcourt Brace Jovanovich New York, 1993.

विषय – नृत्य (भरत नाट्यम)

बी.ए. भाग (1) के लिये इस विषय में प्रयोगिक 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 ।

क्रं	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 – 0153)

1. नृत्य का इतिहास – सिंधु सभ्यता, वैदिक काल, रामायण एवं महाभारत काल ।
2. पुराणों के आधार पर उमाशंकर की विभिन्न नृत्य संबंधी कथायें ।
3. नटकर 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)

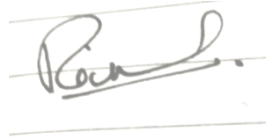
1. ताल की प्रारंभिक जानकारी – (1) ताल की व्याख्या, (2) लय— विलंबित, मध्य, द्रुत ।
2. छत्तीसगढ़ के दो लोग नृत्यों का सामान्य परिचय – (पर्व एवं त्यौहारों के आधार पर ।
 - 1 करसा,
 - 2 ददरिया,
 - 3 सुवा,
 - 4 रीना ।
3. संगीत की व्याख्या और नृत्य का उसमें स्थान ।
4. नृत्य के अभ्यास से शारीरिक एवं उसमें स्थान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

प्रायोगिक

1. मौखिक मुद्रा प्रदर्शन – (अभियण दर्पणम् के अनुसार)

- (1) शिवस्तुति
 - (2) शिरोभेद
 - (3) ग्रीवाभेद
 - (4) नेत्र संचालन
 - (5) असंयुक्त हस्तमुद्रा
 - (6) असंयुक्त हस्तमुद्रा
2. कार्यक्रम विभाग

(1) शारीरिक अभ्यास (2) अङ्क-05 अंग संचालन (पद संचालन+ हस्त संचालन) तीन काल में (3) पूजा नृत्य (4) अलारिपु (तिस्त्रजाति)



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 International (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. Addison 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.

Bhat B. R. Srivenkairamana T and Rao Madhava K.S. (1996); Statistics : A Beginner's Text Vol. I, New Age International (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 Mifflin/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. Iowa 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.

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 संबंधित कालखण्ड के राजनीतिक इतिहास की समुचित जानकारी देना है ।

इकाई-1

1. प्राचीन भारतीय इतिहास के स्रोत
2. हड़प्पा तथा समकालीन ताम्राश्म संस्कृतियां
3. वैदिक युग

इकाई- 2

1. महाजन पद युग
2. मगध साम्राज्य का उत्कर्ष

इकाई- 3

1. सिकन्दर का आक्रमण और उसका प्रभाव
2. मौर्य साम्राज्य का उत्थान और उसके प्रभाव

इकाई- 4

1. हिन्द-यूनानी
2. शंगु
3. सतवाहन
4. शक-क्षत्रप, पार्थियन
5. खारवेल

इकाई- 5

1. संगम युग
2. कुषाण
3. मालव, यौधेय, अर्जुनायन तथा औदुम्बर
4. नागवंश

Naraj
2017/17

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सहायक ग्रंथ:

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

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द्वितीय: प्रश्न-पत्र
प्राचीन भारतीय सामाजिक तथा आर्थिक संस्थाएं
(पेपर कोर्ड-0134) पूर्णांक: 75

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

इकाई-1

1. वर्ण एवं जाति
2. आश्रम व्यवस्था
3. पुरुषार्थ 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, उपलब्धीयां तथा प्रमुख शिक्षा केन्द्र

इकाई-4

1. वैदिक काल में 600 ई. पू. तक की आर्थिक दशा
2. श्रेणियों का संगठन और कार्य
3. 600 ई. पू. से 319 ई. तक की आर्थिक दशा

इकाई- 5

1. 319 ई. पू. 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 | — हिन्दु संस्कार |

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|---|--|
| 5. हरिदत्त वेदालंकर | – हिन्दु 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. रमेशचंद्र मजुमदार (अनु. कृष्णदत्त बाजपेयी) | – प्राचीन भारत के संगठित जीवन |
| 10. मोती चंद्र | – सार्थवाह |
| 11. कृष्णदत्त बाजपेयी | – भारतीय व्यापार का इतिहास |
| 12. कृष्णदत्त बाजपेयी | – प्राचीन भारत का विदेशों में संबंध |
| 13. आर. एस. शर्मा | – पूर्व मध्य कालिन भारत में सामाजिक परिवर्तन |
| 14. डॉ. चंद्रदेव सिंह | – प्राचीन भारतीय समाज और चिन्तन |
| 15. सुस्मिता पाण्डेय | – समाज, आर्थिक व्यवस्था एवं धर्म |
| 16. P.N | – Hindu Social Organization |
| 17. S.K Maity | – The Economic Life of Northern Indian 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 संस्थाएं |

Narraf
2017/17


Prasanna

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 influenced 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-11. The definition and scope of Defence Studies and its relationship with other sub-jects.

2. Art of war of Epic and Puranic period.
3. Comparative study of Indo-Greek art of war with special reference to the Battle of Hydaspus 326 B.C.
4. Mauryan Military system and art of war.

UNIT-21. Kautilya's Philosophy of war.

2. Gupta's military system and art of war.
3. Military system of Harshavardhan.
4. Decline of Chariots and Importance of Elephant and Cavalry.

UNIT-31. Mughal military system.

2. Rajput and Turk pattern of warfare with special reference to Battle of Somnath and Battle of Tarain up to 12th century A.D.
3. Causes of the fall of 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 Ancient 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 for-mulation of national defence policy and roles as political and military leadership in fur-thering 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
: Venkateshwar
m
2. Defence Organization in India

PRACTICAL

M.M. : 50

There shall be practical examination of 3 hours duration and carrying 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- Definition, 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 & ELEMENTARY 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.
-

पाठ्यक्रम उर्दू निसाब

नोट : इस इम्तेहान में दो 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 मुसन्निक अल्लाफ हुसैन हाली
2. शिब्ली की बेनियाजी और खुद्दारी शिब्ली ' से सैयद सुलेमान नदवी
3. नजीर अहमद की कहानी : ' कुछ मेरी, कुछ उनकी जबानी ' मुसन्निव फरहत उल्ला बेग

2. खाके :

1. नामदेव माली : चन्द्र हम अस्र से मुसन्निव मौलवा अब्दुल हक
2. हकीम अजमल खां : 'खिमालिस्तान ' सज्जाद हदर यलद्रम'
3. अकबर इलाहाबादी :इन्शाएं माजिद हिस्सा—2 मुसन्निव अब्दुल माजिद दरयावादी
4. जिगर साहब : 'सहाब' से मुसन्निव मोहम्मद तुफैल
5. मौलाना अब्बुल कालाम आजाद : 'अब्बुल कालाम आजाद' से मुसन्निव ख्वाजा सहन निकामी

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 सुसन्निव सहन निजामी
4. स्बेरे जो कल आंख मेरी खुली : 'मजामीने पितरस' अज पितरस बुखारी
5. बरसात : निगारिस्तान अज नियाज फतहपूरी
6. शायर होना क्या माने रखना है : अज रशीद अहमद सिद्दीकी

पर्चा प्रथम

नोट : मुन्दरजा बाला पर्चा पांच इकाईयों में तफसीम होगा ।

इकाई-1

1. सवाने, निगारी, खाका निगारी और इन्शाईया निगारी पर सवालात नंबर 15
2. शामिले निशाब हसबाफ पर सवाल नंबर 15
3. शामिले निशाब खाकों पर सवालात नंबर 15
4. शामिले निशाबइन्शाईयों पर सवालात नंबर 15
5. शामिले निशाब असबाफ सवानेही और इन्शाईयों में इक्तेबायात की तशरीह 15 नंबर

पर्चाद्वितीय (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 तरी मीर :

1. उल्टी हो गई सब तदवीरें
2. मुहं तकाही करें है जिस तिस का

(3) गालीब :

1. दिल ही ताक है न संगो खिश्त दर्द से भर आये क्यो
2. यह न थी हमारे किस्मत के विसाले यार होता

(4) मौमिन :

1. अगर उसकी जरा नहीं होता
2. गैरो पर खुल न जाएं कही राज देखना

(5) आतिश :

1. मगर उसको फरेबे नर्गिये मस्ताना आता है
2. हवाएं दौरे गए खुशगवार राह में है

(6) दाग देहलावी :

1. खातिर से या खअयाल से मैं मान तो गया
2. गाब किया तेरे बादे पे एतेवार किया

(7) सिरज मिर खां सैहर

1. सोने में दिल है दिल में दाग
2. वक्ते जिबाह मुहं फिर गया शमशीरे कातिल का

(8) डॉ. इकबाल

1. कभी ये हकीकते मुसुन्तजिर नजर आ लिबाजे गजाज
2. फिर चरागे लाबा से रोशन हुए कोहो दमन

(9) हसरत मौहानी

1. रस्मे जफा कामयाब देखिए कब तक रहे
2. हुस्ने बे परवा को कुद बीन खुद आरा कर दिया

(10) फानी बदायूरी

1. खल्क कहती है जिसे दिल तेरे दिवाने का
2. दुनियां मैरा बला जाने मेंहगी है के सस्ती है

(11) जिगर मुरादाबादी

1. दिल गया रोकने हायत गई
2. सेरले खिदर ने दिल यह दिखाएं

(12) फराक गौरखपुरी

1. निगारे नाज दे पर्दे उठाए है क्या-क्या
2. बहुद पहले से उन कदमों की आहट जान लेते है

(13) मजरूम सुलतान पुरी

1. जला के मशअले जॉ हम जुन सिफात चले
2. मुझे सहल हो गई मंजिले

(14) ताल भोपाली

1. मैं हूं गदाए हुस्न न यूँ हँस के टाल दे
2. है अजब भीड़ भाडत्र 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 आंजमी

1. हम जिन्दगी की 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

इकाईयां : इकाई नं.

1. गजल से मुजाल्लिक सवालात 15 नम्बर
3. कदीम शुअरा पर तन्दीकी सवालात 15 नम्बर
4. जरीद गजल गो शुअरा पर सावालात 15 नम्बर
5. कदीम गजल गो शुअरा के अशआर की तशरीह 15 नम्बर
6. जदीद गजल गो शुअरा के अशआरकी तशरीह 15 नम्बर

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, poison, bleeding, Burns and scalds, fracture sprain, dislocation.

Asejgal
22.07.17

Don
22/7/17

beta
22/7/17

Devi
22.7

Purgh
22.7.17

प्रायोगिक

कुल समय 3 घंटे

कुल अंक—50

अंको का विभाजन

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

स्पेशल : (परीक्षा के समय छात्राएँ प्रायोगिक नोट बुक एवं उपचार पेटी जमा करें ।)

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

प्रयोग क्रमांक — 2 स्वयं के परिवार में पीने के पानी के प्राप्ति 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 परिचर्या 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 दवाईयां ।
3. अपाचन— में प्रयुक्त दवाईयां ।

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 व्यंजनो 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 स्ट्रू

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

प्रयोग क्रमांक — 6 प्राथमिक उपचार

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

Ashtgal 22/07/17
Ashtgal 22/7/17
Ashtgal 22/7/17
Ashtgal 22/7/17

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 छात्राओ द्वारा प्रायोगिक नोट बुक में लिखकर एवं अध्यापक द्वारा प्रति हस्ताक्षरित/प्रमाणित करवाकर परीक्षा के समय प्रस्तुत की जावेगी।

A. Singh
22.07.17

A. Singh
22.7.17

A. Singh
22.7.17

A. Singh
22.7.17

HOME SCIENCE
Paper - II
HOME SCIENCE - EXTENSION EDUCATION
(Paper Code-0122)

UNIT-1 Introduction of Home Science Extension Education :

- (A) Home Science - 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 education 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 planning programme.
Community problems, child marriage, Dowry system, parda pratha, rural indigentness unemployment.

UNIT-3 Teaching methods & aids :

Methods of learning - Discussion, demonstration, observation and their application 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. Application 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.

Asghar 22.07.17
Don 22/7/17
Devi 22.7
Belin 22/7/17
Bugh 22.7.17

UNIT-5 Curriculum Planning in Home Science :

Basic concept of curriculum planning components of curriculum planning implementation evolution and improvement required in the existing system of H.Sc. education policy and its relevance to H.Sc. Programme planning-concept, principles 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.

Asegal
22.07.17

22/7/17

22.7

22.7.17

INSURANCE PRINCIPAL & PRACTICE (Paper Code-0139)

PAPER - I

LIFE INSURANCE :

M.M. : 50

- UNIT-1** Introduction :
Need for security against economic difficulties, Risk and uncertainty, 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 aleatory 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** Salesmanship
Life Insurance p :
Rules of agency 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 Insurance - Hull Insurance-etc.

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FUNCTIONAL ENGLISH

(Paper Code-0137)

PAPER - I

M.M. : 50

UNIT-1 (a) Linguistics and Phonetics.

(b) Phonology.

UNIT-2 (a) The Organs of Speech

(b) Speech Sounds - Vowels 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.

FUNCTIONAL ENGLISH

(Paper Code-0138)

PAPER - II

M.M. : 50

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

Questions, Agreement of verb and subject, Transitive and Intransitive regular

UNIT-2 and in-

regular verbs.

UNIT-3 Tenses

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

UNIT-5 Common Errors in English.

Based on F.T. words Grammer

Dr. M. Chakraborty  Dr. S. Gupta  DR. MERILY ROY 

VIVA - VOCE
SYALLABUS FOR THEORY AND PRACTICAL
(Drawing and painting) (M.M.50)

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 Evaluation 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 Fruits 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.



B.A. EDUCATION PART - I
PAPER - I
EDUCATION AND SOCIETY
(Paper Code-0123)

M.M. 75

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.
- Freedom and Discipline, Need of discipline in and out of school, discipline and
- Order, Free disciplin

UNIT-4

- 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
(Paper Code-0124)

M.M.
75

- 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.



हेमचंद यादव विश्वविद्यालय, दुर्ग (छ.ग.)

(पूर्व नाम- दुर्ग विश्वविद्यालय, दुर्ग)

रायपुर नाका दुर्ग (छ.ग.)-491001

ई मेल : academic@durguniversity.ac.in

वेब साइट : www.durguniversity.ac.in

दूरभाष : 0788-2359400

क्र. 3861 / अका. / 2021

दुर्ग, दिनांक 30/7/21

प्रति,

प्राचार्य,

समस्त संबद्ध महाविद्यालय,

हेमचंद यादव विश्वविद्यालय,

दुर्ग (छ.ग.)

विषय:- स्नातक स्तर भाग-तीन के पाठ्यक्रम विषयक।

संदर्भ:- संयुक्त संचालक, उच्च शिक्षा विभाग के पत्र क्र. 2456/315/आउशि/सम/2019, दिनांक 16.05. 2019।

—00—

विषयांतर्गत लेख है कि संदर्भित पत्र के माध्यम से प्राप्त स्नातक स्तर भाग-तीन के निम्नलिखित कक्षा/विषयों के परिवर्तित/संशोधित पाठ्यक्रम शिक्षा सत्र 2021-22 से लागू किये जाते हैं:-

1. बी.ए. — आधार पाठ्यक्रम — हिन्दी भाषा, हिन्दी साहित्य, राजनीतिशास्त्र, अर्थशास्त्र, नृत्य, दर्शनशास्त्र, समाजशास्त्र, इतिहास, मानवविज्ञान, संस्कृत, सांख्यिकी प्राचीन भारतीय इतिहास, भूगोल, मनोविज्ञान
2. बी.एस-सी. — आधार पाठ्यक्रम-हिन्दी भाषा, जीव विज्ञान, मानवविज्ञान, बायोटेक्नोलॉजी, कम्प्यूटर साईंस, गणित, भौतिक शास्त्र, प्राणीशास्त्र, सूक्ष्मजीव विज्ञान, वनस्पतिशास्त्र, भूविज्ञान, इलेक्ट्रॉनिक्स, रसायन शास्त्र, सांख्यिकी, भूगोल।
3. बी.ए./बी.एस.सी. — आधार पाठ्यक्रम — हिन्दी भाषा एवं गृह विज्ञान।
(गृह विज्ञान)
4. बी.सी.ए. — भाग-3
5. बी.कॉम. — भाग-1, भाग-2 एवं भाग-3 का परिवर्तित पाठ्यक्रम सत्र 2019-20 में जारी कर लागू किया जा चुका है।

कृ.प.उ.

उपरोक्त विषयों को शिक्षा सत्र 2021-22 से संशोधित रूप में स्नातक स्तर भाग-तीन के लिए लागू किया जाता है स्नातक स्तर भाग-एक हेतु सत्र 2019-20 एवं स्नातक स्तर भाग-दो हेतु सत्र 2020-21 में लागू पाठ्यक्रम मान्य होंगे।

टीप:- परिवर्तित/संशोधित पाठ्यक्रम विश्वविद्यालय की वेबसाईट पर उपलब्ध है।


कुलसचिव

क्र. 3862 /अका./2021

दुर्ग, दिनांक 20/7/21

प्रतिलिपि:-

1. संयुक्त संचालक, उच्च शिक्षा विभाग के पत्र क्र. 2456/315/आउशि/सम/2019, दिनांक 16.05.2019 के परिपेक्ष्य में सूचनार्थ
2. उपकुलसचिव, परीक्षा विभाग एवं उपकुलसचिव, गोपनीय विभाग हेमचंद यादव विश्वविद्यालय, दुर्ग।
3. वेबसाईट प्रभारी, वेबसाईट पर पाठ्यक्रम प्रकाशित करने हेतु।
4. कुलपति के निज सहायक एवं कुलसचिव के निज सहायक, हेमचंद यादव विश्वविद्यालय, दुर्ग।


सहा. कुलसचिव (अका.)

HEMCHAND YADAV VISHWAVIDYALAYA, DURG (C.G.)

Website - www.durguniversity.ac.in, Email - durguniversity@gmail.com



SCHEME OF EXAMINATION & SYLLABUS Of

**B.Com. Final Year
Session 2021-22**

**(Approved by Board of Studies)
Effective from July 2021**

REVISED ORDINANCE NO.-23

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

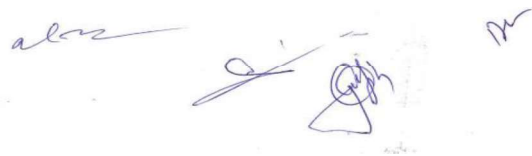
BACHELOR OF COMMERCE

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 recognized 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 recognized 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).
6. 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.
7. Every candidate for B.Com. Examination shall be examined in subjects as mentioned in the marking scheme and course or studies.
8. A candidate who has passed the B.Com. Part-III examination of the University shall be

A handwritten signature in blue ink is written over a circular official stamp. The signature is somewhat stylized and difficult to read. The stamp is partially obscured by the signature.

allowed to present him 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.

9. 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.
10. 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.
11. 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.
12. 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.



- इकाई-एक (क) भारत माता : सुमित्रानंदन पंत
(ख) कथन की शैलियाँ
1. विवरणात्मक शैली
2. मूल्यांकन शैली
3. व्याख्यात्मक शैली
4. विचारात्मक शैली
- इकाई-दो (क) सूखी डाली : उपेन्द्रनाथ अशक
(ख) विभिन्न संरचनाएँ
1. विनम्रता सूचक संरचना
2. विधि सूचक संरचना
3. निषेध परक संरचना
4. काल-बोधक संरचना
5. स्थान-बोधक संरचना
6. दिशा बोधक संरचना
7. कार्य-कारण सम्बन्ध संरचना
8. अनुक्रम संरचना
- इकाई-तीन (क) वसीयत : मालती जोशी
(ख) कार्यालयीन पत्र और आलेख
1. परिपत्र
2. आदेश
3. अधिसूचना
4. ज्ञापन
5. अनुस्मारक
6. पृष्ठांकन
- इकाई-चार (क) योग की शक्ति : हरिवंश राय बच्चन
(ख) अनुवाद : स्वरूप एवं परिभाषा, उद्देश्य
स्रोत भाषा और लक्ष्य भाषा,
अच्छे अनुवाद की विशेषताएँ,
अनुवाद प्रक्रिया, अनुवादक
- इकाई-पांच (क) संस्कृति और राष्ट्रीय एकीकरण : योगेश अटल
(ख) घटनाओं, समारोहों आदि का प्रतिवेदन, विभिन्न प्रकार के निमंत्रण पत्र

मूल्यांकन योजना : प्रत्येक इकाई से एक-एक प्रश्न पूछा जाएगा। प्रत्येक प्रश्न में आंतरित विकल्प होगा। प्रत्येक प्रश्न के 15 अंक होंगे। इसलिए प्रत्येक प्रश्न के दो भाग 'क' और 'ख' होंगे एवं अंक क्रमशः 8 एवं 7 अंक होंगे। प्रश्नपत्र का पूर्णांक 75 निर्धारित है।

5/7/2021

डा. आशा तिवारी

5/7/2021

Aradhana Sharma

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 Precise 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 decentralization (with reference to 73, 74 constitutional Amendment.

Books Prescribed:

Aspects of English Language and Development - Published by M.P. Hindi Granth Academy, Bhopal.

Hemchand Yadav Vishwavidyalaya, Durg (C.G.)

SYLLABUS

B.COM. PART-III

GROUPING OF SUBJECTS AND SCHEME OF EXAMINATION

Subject		Max.	Min.
Foundation Course			
I. Hindi Language		75	26
II. English Language		75	26
Compulsory Groups			
Group-I			
I. Income Tax	75	150	50
II. Auditing	75		
Group-II			
I. Indirect Taxes with GST	75	150	50
II. Management Accounting	75		
Group-III Optional			
Option Group A (Finance Area)			
I. Financial Management	75	150	50
II. Financial Market Operations	75		
Option Group B (Marketing Area)			
I. Principles of Marketing	75	150	50
II. International Marketing	75		
Option Group C (Commercial Area)			
I. Information Technology and its Applications in Business	75	150	50
II. Essential of e-Commerce	75		
Option Group D (Money Banking & Insurance Area)			
I. Fundamental of Insurance	75	150	50
II. Money & Banking System	75		


20/6/19


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B.COM PART III
COMPULSORY CORE COURSE
TITLE OF PAPER - Group-I
PAPER – I - INCOME TAX

OBJECTIVE

It enables the students to know the basics of Income Tax Act and its implications.

M.M. 75

- 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 Liability: Set-off and carry forward of losses; Deduction from gross total income. Aggregation of income; Computation of total income and tax liability of individual and HUF.
- 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.
Preparation of return of income
-Manually and on line

Suggested Reading:

1. Singhanian V.K.: Students Guide to Income Tax; Taxmann, Delhi.
2. Prasad, Bhagwati: Income Tax Law & Practice; 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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B.COM PART III
COMPULSORY CORE COURSE
TITLE OF PAPER - Group-I
PAPER – II- AUDITING

M.M. 75

OBJECTIVE

This course aims at imparting knowledge about the principles and methods of auditing and their applications.

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 – Qualification, Appointment, powers, duties, Resignation 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. Verifications & Valuation of assets.

UNIT-V Recent Trends in Auditing: Nature and significance of cost audit; Tax audit;
Management audit.

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, SahityaBhawan, Agra.
5. Shukla S.M.: Auditing - ShahityaBhavan, Agra, (Hindi)
6. Batliboy: Auditing.


20/6/19 20/6/19 20/6/19

B.COM PART III
COMPULSORY CORE COURSE

PAPER – II

Group-II -PAPER – I - INDIRECT TAXES WITH GST

OBJECTIVE

This course aims at imparting basic knowledge about GST and apply the provisions of GST law to various situations.

M.M. 75

- UNIT-I** 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, auxiliary, additional or countervailing; Basics of levy ad valorem, 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-II** State Excise, CENVAT. Detail study of State Excise during calculation of Tax.
- UNIT-III** INTRODUCTION TO GOODS AND SERVICES TAX (GST) -Objectives and basic scheme of GST, Meaning – Salient features of GST – Subsuming of taxes –Benefits of implementing GST , Structure of GST (Dual Model) – Central GST – State / Union Territory GST – Integrated GST
GST Council: Structures Power and Functions. Provisions from amendments.
- UNIT-IV** Registration under GST: Procedure for registration, Persons liable for registration, Persons not liable for registration, Compulsory registration. Exempted goods and services - Rates of GST.
Procedure relating to Levy: (CGST & SGST): Scope of supply, Tax liability on Mixed and Composite supply, Time of supply of goods and services, Value of taxable supply.

Eway-Billing


20/6/19 20/6/19 20/6/19

UNIT-V ASSESSMENT AND RETURNS -

Input tax Credit: Eligibility, Apportionment, Inputs on capital goods,
Distribution of credit by Input Service Distributor (ISD)
Furnishing details of outward supplies and inward supplies, First return,
Annual return and Final return.

Suggested Reading:

1. Deloitte: GST Era Beckons, Wolters Kluwer.
2. Madhukar N Hiregange: Goods and Services Tax, Wolters Kluwer.
3. All About GST: V.S Datey - Taxman's.
4. Guide to GST: CA. Rajat Mohan,
5. Goods & Services Tax – Indian Journey: N.K. Gupta & Sunnania Batia, Barat's Publication
6. Goods & Services Tax – CA. Rajat Mohan,
7. Goods & Services Tax: Dr. Sanjiv Agrawal & CA. Sanjeev Malhotra.
8. GST - Law & Practice: Dr. B.G. Bhaskara, Manjunath. N & Naveen Kumar IM,
9. Understanding GST: Kamal Garg, Barat's Publication.


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B.COM PART III
COMPULSORY CORE COURSE
TITLE OF PAPER -Group-II
PAPER – II -MANAGEMENT ACCOUNTING

OBJECTIVE

This course provides the students an understanding of the application of accounting techniques for management.

M.M. 75

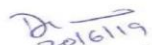
- UNIT-I** Management Accounting : Meaning, nature, scope, and functions of management Accounting; Role of management accounting in decision making; Management accounting vs financial accounting; Tools and techniques of management accounting; Financial statement; Objectives and methods of financial statements 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.

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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).


20/6/19


20/6/19
SFA


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B.COM PART III
OPTIONAL GROUP A (Finance Area)
TITLE OF PAPER - FINANCIAL MANAGEMENT
PAPER – I

OBJECTIVE

The objective of this course is to help students understand the conceptual framework of financial management.

M.M. 75

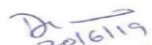
- UNIT-I** Financial Management: Financial goals; Profit vs wealth maximization; Financial functions-investment, financing, and dividend decisions; Financial planning.
- UNIT-II** Capital Budgeting : Nature of investment decisions, Investment evaluation criteria, payback period, accounting rate of return, 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, determinants.
- 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, receivables, and inventories.


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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 McGraw Hill, New Delhi.
3. Prasanna Chandra L Financial Management Theory and practice; Tata McGraw 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.


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B.COM PART III
OPTIONAL GROUP A (Finance Area)
TITLE OF PAPER - FINANCIAL MARKET OPERATIONS
PAPER - II

OBJECTIVE

This course aims at acquainting the students with the working of financial markets in India.


M.M. 75

- 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, Bombay stock exchange
- UNIT-III** Securities contract and Regulations Act: Main provisions. Investors Protection: Grievances concerning stock exchange dealings and their removal; Grievance cells in stock exchanges; SEBI; Company Law Board; Press;
Remedy through courts.
- UNIT-IV** Functionaries on Stock Exchanges: Brokers, sub brokers, market makers, jobbers, portfolio consultants, institutional investors, and NRIs.
- UNIT-V** Financial Services: Merchant banking - Functions and roles; SEBI guidelines; Credit rating - concept, functions, and types.

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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 McGraw 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.


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B.COM PART III
OPTIONAL GROUP B (Marketing Area)
TITLE OF PAPER -PRINCIPLES OF MARKETING
PAPER – I

OBJECTIVE

The Objective of this course is to help students to understand the concept of marketing and its applications.

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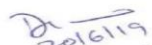
- UNIT-I** Introduction: Nature and scope of marketing; Importance of marketing as a business function, and in the economy; Marketing concepts - traditional and modern; Selling vs. Marketing; Marketing mix; Marketing environment.
- UNIT-II** Consumer Behaviour and Market Segmentation: Nature, scope, 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 wholesaler; Physical distribution of goods; Transportation, Warehousing, Inventory control; Order processing.
- UNIT-V** Promotion: Methods of promotion; Optimum promotion mix; Advertising media - the relative merits and limitations; Characteristics of an effective advertisement; Personal selling; Selling as a career; Classification of successful sales person; Functions of sales man.
Recent development in marketing - social marketing, online marketing, direct marketing, Services marketing, Green marketing.

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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; McGrawHill, 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 : RichardD. Inwin, Home wood 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 GranthAcademi. M.P.
10. Dr. N.C. Jain


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B.COM PART III
OPTIONAL GROUP B (Marketing Area)
TITLE OF PAPER -INTERNATIONAL MARKETING
PAPER – II

OBJECTIVE

This course aims at acquainting student with the operations of marketing in international environment.

M.M. 75

- UNIT-I** International Marketing: Nature, definition, 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 influencing 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. Marketing Control Process

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Suggested Reading:

1. Bhattacharya R.L. and Varshney B.: International Marketing Management; Sultan Chand, New Delhi.
2. Bhattacharya B. : Export Marketing Strategies 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, NewDelhi.


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B.COM PART III
OPTIONAL GROUP C (Commercial Area)
TITLE OF PAPER - INFORMATION TECHNOLOGY AND ITS
APPLICATIONS IN BUSINESS
PAPER – I

OBJECTIVE

The objective of the course is to familiarize 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.

M.M. 75

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 satellite 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; BCD, EBCDIC, ASCII; Gray and conversions.
- b. Computer Arithmetic and Gates: Binary arithmetic, complements, addition subtraction; Conversion from one system to another; Logic Gates, truth table 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 optical); various devices and their comparison.


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- g. System Software - Role 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; Creating 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 creating 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-level domain (gTLD); Country code top-level domain (ccTLD); - India; Location of second-level domains; 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.

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Suggested Reading:

1. Agrawala Kamlesh N. and Agarwala Deeksha: Business on the Net - Introduction to Ecommerce, Macmillan India, New Delhi.
2. Agrawala Kamlesh, N. and Agarwala Deeksha: Bulls, Bears and The mouse; and introduction to On-line Service Market Trading; Macmillan India, New Delhi.
2. Agarwala Kamlesh, N. and Agarwala Prateek Amar; WAP the Net; an Introduction on Wireless Application Protocol; Macmillan India, New Delhi.
3. Bajaj Kamlesh K. and Nag Debjani: E-Commerce; The cutting Edge of Business; Tata McGraw Hill, New Delhi.
4. Edwards, Ward and Bytheway : The Essence of Information Systems; Prentice Hall, New Delhi.
5. 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 McGraw Hill, New Delhi.
10. Yeats: Systems Analysis & Design; Macmillan India, New Delhi.
11. Goyal: Management information System; Macmillan India, New Delhi.
12. Timothy J O'Leary: Microsoft Office 2000; Tata McGraw Hill, New Delhi.

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B.COM PART III
OPTIONAL GROUP C (E-Commerce Area)
TITLE OF PAPER -ESSENTIAL OF E-COMMERCE
PAPER – II

OBJECTIVE

The objective of this course is to familiarize the students with the basics of e-commerce and to comprehend its potential.

M.M. 75

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 (SHTTP); 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 market place, 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.

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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. Security and Legal aspects of E-commerce.

Suggested Reading:

1. Agarwala Kamlesh. N. and Agarwala Deeksha: Bridge to Online Storefront; 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.: Education 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 McGraw Hill, 1999.
7. Bhatnagar Subhash and Schwabe Robert (Eds): Information and Communication Technology in Development; Sage Publications India, New Delhi.
7. Amor, Daniel: E-business Reevaluation, The : Living and Working in an Interconnected World; Prentice Hall, U.S.
8. Afuah, A., and Tuccu, C.: Internet business models and Strategies; McGraw Hill, New York.

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B.COM PART III
OPTIONAL GROUP D (Money Banking & Insurance Area)
TITLE OF PAPER FUNDAMENTAL OF INSURANCE
PAPER – I

OBJECTIVE

This course enables the students to know the fundamentals of insurance.

M.M. 75

- 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: Definition 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 license; 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. Online insurance procedure

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. BalchandShriwastava, Agra.
8. Dr. M.L. Singhai, RAmesh Book Depot, Jaipur.


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B.COM PART III
OPTIONAL GROUP D (Money Banking & Insurance Area)
TITLE OF PAPER - MONEY & BANKING SYSTEM
PAPER -II

OBJECTIVE

This course enables the students to know the working of the Indian Money & banking system.

M.M. 75

- 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.
Internet banking system

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 lock wood 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.


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B.Com-III
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, User-defined data types, constants working with procedures, Working with dates and times, Using the Format Function, Manipulating text string.

UNIT-II Controlling Program Execution, Working with Control

Comparison and logical operators, If...Then 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 Error 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 Using 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.

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B.Com-III
PAPER - II
SYSTEM ANALYSIS, DESIGN & 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 Wixom.
3. Management Information systems - C.S.V. Murthy, Himalaya Publication House.

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B.Com-III

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 Fibonacci series)
2. Design the Project on one of the following - Application Software / Website Design/Accounting software / Inventory control System / System Software & other (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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दुर्ग विश्वविद्यालय, दुर्ग (छ.ग.)



पाठ्यक्रम

परीक्षा – 2017–18

बी.एससी. भाग-1
B.Sc. Part-1

(Approved by Board of Studies)
Effective from July 2017

B. Sc. Part- I

विषय-सूची

1.	Revised Ordinance No. 21	3
2.	Scheme of Examination	5
3.	Environmental Studies	7
4.	Foundation Course :आधार पाठ्यक्रम प्रथम हिन्दी द्वितीय –अंग्रेजी भाषा Physics (भौतिक शास्त्र)	11
6.	Chemistry (रासायन शास्त्र)	17
7.	Zoology (प्राणी शास्त्र)	24
8.	Botany (वनस्पति शास्त्र)	26
9.	Mathematics (गणित)	28
10.	Microbiology (सूक्ष्म जीव विज्ञान)	31
11.	Geology (भू – विज्ञान)	33
12.	Anthropology (मानव विज्ञान)	35
13.	Statistics (सांख्यिकी)	37
14.	Defense Studies (रक्षा अध्ययन)	39
15.	Industrial Chemistry (औद्योगिक रसायन)	42
16.	Computer Science	45
17.	Electronics Equipment Maintenance	49
18.	Electronics	51
19.	Information Technologies	54
20.	Industrial Microbiology	56
21.	Bio Chemistry	58
22.	Biotechnology	61

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 recognized 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 recognized 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 & Defense Studies.
 9. Chemistry, Zoology & Defense Studies
 10. Physics, Mathematics & Defense Studies.
 11. Chemistry, Geology & Defense 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 & Defense Studies.
20. Geology, Mathematics & Statistics.
21. Mathematics, Defense 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 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.

SCHEME OF EXAMINATION

Subject	Paper	Max. Mark	Total Marks	Min. Marks
Environmental Studies		75	100	33
Field 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 होंगे। सभी प्रश्नपत्र समान अंक के होंगे।				
Three Elective Subject:				
1. Physics	I		50	
	II		50	100
	Practical			50
				17
2. Chemistry	I		33	
	II		33	100
	III		34	
	Practical			50
				17
3. Mathematics	I		50	
	II		50	150
	III		50	
4. Botany	I		50	
	II		50	100
	Practical			50
				17
5. Zoology	I		50	
	II		50	100
	Practical			50
				17
6. Geology	I		50	

		II	50	100	33
		Practical		50	17
7. Statistics	I		50		
	II		50	100	33
	Practical			50	17
8. Anthropology	I		50		
	II		50	100	33
	Practical			50	17

Subject	Paper	Max. Marks	Total Marks	Min. Marks
9. Defense 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		
	I	33	100	33
	II	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 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, exponentials log, square root, trigonometric functions, wize, sine, cosine, tangent etc. factorial summation, xy, yx and in the light of objective approval of merits and demerits of the viva only will be allowed.

Part - I
SYLLABUS FORENVIRONMENTAL STUDIES AND HUMAN RIGHTS
(Paper code-0828)

MM. 75

इन्वायरमेंटल साइंसेस 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: (तीस 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 अधीक्षक, 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.

(12Lecture)

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.

(12Lecture)

(b) Environmental Management

- From Unsustainable to sustainable development.
- Urban problems related to energy.
- Water conservation, rain water harvesting, water shed 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- International 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, Clarendon 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 Development, Environment & Security. Stockholm Eng. Institute. Oxford University, Press. 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 Hindu (M)
25. Townsend C. Harper J. And Michael Begon, Essentials of Ecology, Blackwell Science (TB)
26. Trivedi R.K. Handbook of Environment Laws, Rules, Guidelines, Compliances and Standards, Vol I and 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 संख्या 0791)

पूर्णांक:75

नोट-:

01. प्रश्न पत्र 75 अंक का होगा ।
02. प्रश्न पत्र अनिवार्य होगा ।
03. इसके अंक क्षेणी निर्धारण के लिए जोड़े जावेगे ।
04. प्रत्येक इकाई के अंक समान होंगे ।

पाठ्य विषय-

इकाई- 01. पल्लवन, पत्राचार तथा अनुवाद एवं पारिभाषिक शब्दावली ।

इकाई -02 मुहावरे- लोकोक्तियाँ,शब्दशुद्धि वाक्य शुद्धि, शुद्धि ज्ञान - पर्यायवाची, विलोम, अनेकार्थी ,
समश्रुत (समानोचरित) अनेक शब्दों के लिए एक शब्द ।

इकाई -03. देवनागरी लिपि की विशेषता, देवनागरी लिपि एवं वर्तनी का मानक रूप ।

इकाई- 04. कम्प्युटर में हिन्दी का अनुप्रयोग, हिन्दी में पदनाम ।

इकाई- 05. हिन्दी अपठित, संक्षेपण, हिन्दी में संक्षिप्तीकरण ।

पाठ्य क्रम के लिए पुस्तकें

- | | | |
|---|---|--------------------------------------|
| 01. भारतीयातां के स्वर साधन धनंजय वर्मा | - | म.प्र.ग्रंथ अकादमी । |
| 02. नगरी लिपि और हिन्दी | - | अनंत चौधरी - ग्रंथ अकादमी पटना । |
| 03. कम्प्युटर और हिन्दी | - | हरिमोहन - तक्षशिला प्रकाशन, दिल्ली । |





**FOUNDATION COURSE
PAPER - II
ENGLISH LANGUAGE
(Paper code - 0792)**

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 simply 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 Grant Academy Bhopal.

Dr. M. C. Chakraborty  Dr. S. Gupta  DR. MERILY ROY 

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 ideas/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 at least 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 pendulum.


UNIT-3 Bifilar oscillations, Helmholtz resonator, LC circuit, vibrations of a magnet, oscillations of two masses connected by a spring. Superposition of two simple harmonic motions of the same frequency, Lissajous figures, case of different frequencies. Damped harmonic 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 focusing (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, Bernoulli's theorem, viscous fluids, streamline and turbulent flow. Poiseuille'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- Oscillations 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, divergence 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 theorem.

UNIT-2 Columbus 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 ϕ , $E = -\nabla\phi$, 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, Gaussian 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 D , molecular interpretation of Clausius- Mossotti equation.

Steady current, current density J, non-steady currents and continuity equation, Kirchhoff'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 dipole moment, angular momentum and gyro magnetic ratio.

$\nabla \cdot B = 0$, $\nabla \times B = \mu J$. 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, $\epsilon = \mathbf{E} \cdot d\mathbf{r}$, 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) Holliday and Resnik, Physics, Vol. 2

D J Griffith, Introduction to Electrodynamics (Prentice-Hall of India) Raitz and Milford, Electricity and Magnetism (Addison-Wesley)

A S Mahajan and 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 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 under 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 ballistic 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 resonance frequency 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)



CHEMISTRY

The new curriculum will comprise of Three papers of 33.33 and 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 - 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, Aube and Pauli exclusion principles, Hand'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 inorganic molecules

and ions. Valence shell electron pair repulsion (VSEPR)² theory to NH_3 , H_3O^+ , SF_4 , ClF_3 ,

Ψ and Ψ

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 & polarisability 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 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 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 Chemistry, 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 Publication.

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PAPER - II
ORGANIC CHEMISTRY
(paper code - 0796)

M.M. 33

UNIT-I ELECTRONIC STRUCTURE & BONDING

A. Resonance, Hyper conjugation, Inductive and other field effects, Aromaticity, hydrogen bonding.

B. MECHANISM OF ORGANIC REACTIONS

Homolytic & heterolytic bond breaking, types of reagents-electrophiles & nucleophiles. Structure and reactivity of reaction intermediates- Carbocation, carbanions free radicals, carbenes and nitrenes.

UNIT-2 STEREOCHEMISTRY OF ORGANIC COMPOUNDS

A. Optical Isomerism - enantiomers, diastereomers, threo and erythro meso compound, resolution of enantiomers, inversion, retention and racemization,

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 rings. 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. SN_1 , SN_2 , SN_i mechanisms.

- B. Mechanisms and stereochemistry of elimination reaction and alkyl halides. Elimination Vs Substitution.

REFERENCE BOOK :

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, MC Graw Hill
6. Introduction to Organic Chemistry, Struweiasser, 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 Rasayan, P.L. Soni.
14. Corbanic Rasayan, Bhagchandani, Sahitya Bhawan Publication.
15. Rasayan Vigyan, Bhatnagar, Arun Prakashan.

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PAPER - III
PHYSICAL CHEMISTRY
(paper code - 0797)

M.M.34

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 relevant 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 velocities 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, Raoult's 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, Degree of dissociation and association of solutes, Vant Hoff factor.

UNIT-4 A. LIQUID CRYSTALS :

Difference between liquid Crystal, solids and liquids, Classification, Structure of nematic and cholesteric phases, Thermography, Seven segment cell, applications of liquid Crystals.

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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 curriculum

1. Inorganic Chemistry

Semimicro Analysis - cations analysis, separation and identification of ions from

Bi^{3+} , Cu^{2+} , Cd^{2+} , Sb^{3+} , $\text{Sn}^{2+,4+}$, 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^- , $\text{C}_2\text{O}_4^{2-}$, BO_3^{3-} , F^- .

2. Organic Chemistry

i. Calibration of Thermometer

$80^\circ - 82^\circ$ (Naphthalene), $113.5^\circ - 114^\circ$ (Acetanilide), $132.5^\circ - 133^\circ$ (Urea), 100° (Distilled Water)

i. Determination of Melting Point

$80^\circ - 82^\circ$ (Naphthalene), Benzoic acid $121.5^\circ - 122^\circ$, Urea $132.5^\circ - 133^\circ$, Succinic acid $184.5^\circ - 185^\circ$, Cinnamic acid $132.5^\circ - 133^\circ$, Salicylic acid $157.5^\circ - 158^\circ$, Acetanilide $113.5^\circ - 114^\circ$, m- Dinitrobenzene 90° , p- Dichlorobenzene 52° Aspirin 135° .

i. Determination of boiling points

Ethanol = 78° , Cyclohexane 81.4° , Toluene 110.6° , Benzene 80° .

iv. Mixed Melting 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 condenser.

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

Naphthalene from ethanol

Benzoic acid from water.

Vii. Decolorisation and crystallisation using charcoal

Decolorisation of brown sugar with animal charcoal using gravity filtration

Crystallization and decolorisation of impure naphthalene (100g of naphthalene mixed with 0.3g of congo red using 1g of decolorising carbon) from ethanol.


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Viii. Sublimation

Camphor, Naphthalene, Pthalic acid and Succinic acid

ix. Qualitative Analysis

Detection of elements (N, S and halogens) and functional groups (Phenolic, Carboxylic, Carbonyl, 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 & H₂SO₄ by studying the kinetics of hydrolysis of ethyl acetate

To study kinetically the reaction between H₂O₂ & Iodide

(i) Distribution Law

To study distribution of iodide between water & CCl₄

To study distribution of benzoic acid between benzene & water.

(i) 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 method.

To determine the viscosity of any alcohol in water at different 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. Vogel's qualitative analysis, revised edition, 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 & K.S. Bajpai, Tata Mc Graw Hill
4. Manual inorganic 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. Tatchell, 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
- O R** Crystallization of any one compound as given in the prospectus along with the determination of mixed MPt.
- O R** 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.

Abhinav
24.7.2017

Abhishek
24.7.17

Abhishek
24/7/17

Divyanshu
24/7/17

Pratik
24.7.17

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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)
Organization 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 invertebrates upto orders with examples Protozoa - type study Paramecium, protozoa & disease Porifera - type study Sycon Coelenterata - type study Obelia.
- UNIT-4** Helminths - type study Fasciola
Annelida - type study Pheretima
Arthropoda - type study Palaemon
- UNIT-5** Mollusca - type study Asterias (starfish)
Protochordata - type study Balanoglossus

PAPER - II (paper code - 0814) (VERTEBRATES & EMBRYOLOGY)

M.M. 50

- UNIT-1** Origin and classification of Chordates.
Protochordata - type study Amphioxus.
A comparative account of Petromyzon & Myxine
- UNIT-2** Fishes - Skin and scales
Migration in fishes
Parental care
Amphibia - Parental care
Neoteny
Reptilia - Poisonous & nonpoisonous snakes, 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 & Parthenogenesis.
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

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PARACTICAL

M.M. 50

The practical work will, in general 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

(P)
28-7-17

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Jan

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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 classification 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.

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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 segregation and 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 characteristic 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 consistency of a system of linear equations. Relation between the roots and coefficients of general polynomial equations in one variable. Transformation of equations. Descartes's rule of signs. Solutions of cubic equations

(Cardon's Method), Biquadratic equation.

UNIT-3 Mappings, Equivalence relations and partitions. Congruence modulo n .

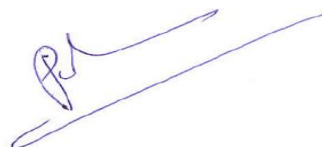
Definition of a group with examples and simple properties. Cyclic groups generators, Coset decomposition, Lagrange's theorem and its consequences. Fermat and Euler's theorems. Normal subgroups. Quotient group, Permutation groups, Even and odd permutations the alternating groups. Cayley's theorem A_n .

UNIT-4 Homomorphism and Isomorphism the fundamental theorems of homomorphism. Introduction, properties and examples of Rings, Subrings, Integral domain and fields Characteristic of a ring and field.

TRIGONOMETRY :

UNIT-5 De Moivre's theorem and its applications. Direct and inverse Circular and Hyperbolic functions. Logarithm of a complex quantity. Expansion of Trigonometrical functions.

Gregory's series. Summation of series.

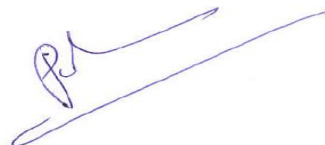


TEXT BOOK :

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, 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 $\epsilon - \delta$ definition of the limit of a function. Basic properties of limits. Continuous functions and classification of discontinuities. Differentiability. Successive differentiation. Leibnitz 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 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.

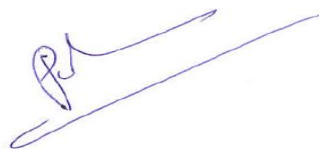
TEXT BOOK :

1. Gorakh Prasad, 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), 1976.

REFERENCES :

1. Gabriel Klambauer, Mathematical Analysis, Marcel Dekker, 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. Coddington, An Introduction to Ordinary Differential Equations, Prentice Hall of India, 1961.
10. H.T.H. Piaggio, Elementary Treatise on Differential Equations and their Applications, C.B.S. Publishers & Distributors, Delhi, 1985.
11. W.E. Boyce and P.O. DiPrima, Elementary Differential Equations and Boundary Value Problems, John Wiley, 1986.
- 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 differentiation. 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.

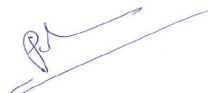
UNIT-5 Central Conicoids. Paraboloids. Plane sections of conicoids. Generaing lines.
Confocal Conicoids. Reduction of second degree equations.

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 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 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.



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, Sterilization, 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, Oscillatoria*), 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.


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PAPER - II
BIOCHEMISTRY AND IMMUNOLOGY
(paper code - 0820)

M.M. 50

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. Extracellular 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


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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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29/7/12 29/7/12

GEOLOGY
PAPER - I
INTRODUCTION TO GEOLOGY
(paper code - 0801)

M.M. 50

- 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. Radio activity, Production of magnetic field.
 5. Origin of solar system and 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. Volcano types and distribution.
 4. Rock-weathering. Erosion and 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 outlier, 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 - Axis & Centre of symmetry.
 4. Classification of crystal : Symmetry elements of normal class of cubic, tetragonal and hexagonal 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 colours.
 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
(paper code - 0802)

M.M. 50

- 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 isogrades. 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 Arthropoda.
4. Gondwana Plant fossils & their significance.
5. Morphology of corals
- UNIT-4** 1. Principles of stratigraphy. Geological time scale.
2. Lithostratigraphic, Chronostratigraphic and biostratigraphic units. Stratigraphic correlation.
3. Physical and structural subdivisions of Indian subcontinent and their Characteristics.
4. Classification & distribution of Dharwar.
5. Classification & distribution of Aravallis, saugar. 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 & distribution of Siwalik.
5. Evolution of Himalayas.

**PRACTICAL
LABORATORY WORK :**

**M.M. 50
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.

ANTHROPOLOGY
PAPER - I
FOUNDATION OF ANTHROPOLOGY
(paper code - 0815)

M.M. 50

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.

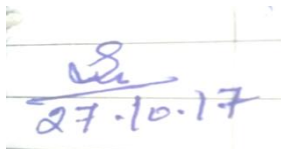
- (a) Human Evolution
- (b) Human Variation
- (c) Human Genetics
- (d) Human Growth and Development.

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 revolution: Broad outlines of cultures.
- (c) Chronology.


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PAPER - II
INTRODUCTION TO PHYSICAL ANTHROPOLOGY M.M. 50
(paper code - 0816)

UNIT-1 Meaning & scope & History of Physical Anthropology & its applied aspects.

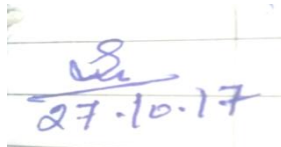
Theories of organic evolution, synthetic theory of evolution Lamarism & Darwinism.

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, Australopithecus, Pithecanthropus, Sinanthropus, Neanderthal, Cromagnon, Grimaldian, Chanulade.

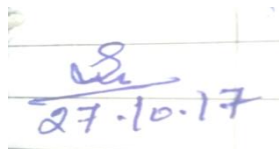
UNIT-4 Concept of race, Genetic basis of Race, UNESCO Statement on Race-Ethnic Group population, Racial classification of human Populations.

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


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PAPER - III
ANTHROPOLOGY PRACTICAL M.M. 50

- I. Identification 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
 - (i) Maximum Cranial breadth
 - (i) Minimum frontal Breadth
 - (iv) Bizygomatic Breadth
 - (v) Nasal Height
 - (vi) Nasal Breadth
 - (vii) Basibregmatic Height
 - (viii) Bimaxillary Breadth
 - (ix) Biometrical Breadth
 - (x) Length of occipital foramen.
- III. Solliatometry : Osteometry Femur
 - (1) Maximum length


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STATISTICS
PAPER - I
PROBABILITY THEORY (paper code - 0803)

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 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. Discrete sample space, properties of probability based on axiomatic approach, conditional probability, independence 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 Binomial distributions.

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 Beachner's Text, Vol. II new Age International (P) Ltd.

Edward P.J. Ford J.S. and Lin (1974): Probability 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, Chapman 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. Addison Wesley

PAPER - II
DESCRIPTIVE STATISTICS (paper code - 0804)

Type 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 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 consistency and detection of errors of recording. ideas of cross-validation.

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.

Analysis of Quantitative Data: Univariate data-Concepts of central tendency or location, dispersion and relative dispersion, skewness and kurtosis, and there, measures including those based on quintiles 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 measures.

Multivariable data: Multiple regression, multiple correlation and partial correlation in three variables. Their measures and related results.

Analysis of Categorical Data: Consistency of categories data. Independence and association of attributes, Various measures of association for two way and three way classified 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 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 (19718) An Introduction to the Statistical Analysis of. Houghton Mifflin\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. Ivltiple 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.

DEFENCE - STUDIES
PAPER - I
INDIAN MILITARY HISTORY 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 influenced 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 Indo-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. Decline of Chariots and Importance of Elephant and Cavalry.

UNIT-3 1. Mughal military system.

2. Rajput and Turk pattern of warfare with special reference to Battle of Somnath and Battle of Tarain up to 12th century A.D.
3. Causes of the fall of 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 Ancient 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)

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 practical examination of 3 hours duration and carrying 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- Definition, 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 & ELEMENTARY 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.

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-33.1.Renewable natural resources :- Cellulose, starch, properties, modification, impor-tant ind. Chemicals derived from them, Alcohol and alcohol based chemicals, Ox-alic 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 availability, 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 Agrocabon to Petrochemicals, L.F. Hatch & S. Matarm, Gulf Publishing Co., Houston.
4. Colten Cellulose : 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.

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PAPER - II
INDUSTRIAL ASPECTS OF PHYSICAL CHEMISTRY
MATERIAL AND ENERGY BALANCE

(paper code - 0822)

UNIT-1 Surface. chemistry and Interfacial Phenomena Adsorption Isotherm, Sols, Gels, Emulions, Micoemulsions,,micelles, Aerosols, Effect of surfactants, 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 opera-tions 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, con-version, 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, Shepherd, H.R.
2. Catalysir :Heterogeneons & Homogeneous, Delmon, Elbeviur 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. Storchimetry, B.I. Bhalt & S.M. Vora.
9. Chamical Process Principle - Part I, B.A. Hougen, K.M. Watson & R.A. Ragats, Asia Publi-cation.



PAPER - III
UNIT OPERATIONS IN CHEMICAL INDUSTRY AND UTILITIES,
FLUID FLOW AND HEAT TRANSPORT IN INDUSTRY
(paper code - 0823)

UNIT-1 1.1. Distillation - Introduction; Batch and continuous distillation, separation of azeo-tropes, 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) evaporations, 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, cen-trifuge.

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.

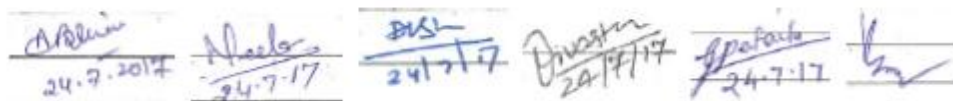
UNIT-4 Fluid Flow : Fans, blowers, compressors, vacuum pumps, ejector. Pumps :-

Reciprocating pumps,, Gear pumps,, centrifugal pumps.

UNIT-5 Heat Exchangers -: Shall and Tube type; finned tube heat exchangers, plate heat ex-changers, 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 techniques crystallisation, Fraction Crystallisation, Distillation, Fractional distillation Boiling Point.Diagram.
2. Extraction Processes- Phase diagram, partition_{HSO₄O}-efficient.
3. Preparation of standard solutions- Primary² and⁴secondary standards, Determination of- and H₃PO₄ 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. Determiation of Physical Constants
Refractive -index, surface tension, Effect of surfactants, on surface tension, viscosity- Fluids, Polymer solutions effect of additives on viscosity, 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.

COMPUTER SCIENCE
PAPER - 1
COMPUTER HARDWARE
(paper code - 0805)

AIM : 'Introduction to computer hardware organization-& computer digital electronics:

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 digital electronics and digital circuits for building up the computer.

UNIT-1 GENERAL OVERVIEW OF COMPUTER HARDWARE :

(A) Introduction to computer : Computer Vs-Calculator & typewriter ; Parts of a computer ; The system unit/inside the system unit, CPU; RAM-KeyBoard Storage Media Floppy disc & hard disc; Monitor, Mouse;. Printer; Types of Computer, Evolution of personal computer from PC-XT, PC-AT (286) to pentium PC. Hardware & Software Types of Software System Software, Application Software, introduction to Programming Languages, Procedural Oriented Language, Structured Programming, Object Oriented Programming, Languages [Ex. BASIC, COBOL, PASCAL, C, C++, Visual Basic, JAVA & C#]. Types of operating System" introduction to DOS, UNIX, Windows, Simple DOS Commands and Features 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; Excess 3 code; parity code-, Grey code ASCII & EBCDIC codes.

(B) Components of Digital System Logic Gates, Digital Mathematics, Boolean Algebra, AND, OR, NOT operator./ gate, Positive and Negative logic, NOR & NAND gates, Boolean, equations by logic symbol

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UNIT-3 COMPUTER DIGITAL ELECTRONIC - PART B :

- (A) **Integrated Circuits for Computer Logic Family** : Electrical characteristics, Propagation delay Noise immunity, Types of load RTL,DITL,TTL & CMOS Bipolar & MOS integration circuits, TTL circuits.
- (B) **Basic bone of Digital Circuitary, Boolean Algebra** : Laws of boolean Algebra, Demorgans theorem, 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 circuitary, 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 cemobinational 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 f 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, Moni-tor horizontal to Vertical generator, shift reqisters in brief, application of shift regis-ters.
- (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

REFERENCE 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.

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PAPER - II
COMPUTER, SOFTWARE PART - A
(paper code - 0806)

AIM : Introduction to computer software organization & use for solving any problem by Com-puter.

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.

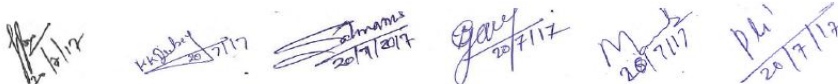
UNIT-1 Fundamentals for using the Computer:

(A) Driving the Computer

- (1) Computer Operating System & other Software :
 - (i) Windows & UNIX system Software & their versions.
 - (i) HLL Sottware : BASI C, COBOL,PASCAL,C, C++, Visual Basic, JAVA & C#.
 - (i) 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.

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(C) Programming Constants, and Variables

Character set, constants (numeric string), variables (numeric & String), rules for arithmetic expression and hierarchy of operations, 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.

Introduction 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.

Introduction 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

Introduction to Internet; Concept of Internet, Application of Internet, Services on Internet, World Wide Web (WWW) & Web Browsers,, 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 PROGRAMMING WITH C : PART - A

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 General Outputs, Types of Characters in format string, Scanf with Specifier, Searchset Arrangements and Suppression Character, Format Specifier for scanf. Control Structure: If-statement, If else statement, Multiway decision, Compound

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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

Scope and Extent, Arrays, Strings, Multidimensional Arrays, Strings, Array of Strings, I Function in String, Pointers: Definition, and Use of Pointer, address operator, pointer 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, pointers 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 initialization, 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.

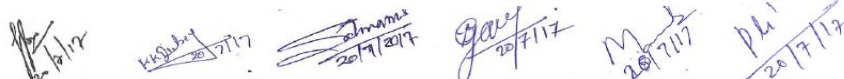
Dynamic memory allocation. Library function for Dynamic memory allocation, Dynamic Multi-Dimensional arrays, Self-referential structure. File:- Introduction, Structure, Filehandling, Functions file types, Unbuffered and buffered file" Error handling. Low level five Input-Output.

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

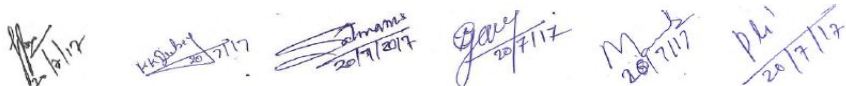
REFERENCE:

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

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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 as carbon, metal film, thin-film thick-film, wire-wound), Variable resistors potentiometers (logarithmic linear multi-turn wire wound rheostat).

Physical properties : Temperature dependence (Thermistor), Light Dependence (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, choking inductors (Coil), frequency response of an inductor.

Method of measurement of inductances: using universal bridges design and fabrication rules.

CAPACITORS : General information : symbol, colour code, types of capacitors such as

Air, paper, Electrolytic, Mica, Tantalum Polyurethane, fixed and variable capacitors. Measurement of Capacitance: universal bridge. application areas.

BATTERIES : Dry Cells, Lead-Acid Accumulators, Nickel Cadmium 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 theory. (Audio, IF and RF), Design of mains transformers and CVT.

RELAYS : General information: symbol, types of relays, such as reed electromagnetic. Specifications, rating, application areas.

MICROPHONES AND LOUDSPEAKERS : General information: frequency response, input and output Impedance, power rating, directionality (omni and uni-directional). Application areas.

TRANSDUCERS : Commonly used transducers, LDR, thermistors thermocouples, photodiodes, photo transistors, IR detectors LDR.

UNIT-3 SWITCHES, CABLE AND CONNECTORS : Spdl, dpdl, band switches, touch switches, thumpwheel switches, micro 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. Integra-tion, 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-inverting suffers.

LOGIC.FAMILIES : TTL, ECL & CMOS parameters like power dissipation, speed, sup-ply requirements, logic level, fan in, fan out noise half addar, full addar, half subtulor.

UNIT-5 COMBINATIONAL CIRCUITS : Encioder-decoder sequenfiat 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, semiconductor, insulation, intrinsic and extrinsic semiconductors (P.N. type), diffused junctions, depletion layer, barrier potential.

JUNCTION DIODES : Rectifying diode, forward and reverse bias characteristic, switching diode, varactor diode, photo diode. light emitting diode, IR sources and detector optical isolators, Zener diode, Tunnel diode, tunnel diode.

BIPOLAR JUNCTION TRANSISTORS : Basic working principle (qualitative), characteristic, Basic configurations and biasing. Operating point, load line, biasing for stabilization of operating point.

UNIT-2 JFET & MOSFET: Basic working principle (qualitative), characteristic
Pinch-off voltage,

UNI JUNCTION TRANSISTORS : Basic working principle (qualitative), characteristic applications, as a switch.

POWER CONTROL DEVICES : Four layer diode (PNPN), Silicon controlled rectifier (SCR) triac, diac, principle & characteristics.

AMPLIFIERS : Different terms used in amplifiers, such as signal source, input output, voltage and current gain power gain, - decibel, input and output impedance.

Classification according to the frequency response, RC coupled, class A common emitter Amplifier, Introduction to the class & operation

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-linear distortion.

PUSH-PULL AMPLIFIERS : Phase splitter circuits, complementary push-pull, thermal runaway, 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 inverting and noninverting inputs, virtual ground

Parameters such as input impedance, output impedance, open loop gain, measurements of parameters.

Qualitative description of OPAMP as inverting and non inverting amplifier, summing and difference amplifier, comparator and linear integrators, instrumentation amplifier.

UNIT-4 OSCILLATORS : Positive feedback, Barkhausen criteria, phase shift oscillators, Wien bridge oscillators Tuned oscillators, Hartley, Colpitts-oscillators, crystal oscillator.

POWER SUPPLIES : Regulated power supply, Zener regulated power supply series and shunt regulated power supply, block diagram of IC 723, regulated supply of IC 723.

Three terminal ICs power supply. Study of power supply. w.r. to variation in load and input 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 detectors diode detectors, ratio detector, balanced de-modulator'.

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 effective mass, carrier concentration at normal equilibrium in an intrinsic semi-conductor, 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 ($n_p \cdot p_p = N_i^2$).

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 (Eber-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, Qualitative 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
(paper code - 0808)

M.M. 50

- 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} , $I_{C O}$ and β , $I_{C O}$ 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, hybrid 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 determination of its gain and bandwidth (for CE case), idea of cascading of tuned amplifiers, Class A, Class B and Class C amplifiers, Power amplifiers, analysis and design 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 inverting 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 scheme of Practical Examination will be as follows :-

(i) One Experiment	3 Hours
(i) Marks	
Experiment	30
Viva-Voce	10
Sessional	10
	50

LIST OF PRACTICALS :

Familiarisation 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.

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 types like 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 Operator and expression Arithmetic Operators Assignments operator 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).

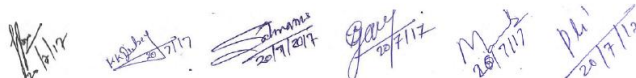
Pointer in Array, Structures Pionters and file handlings.

BOOK RECOMMENDED :

1. Let us C- y. Kanetkar
2. Ansi C- Balaguruswami
3. Programming in C- Gotrfield (Schaum Series)

PRACTICAL

M.M. : 50



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 van Leeuwenhoek, Louis Pasteur, Robert Koch, Edward Jenner, Wakman, Alexander Fleming.
- UNIT-2** General characteristics and structure of Bacteria, Cyanobacteria, Fungi, Actinomycetes, Mycoplasmas, Viruses.
- 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, Fluorimetry, Centrifugation - Principles and applications. Usage of Fermentation.

PRACTICALS

The Practical works will, in general be based on the prescribed syllabus 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. Haemocytometer.
8. Chromatographic techniques : Separation of amino acids by paper and thin layer chromatography.
9. Measurement of pH of fruit juice.
10. Estimation of carbohydrate by colorimeter.

BOOK RECOMMENDED :

1. General Microbiology, Vol. II by Power and Dagainawala.
2. Microbiology by Pelczar, Reid and Chan.
3. General Microbiology by Davis and Harper.
4. A Treatise on Media and Methods Used in Bacteriological Techniques by V. Iswaran.
5. Introductory Mycology by C.J. Alexopoulos & Mims.
6. Microbiology by P.D. Sharma.


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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 regulation 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 α -oxidation and ω -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. Estimation of alkaline phosphatase activity.
3. Measurement of α -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.


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BOOK RECOMMENDED :

1. General Microbiology, Vol. 1 by Power & Dagainawala.
2. Microbial 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
(paper code - 0832)

M.M. 50

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 occurrence 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 properties and characterization 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, phos-phatidyl inositol, plasmalogens), sphingomyelins, glycolipids - cerebroside, ganglio-sides. Properties and functions of phospholipids, isoprenoids and sterols.



UNIT-III Proteins

Introduction, classification based on solubility, shape, composition and functions.

Amino acids: 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 peptide synthesis. 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), globular 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.

Abhinav
24.7.2017

Abhishek
24.7.17

Abhishek
24/7/17

Divyanshu
24/7/17

Apurva
24.7.17

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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 energy change (derivations and numericals included). High-energy phosphate compounds - introduction, phosphate³² P, ³⁵ S, ¹⁴ C and ³H 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-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

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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. Estimation 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.
 - i) 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
 - i) 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-Pancreas and Thyroid.
- UNIT-3** 1. Biological Oxidation : Oxidation & Reduction constituents 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 - Introduction, conversion of amino acids, decarboxylation. Deamination of amino acids formation of Urea.
 5. Enzyme technology - Introduction, Comparison between enzyme and catalysis production 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.

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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.

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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).

Handwritten signatures and dates:
Sourya 28.2.17
Sudha 28.2.17
Ravi 28.2.17
Sd 28-02-17

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, Harley and Klein - Microbiology, Third Edition, Wm. C. Brown Publishers (1996).
7. P. Chakraorborthy - 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 : Introductory 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

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Shobha
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- (6) Preparation of media and cultivation techniques
- Basic liquid media (broth)
 - Basic Solid media, (agar slants and deep tubes)
 - Demonstration of selective and differential media
 - Isolation and enumeration of micro organisms
 - Isolation from air.
 - Isolation from Soil.
- (7) Methods of obtaining pure cultures
- Streak plate method
 - Pure plate method
 - Spread plate method
 - Broth cultures
- (8) Growth & Biochemical techniques
- Determination of bacterial growth
 - Amylase production test
 - Cellulose production test
 - Estimation of Sugar in given solution
 - Extraction and separation of lipids
 - Extimination of proteins
 - Isolation and purification of protein.
 - Kinetic studies on enzymes.
 - Mitosis and Meiosis
 - Biostatistics : By Manual and by computer.
 - Problems on chi-square text
 - Problems on mean, mode and median.

**SCHEME OF PRACTICAL
EXAMINATION**

Time – 4 hrs.

M. M. : 50

Instrument based Experiment (Two) 5x2	:	10 Marks
Experiment based on Culture of Micro-organisms	:	10 Marks
Bacterial Growth	:	07 Marks
Biochemical techniques	:	08 Marks
Bio statistics	:	05 Marks
Viva – Voce	:	05 Marks
Record/Sessional	:	05 Marks

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