Maharshi Dayanand University
Rohtak

Ordinances, Syllabus and Courses of Reading for B.A./B.Sc. Part-III Examination

Session—2002-2003

Available from :
Deputy Registrar (Publication)
Maharshi Dayanand University
Rohtak-124 001 (Haryana)

Price :
At the Counter : Rs. 50/-
By Regd. Parcel : Rs. 75/-
By Ordinary Post : Rs. 60/-

ORDINANCE : B.A./B.Sc./B.Com./B.Sc. (Home Science) EXAMINATIONS

1. The duration of the course of instruction for the B.A./B.Sc./ B.Com./B.Sc. (Home Science) shall be three years and the examination for Part-I shall be held at the end of Ist year., Part-II examination at the end of 2nd year and Part-III examination at the end of third year. The examination in Part-I & II shall be held once a year ordinarily in the month of April or on such dates as may be fixed by the Vice-Chancellor. The examination in Part-III shall be held twice a year ordinarily in the month of April and September or on such dates as may be fixed by the Vice-Chancellor.

   The Supplementary examination for part-I and part-II for compartment/reappear

   Candidates shall be held ordinarily in the month of September or on such dates as may be fixed by the Vice-Chancellor.

2. The date of commencement of the examination as well as the last date for the receipt of examination forms and fee as fixed by the Vice-Chancellor, shall be notified by the Registrar/ Controller of Examinations to all the colleges admitted to the privileges of the University.

3. A candidate's admission form and fee may be accepted after the last date of payment of late fee as prescribed up to the period notified by the University.

4. No one shall be eligible to join the first year (Part-I) class of B.A./B.Sc./B.Com./B.Sc. (Home Science) unless :-

   i) he/she has passed one of the following examinations with 33% marks in aggregate for admission to B.A. Part-I, 35% for admission to B.Sc. (Home Science) Part-I, 40% for admission to B.Com. Part-I and 45% for admission to B.Sc. Part-I.

   a) Senior Secondary Certificate Examination of Haryana Education Board, Bhiwani.

OR

b) B.A./B.Sc. (Home Science) Part-I examination under old scheme of this University.

OR

c) Diploma in Pharmacy Course. for (B.A./B.Sc.-I only).

d) Any other examination recognised by the Academic Council as equivalent to (a) or (b) or (c) above.

Note : 1. The candidate seeking admission to B.Sc. (Non-Medical Group) Part-I should have passed the above examination with English, Physics, Chemistry and Mathematics and those seeking admission to B.Sc. (Medical Group) Part-I should have passed the above examination with English, Physics, Chemistry and Biology.

2. The admission to B.Sc. (Home Science) Course shall be open to Women candidates only.

3. If a candidate of another Board did not pass in the subject of English at 10+2 level, he/she may be allowed provisionally to join the B.A./B.Sc./B.Com./B.Sc. (Home Science) Part-I class as the case may be under new scheme of this University subject to his/her qualifying in the subject of English of 10+2 examination at the Supplementary examination of the same year from the Board concerned. Such a candidate shall have to furnish to the Principal of the College the proof of his/her haivng cleared the subject of English upto 20th Dec. of the year of admission failing which his/her admission to B.A./B.Sc./ B.Com./B.Sc. (Home Science) Part I examination shall stand automatically cancelled.

5. No one shall be eligible to join the second year (Part-II) class of B.A./B.Sc./B.Com./B.Sc. (Home Science) course unless he/she has passed :

a) B.A./B.Sc./B.Com./B.Sc. (Home Science) Part-I examination as the case may be, under new scheme of this University.

OR

b) B.A./B.Sc./B.Com./B.Sc. (Home Science) Part-II examination as the case may be, under old scheme of this University.

OR

c) An examination recognised as equivalent to (a) or (b) above.

A student who wishes to seek admission/migration to Part-II Course after passing the Senior Secondary Certificate Examination under (10+2 system) or an examination recognised as equivalent thereto and also after having passed the Ist year examination of any statutory University, recognised by this University as equivalent to Ist year examination of this University under new scheme may be allowed to do so provided, that he/she has secured 33% or 40% or 45% or 35% marks, as the case may be in aggragate of the Senior Secondary Certificate Examination or of any equivalent examination and the minimum percentage of marks in the Ist year examination of the degree course equivalent to the percentage of marks as laid down in Clause-16.

6. A person who has passed one of the following examinations shall be eligible to join III year (i.e. Part-III) class of B.A./B.Sc./B.Com./B.Sc. (Home Science) course :

a) B.A./B.Sc./B.Com./B.Sc. (Home Science) Part-II examination as the case may be, under new scheme of this University.

b) B.A./B.Sc./B.Com./B.Sc. (Home Science) Part-II examination as the case may be, under scheme of other statutory Universities. Provided that the subjects offered for B.A./B.Sc./B.Com./B.Sc. (Home Science) Part-II were the same as are available at this University and the syllabi were not materially different.

In case the subject/paper offered for the B.A./B.Sc./B.Com./B.Sc. (Home Science) Part-II were not the same as are available at this University, the candidate may be

given exemption in the Part-III for the subject(s)/paper(s) already studied /passed by the student and the subject(s)/paper(s) which the candidate has not studied/ passed in Part-I & II shall have to be Studied/Passed alongwith remaining subject(s)/paper(s) of Part-III.

7. The examination in Part-I,II & III shall be open to a student who :-

   a) has passed not less than one academic year previously the requisite examination as laid down in Clause-4, 5 & 6 above.

      In case of a candidate who passed the requisite exam. under the rule relating to compartment the period of one academic year shall be counted from the examination in which he/she is first placed under compartment.

7. (a) A candidate who is placed under compartment in one subject only in 10+2 examination of the Board of School Education Haryana, Bhiwani or of any other Board/ University recognised by this University may be allowed provisionally to read for TDC-I exam. and to clear the compartment subject in the Supplementary exams. If he/ she fails to produce/submit the proof of having passed the compartment subject upto 20th Dec.of year of admission to the Principal of the College his/her admission to TDC-I exam. shall stand automatically cancelled.

      Provided that a candidate who joins Part-I of B.A./B.Sc./ B.Com/ B.Sc. (Home Science), as the case may be must have obtained atleast 33%, 35%, 40%, 45% marks in the aggregate (by adding minimum qualifying marks in the compartmental subject) in the Sr. Secondary Certificate Examination (+2 Examination) or an examination recognised equivalent thereto.

      A candidate who is placed under compartment/re-appear in one subject only in the lower examination of this University may be allowed to read for the next higher class and to clear the compartment subject in two consecutive chances but if he fails to pass or fails to

appear for the compartment subject at the second chance his result for the higher examination shall, unless he has passed in that exam., be cancelled and he shall not be allowed to appear for the same till he has passed in the lower examination. If he has passed in the higher examination his result for the same shall be declared provisionally subject to his passing the lower exam. within permissible chances under clause-9.1 as an ex-student.

b) has his/her name submitted to the Controller of Examinations by the Principal of the College he/she has most recently attended and produces the following certificates signed by the Principal of that college.

i) of having remained on the rolls of a recognised college for the academic year preceding the exam;

ii) of having satisfactorily performed the work of his/her class;

iii) of having attended not less than :

1. 75% of the full course of lectures delivered to his/her class in each of the subjects offered, (the course to be counted from the date of admission upto the last date when the classes break up for preparatory holidays, viz. 21 working days before the commencement of the examination); and
2. 75% of the periods assigned to Practical Work in each of the Science subject or Psychology or in the case of Geography Map Work and Practical (the minimum number of periods of Practical Work and in the case of Geography Map Work and Practical required to be arranged by each college shall not be less than 40% in each subject).

iv) of having obtained not less than 20% marks in each subject or 25% marks in the aggregate of all the subjects in the half yearly house examination held in November/December with 100 marks for each subject.

8. a) A student who is unable to appear in the annual examination due to shortage in attendance and has complied with the requirement in Clause-7(b) (iv) above may be exempted from this requirement while taking the examination in the following year as an ex-student in terms of Clause- 9.1.

   b) A student who has completed the required percentage of lectures but has failed to comply with the requirements in Clause-7(b) (iv) may be allowed on the recommendation of Principal of the College concerned to appear as an ex-student in the following year.

9.1 A student who has completed the prescribed course of instruction in recognised college for I, II, III examination, but does not appear in it or, having appeared fails, may be allowed on the recommendations of the Principal of the college concerned three consecutive chances to appear in the examination as an ex-student without attending a fresh course of instruction.

10. A candidate who re-appears in B.A. Part-I examination as an ex-student (in full subjects) may change one of his subjects.

11. The amount of examination fee to be paid by a candidate for each part shall be as prescribed from time to time

    A candidate taking up a subject which includes a practical examination shall pay an additional fee of Rs. 10/- per subject.

12. i) The medium of instruction shall be Hindi/English.

    ii) The question papers will be set in :

        a) Hindi in case of Sanskrit.

        b) the language concerned in case of other language.

        c) in both Hindi and English in case of other subjects.

    iii) The candidates shall write their answer in :

        a) the language concerned in case of English and Modern Indian and Oriental Language except Sanskrit in which case the answer may be written in Hindi; and

b) Hindi, English, Punjabi or Urdu in case of other subjects.

13.1 The examination shall be held according to the Syllabus prescribed by the Academic Council. A candidate who fails in an examination, or having been eligible fails to appear in an examination shall unless approved otherwise by the Academic Council take the examination as an ex-student according to the Syllabus prescribed by University for regular students appearing for that examination, provided that the Syllabus for the candidates for the compartment/re-appear examination to be held in September/April as the case may be shall be the same as was in force for the regular student in the last Annual Examination.

13.2 A candidate for B.A. Examination shall take up Englsih and Hindi/Punjabi/Sanskrit/Urdu as compulsory subjects and two elective subjects in each of three parts. Two elective subjects may be selected from the subjects prescribed for the examination as per syllabus, subject to the following :

a) A candidate shall offer Military Science if he is a regular student.

b) A candidate shall offer Statistics if he/she offers it alongwith Mathematics/Computer Applications.

c) Every candidate shall offer Hindi either as a compulsory subject or as an elective subject.

d) Language offered as compulsory subject cannot be offered as an elective subject.

e) A candidate shall offer Computer Application with Math., Statistics for B.A. only.

13.3 A candidate for B.Sc. examination shall offer one paper of English in the Ist year and one paper of Hindi/Punjabi/ Sanskrit/Urdu in the 2nd year. In addition he/she shall be required to offer the subjects of B.Sc. as the case may be, according to the scheme of examination and syllabus approved by the Academic Council.

13.4 A candidate for B.Com. Examination shall offer the papers according to the scheme of examination and the syllabus approved by the Academic Council.

13.5 A candidate for B.Sc. (Home Science) examination shall offer one paper of English in the 2nd year and the subject of B.Sc. (Home Science) in the Ist year, 2nd year and 3rd year, according to the scheme of examination and the syllabus approved by the Academic Council.

Note : A candidate coming from a Non-Hindi speaking area shall if, he/she did not offer Hindi/Punjabi/Sanskrit/Urdu in the examination qualifying for admission, offer in lieu of compulsory Hindi/Punjabi/Sanskrit/Urdu, the subject of Additional English which shall carry the same marks as for Hindi/Punjabi/Sanskrit/Urdu.

14. College students offering a U.G.C. Scheme of restructured/ vocational courses, shall be required to take up the combination of traditional and compulsory subjects in each of the TDC Part-I,II &III as mentioned against each course in the Scheme of Examination.

15. The minimum number of marks required to pass the examination shall be 35% in each subject in case of B.A./ B.Sc./B.Sc.(Home Science) examination. 35% marks in each paper in case of B.Com. examination. Provided that in a subject in which there is a practical examination, this percentage shall be required separately in written and practical parts (including map work in case of Geography) of the examination. (A candidate of the University who fails in theory or practical or both parts of subject may be allowed to re-appear/compartment in the theory or practical or both parts, as the case may be of that subject).

16. The successful candidates shall be classified in three divisions as under:-

i) those who obtain 60% or more of the aggregate number of marks in all the subjects incuding the compulsory subjects in Part-I,II & III Examination taken together shall be placed in the First Division.

Syllabus for B.A./B.Sc. Part-III

CONTENTS

B.A./B.Sc. Part - III

ENGLISH (Compulsory)

"Echoes in Eternity" **Max. Marks : 50**

Time : 3 hrs

Paper - A

1. POETRY : A book of Poems edited by Prof. C.M. Sharma, Dept. of English, M.D.University, Rohtak, published by Oxford University Press.
2. NOVEL : Nectar in a Sieve by Kamala Markandaya, Published by Jaico Publishing House, 125, Mahatma Gandhi Road, Bomaby-I

SCHEME OF EXAMINATION

Q.I One passage each from the two books (with internal choice) for explanation with reference to the context or for answering a set of questions relating to the content, word usage, imagery, symbolism, etc. (5+5 = 10 marks)

Q.II Two short questions (with internal choice) each on poetry and novel requiring critical understanding of the poems and the novel. (5+5 = 10 marks)

Q.III One essay-type question, with internal choice, on the book of poetry requiring first-hand study of the poem/s. (10 marks)

Q.IV One essay-type question, with Internal choice, on the novel, requiring first-hand study of the text/s. (10 marks)

Q.V Short questions based on the two texts/s items each on poetry and novel, out of 20 items. (10 marks)

Paper-B **Max. Marks : 50**

Prescribed Books **Time : 3 hrs**

1. Shakespeare's As You Like It edited by A.W. Varity
2. Advanced English Grammer by Martin Hewings (Cambridge)

The following items are prescribed for study :-

i) Tenses
ii) Modals
iii) Passives
iv) Questions
v) Verbs; Infinitives, ing form
vi) Reporting
vii) Nouns and Compunds
viii) Articles
ix) Determiners and Quantifiors
x) Relative Clause and other types of clauses
xi) Pronouns, Substitution
xii) Adjectives
xiii) Adverbs and Conjunctions
xiv) Propositions.

SCHEME OF EXAMINATION

Q. I One passage (with internal choice) on As You Like It for explanation with reference to the context. (5 marks)

Q. II Short questions (of about 100 words) on the play requiring a through understanding of the text (2 out of 4 questions to be attempted) (5+5 = 10)

Q. III One essay-type question (with internal choice) on As You Like It pertaining to plot, characters, episodes, genre, beginning, ending, comedy, humour, title, dramatic significance of scenes, etc. (10 marks)

Q. IV Precis (10 marks)

Q. V Grammar with adequate choice (15 marks)

ENGLISH (ADDITIONAL)

One Paper Max. Marks : 100
Time : 3 Hours

A. Outline

a) Text 60 Marks
b) General English 40 Marks

B. Details

a) Text

The students will be required to study the following text intensively.

1. The Rape of the Lock by Alexander Pope Recommended edition edited by E. V. Sunderam in 'Macmillan's Annotated Classics Series. (20 Marks)
2. All my Sons by Arthur Miller (Recommended edition by Nissim Ezkiel), in the 'Modern Plays for students' published by O.U.P. (20 Marks)
3. Select Short Stories (Book One) compiled by Nagpur University, Published By O.U.P. (20 Marks)

b) General English

1. Essay Writing (a reflective and autobiographical types) and speech writing. 20 Marks
2. Precis 20 Marks

C. The Scheme of the question papers

1. There will be one question consisting of three parts asking for explanation with reference to the context of three passages from the three prescribed texts (one each from each of the three prescribed books with internal choice in all the three cases). 5×3=15 Marks

2. Questions I, III and IV will be of essay type. These questions will be based on the presscribed texts only. No question will be put on the authors or their other works. There will be internal choice in each case. 15×3=45 Marks.
3. Essay/Speech Writing 20 Marks
The candidates will be required to write on any one of the four/five topics.
4. Reducing a given passage to about one third of the given passage of about 300 words. (20 Marks)

हिन्दी (अनिवार्य)

पूर्णांक : 100
समय : 3 घण्टे

1. खण्डकाव्य अंक : 30

प्रदत्त चार काव्यांशों में से दो की सप्रसंग व्याख्या करनी होगी। निर्धारित प्रश्नावली (नामकरण की सार्थकता, कथासार और प्रतिपाद्य, द्रौपदी, युधिष्ठिर, धृतराष्ट्र का चरित्र–चित्रण, नारी भावना, काव्यरूप, शिल्प–विधान) में से पूछे गए दो समीक्षात्मक प्रश्नों में से एक का उत्तर देना होगा। व्याख्या के लिए 18 और समीक्षात्मक प्रश्न के लिए 12 अंक नियत हैं।

2. नाटक अंक : 30

प्रदत्त चार गद्यांशों में से दो की सप्रसंग व्याख्या करनी होगी। निर्धारित प्रश्नावली (नामकरण की सार्थकता, कथासार और उद्देश्य, तात्विक समीक्षा, विष्णुगुप्त, पुरु, रोहिणी का चरित्र–चित्रण, सांस्कृतिक चेतना, इतिहास और कल्पना, अभिनेयता) में से पूछे गए दो समीक्षात्मक प्रश्नों में से एक का उत्तर देना होगा। व्याख्या के लिए 18 और समीक्षात्मक प्रश्न के लिए 12 अंक नियत हैं।

3. हिन्दी साहित्य का इतिहास (आधुनिक काल) 30 अंक

निर्धारित प्रश्नों (आधुनिक युग की परिस्थितियों, भारतेन्दुयुगीन काव्य, द्विवेदीयुगीन काव्य, छायावादी काव्य, प्रगतिवादी काव्य, प्रयोगवादी/नई कविता, समकालीन कविता, भारतेन्दुयुगीन गद्य, हिन्दी पत्रकारिता, हिन्दी उपन्यास, हिन्दी कहानी, हिन्दी नाटक, हिन्दी निबन्ध, हिन्दी आलोचना, रेखाचित्र) में से चार प्रश्न पूछे जायेंगे, जिनमें से दो का उत्तर देना होगा। इसके लिए तीस (15, 15) अंक नियत हैं।

4. छन्द अलंकार अंक : 10

(अ) **छंद** : पाठ्यक्रम में निर्धारित दस छंदों (दोहा, चौपाई, गीतिका, हरिगीतिका, रोला, कुण्डलिया, सवैया, मालिनी, मंदाक्रान्ता, इन्द्रवज्रा) में से चार छंद पूछे जायेंगे, जिनमें से दो के लक्षण और उदाहरण लिखने होंगे।

(आ) **अलंकार** : पाठ्यक्रम में निर्धारित दस अलंकारों (अनुप्रास, यमक, श्लेष, उपमा, उत्प्रेक्षा, रूपक, विभावना, अन्योक्ति, संदेह, अतिश्योक्ति) में से चार अलंकार पूछे जायेंगे, जिनमें से दो के लक्षण और उदाहरण लिखने होंगे।

पाठ्य-ग्रंथ :

1. द्रौपदी : नरेन्द्र शर्मा, राजकमल प्रकाशन, दिल्ली।
2. वितस्ता की लहरें : लक्ष्मीनारायण मिश्र, लोकभारती प्रकाशन, इलाहाबाद।

सहायक ग्रन्थ :

1. हिन्दी साहित्य का इतिहास, लालचन्द गुप्त "मंगल", यूनिवर्सिटी बुक सैन्टर, कुरुक्षेत्र।
2. हिन्दी साहित्य का विवेचनात्मक इतिहास, तिलकराज शर्मा, आर्य बुक डिपो, दिल्ली।
3. हिन्दी साहित्य का संक्षिप्त इतिहास, बाबू गुलाबराय, लक्ष्मीनारायण अग्रवाल, आगरा।
4. हिन्दी साहित्य का संक्षिप्त इतिहास, आचार्य नन्ददुलारे वाजपेयी, वाणी प्रकाशन, दिल्ली।
5. काव्यांग–दीपिका, रामपत यादव, सरस्वती हाऊस, दिल्ली।
6. काव्यांग–कौमुदी, कन्हैया सिंह, विश्वविद्यालय प्रकाशन, वाराणसी।

हिन्दी (ऐच्छिक)

पूर्णांक : 100
समय : 3 घण्टे

1. आंसू : अंक : 30

प्रदत्त चार काव्यांशों में से दो की सप्रसंग व्याख्या करनी होगी। पूछे गए दो समीक्षात्मक प्रश्नों में से एक का उत्तर देना होगा। व्याख्या के लिए बीस (10+10) तथा समीक्षात्मक प्रश्न के लिए दस अंक नियत हैं।

2. **महाभोज :** अंक : 20

प्रदत्त दो गद्यांशों में से किसी एक की सप्रसंग व्याख्या करनी होगी। पूछे गए दो समीक्षात्मक प्रश्नों में से एक का उत्तर देना होगा। व्याख्या के लिए दस तथा समीक्षा के लिए दस अंक नियत हैं।

3. **हिन्दी साहित्य का इतिहास (आधुनिक काल)** अंक : 30

निर्धारित प्रश्नों (आधुनिक युग की परिस्थितयां, भारतेन्दुयुगीन काव्य, द्विवेदीयुगीन काव्य, छायावादी काव्य, प्रगतिवादी काव्य, प्रयागवाद/नई कविता, समकालीन कविता, भारतेन्दुयुगीन गद्य, हिन्दी पत्रकारिता, हिन्दी उपन्यास, हिन्दी कहानी, हिन्दी नाटक, हिन्दी निबन्ध, हिन्दी आलोचना, रेखाचित्र) में से चार प्रश्न पूछे जाएंगे, जिनमें से दो का उत्तर देना होगा। इसके लिए तीस (15+15) अंक नियत हैं।

4. **समीक्षा शास्त्र** अंक : 20

निर्धारित प्रश्नों (रस : अर्थ और अवयव, रस के भेद और नौ रसों का सौदाहरण परिचय, रस–निष्पत्ति, नाटक, एकांकी, कहानी, निबन्ध, आलोचना, संस्मरण, जीवनी) में से चार प्रश्न पूछे जाएंगे, जिनमें से दो का उत्तर देना होगा। इसके बीस (10+10) अंक नियत हैं।

पाठ्य ग्रन्थ :

1. आंसू : जयशंकर प्रसाद
2. महाभोज : मन्नू भण्डारी

सहायक ग्रन्थ :

1. हिन्दी साहित्य का इतिहास, लालचन्द गुप्त "मंगल", यूनिवर्सिटी बुक सैन्टर, कुरुक्षेत्र।
2. हिन्दी साहित्य का संक्षिप्त इतिहास, बाबू गुलाबराय, लक्ष्मीनारायण अग्रवाल, आगरा।
3. हिन्दी साहित्य का विवेचनात्मक इतिहास, तिलकराज शर्मा, आर्य बुक डिपो, दिल्ली।
4. काव्यशास्त्र, पुष्पा बंसल, कुरुक्षेत्र विश्वविद्यालय, कुरुक्षेत्र।
5. काव्यांग–परिचय, अशोक शर्मा, आर्य बुक डिपो, दिल्ली।
6. काव्यांग–दीपिका, रामपत यादव, सरस्वती हाऊस, दिल्ली।

PUNJABI (COMPULSORY)

Outline of Test

One Paper Max.Marks : 100
Time : 3 Hours

1.	Selection of Punjabi Poetry upto 1700 A.D.	30 Marks
2.	A Book of Punjabi Prose	30 Marks
3.	Precis	20 Marks
4.	Applied Grammar (Samanvachi Shabad ate Vipritavachi Shabad)	20 Marks

Syllabus and Courses of Reading

1. Kaav Sudhakhar, Ed. Dr. Tarlochan Singh Bedi, Patiala, Punjabi University, 1989.
   Note : Only the following five Poets to be studied :-
   Guru Nanak, Guru Arjan Shah Hussain, Damodar, Guru Gobind Singh.
2. Adhunik Punjabi Vartak, Ed. Dr. Gurdev Singh, Patiala, Punjabi University, 1976.
   Note : Only the following seven writers to be studied :-
   Bhai Veer Singh., Lal Singh, Kamla Akali, Teja Singh, Puran Singh, Gurbachan Singh, Talib, Suba Singh, Kirpal Singh Kasel.

PUNJABI (ELECTIVE)

Outline of Test

One Paper Max.Marks : 100
Time : 3 Hours

1.	Selection of Punjabi Poetry upto 1700 A.D.	20 Marks
2.	A Book of Punjabi Prose	20 Marks
3.	History of Punjabi Literature upto 1700 A.D.	20 Marks
4.	Sahit de Roop	
	(A) Var, Qissa, Gazal, Baramaha, Mahakav	10 Marks
	(B) Novel, Short Story, Drama, One Act Play and Essay	10 Marks

Note : The questions relating to 'Sahit De Roop' will be asked in four parts with short answers.

5.	A Book of Reminiscences	20 Marks

Syllabus and Courses of Reading

1. Kaav Sudhakar, Ed. Dr. Tarlochan Singh Bedi, Patiala, Punjabi University, 1989.

2. Adhunik Punjabi Vartak, Ed. Dr. Gurdev Singh, Patiala, Punjabi University, 1976.

3. Punjabi Sahit Da Itihas, Ed. Dr. Parminder Singh, Patiala, Punjabi University.

4. Sahit De Roop, Dr. Parminder Singh, Dr. Kirpal Singh Kasel and Dr. Asha Nand Vohra, Ludhiana, Lahore Book Shop.

5. Yaadan Di Kahani, Balraj Sahni, Amritsar, Nanak Singh Pustakmala, 1988.

URDU (Compulsory)

One Paper **Drama, Nazam & Ghazaliat** Max.Marks : 100
Time : 3 Hours

(a) Texts : Explanation and paraphrase 45 Marks

(b) Critical appreciation and assessment with emphasis on relevant portions prescribed 45 Marks

(c) Prosody 10 Marks

Detailed Course of Study :

1. Nai Drama by Dr. Mohd. Hasan Published by Anjuman Tarraqi Urdu Hindi.
   Following One Act Plays from the above Chotemain Fanker Mahal Sava.
2. Khavaban-i-Adab (Poetry)
   Meer-Dard-Alish-Ghalib-Momin-Dagh
   Masnavyat: Mir Hassain-Naseem
   Marasi : Anis-Dabeer
   Jadeed Shairi-Nazir-Hali-Akbar-Iqbal.

URDU (Elective)

Paper-III **Drama, Nazam, Ghazalyat** Max.Marks : 100
Time : 3 Hours

1. **Text** 60 Marks
   Khyabani-i-Abad (Poetry) Published by Educational Book House, Aligarh.
   Ghazalyat : Meer-Dard-Atish-Ghalib-Momin-Dagh Masnawiat : Mir Hasan

Marsi : Mir Anees
Jadid Shairi : Nazir, hali-Akbar-Iqbal

2. Drama 40 Marks

Darwaze Khol Do by Krishan Chander–Published by Maktaba Jamia, Delhi.

FRENCH

Max. Marks : 100
Time : 3 Hours

Theory 75 Marks

Viva-Voce 25 Marks

1.	Translation from Prescribed Text.	10 Marks
2.	Translation from Unseen (Moderately Difficult) Passage.	10 Marks
3.	Translation from English into French passage from News Paper (120 Words)	10 Marks
4.	Essay on a current Topics in French (250 words)	15 Marks
5.	Questions on Grammar from prescribed text	20 Marks
6.	Questions on text to be answered in French	10 Marks
		75 Marks
	Viva :- Dictation (Unseen)	10 Marks
	Conversation on daily life.	15 Marks
		= 25 Marks

Suggested Readings

1. Course-de-langue at de civilization Francaise Tome-III Manager : (Lessons to be intimated Later on)
2. Menual de Francaise a L'usage scientifique Part-I (Available at Indian Insitute of Sciences, Bangalore).
3. Suggested Journals.
   Passtpartout
   Le nouvelic Observateur

Note : Internal Choice may be given in each question.

HISTORY

Outline of Test

Option-I Modern World — Max.Marks : 100, Time : 3 Hours

Option-II Ancient & Medieval World — Max.Marks : 100, Time : 3 Hours

Syllabus and Courses of Reading

Option-I **Modern World** — Max.Marks : 100, Time : 3 Hours

Note: 1. Atleast ten questions, spread over the entire syllabus more or less proportionately, shall be set in the paper out of which the candidates shall be required to attempt five questions in all. All questions shall carry equal marks.

2. There shall be a compulsory question on map carrying 20 marks (12 for map work and 8 for explanatory note). Blind candidates may not attempt the map question which is compulsory for all other candidates. In lieu of the map question they may attempt any other question. However, in case they wish to attempt the map question the part relating to the explanatory aspect will carry full marks.

3. There shall be one objective type question. This question will be divided into three Sections : Section-I will have snap-short type questions of 10 marks, Section-II will have multiple choice questions of 5 marks, Section-III will have matching type questions of 5 marks.

Section-I

Age of Mercantalism and beginning of Capitalism, Agricultural revolution in Western Europe and its impact; industrial Revolution-Social, economic and technological aspects. Development of Capitalism in Europe in the 19th Century. Imperialism in the 19th century with special reference to Africa.

Section-II

Origin, Achievements and character of French Revolution, 1979-95; Nationalism in Europe in the 19th Century-Italy and Germany; Rise of Liberalism in Britain in the 19th Century Parliamentary Democracy and social legislation; the Russion Revolution of 1917; the Naxism in Germany, Fascism in Italy.

Section-III

The opium war and the Development of the treaty port system in China 1840-1860; Battle of Concessions China; Open Door Policy, Chinese Revolution, 1911 & 1949; Japan as a World Power 1894-1945; Anti-Imperialist Movements in Indonesia & Egypt. Emergence of USA as World Power upto 1919. The Indian National Movement with reference to Non-cooperation Movement. Civil Disobedience Movement & Quit India Movement.

Section-IV Objective type-question (One Question)

Section-V Map

1. On an outline map of Europe-show the countries which witness Agricultural Revolution during 16th, 19th Centuries.
2. Europe on the eve of the French Revolution.
3. Unification of Italy.
4. Unification of Germany.
5. British Rule in India 1857.
6. Two separate maps i.e. one of Asia & one of Africa may be provided.

Books Recommended :

1.	Christopher Hill	From the Reformation to the Industrial Revolution.
2.	Leo Gershoy	French Revolution and Napolean.
3.	A. Wood	Nineteenth Century Britain
4.	David Thomson	Europe Since Napolean (London, 1978)
5.	N. Peffer	Far East : A Modern History.
6.	Clyde and Beers	The Far East (London, 1966, 1977).
7.	K. P. Dutt	India-today.
8.	Sumit Sarkar	Modern India, 1885-1947, Delhi 1984.

Option-II **Ancient & Medieval World** Max.Marks : 100
Time : 3 Hours

Note: 1. Atleast ten questions, spread over the entire syllabus more or less proportionately, shall be set in the paper out which the candidates shall be required to attempt five questions in all. All questions shall carry equal marks.

2. *There shall be a compulsory question on map carrying 20 marks (12 for map work and 8 for explanatory notes). Blind candidates may not attempt the map question which is compulsory for all other candidates. In lieu of the map question they may attempt any other question. However, in case they wish to attempt the map question the part relating to the explanatory aspect will carry full marks.*

3. *There shall be one objective type question. This question will be divided into three Sections : Section-I will have snap-short type questions of 10 marks, Section-II will have multiple choice questions of 5 marks, Section-III will have matching type questions of 5 marks.*

Section-I

The Neolithic Revolution, Bronze Age Civilization : Egypt, India and Sumer, Greek Civilization : Social and Economic Structure, Nature of Greek Polity, Rome : Polity and Economy from the Republic to the Empire, Rise of Christianity, Decline of the Roman Empire. (Three Questions)

Section-II

Theories of the origin of Feudalism in Western and Central Europe, Monorial System. Ties of Inter-dependency. Position of Peasantry under Feudalism-Role of Church in medieval Europe, Feudal Dynamism : Technological innovations, population growth;Revival of long-distance trade and rise of towns. Decline of Feudalism. (Three Questions)

Section-III

Rise of Islam, The Umayyids and Abbasids.Organisation of State and Society. (Two Questions)

Section-IV Objective type-question (One Question)

Section-V Maps (One Question)

1. An outline map of Bronze Age Civilizations indicating important Sites.
2. Locating important Towns of Greek Civilization.
3. Locating important Towns of Roman World.
4. Trade roots and Towns.

Books Recommended :

1.	V. Gordon Childe	What Happened in History ?
2.	- do -	Man Makes Himself
3.	S. N. Kramer	The Sumarians.
4.	A.R.Burn	Pelican History of Greece
5.	M.I. Fonley	The Ancient Economy
6.	A.H.M. Jones	Constantine and Conversion of Europe.
7.	Perty Anderson	Passages from Antiquity to Feudalism.
8.	March Bloch	Feudal Society, Vol. I & II.

POLITICAL SCIENCE

Outlines, Syllabus and Courses of Reading

There will be two optional papers. The students will have to opt only one paper out of two.

Option (i) **Indian Political Thought** Max.Marks : 100
Time : 3 Hours

Note: Out of 10 questions 5 questions will have tobe attempted. There will be one objective Type (multiple choice) compulsory question.

Political Ideas of :

Raja RamMohan Roy, Gokhle, Aurobindo Ghosh,Tilak, Jinnah, M.N. Roy, Vinoba Bhave, Gandhi, Jai Parkash Narain, Jawahar Lal Nehru.

Books Recommended :

1.	U.N. Ghoshal	A History of Indian Political Ideas.
2.	R.Iyer	The Moral and Political Thought of Mahatma Gandhi.
3.	S. Ghose	Modern Indian Political Thought.
4.	V.S. Narvane	Modern Indian Thought.
5.	B. Prasad	Gandhi, Nehru and J.P.
6.	V.P. Verma	Modern Indian Political Thought.
7.	Thomas Pantham and Kenneth Deutsch ed.	Political Thought in Modern India
8.	A. Appadorai	Indian Political Thinkers of Twentieth Century

9.	M.N. Jha	Modern Indian Political Thought-Ram Mohan Roy to Present Day.
10.	O.P. Goyal	Contemporary Indian Political Thought.
11.	J.P. Suda	Main currents of Social and Political Thought in India.

Option (ii) **Western Political Thought** Max.Marks : 100
Time : 3 Hours

Note: Out of 10 questions 5 questions will have tobe attempted. There will be one objective Type (multiple choice) compulsory question.

Political Ideas of :

Plato, Aristotle, Machiavelli, Hobbes, Locke, Rousseau, Mill, Marx.

Books Recommended :

1.	G.H. Sabine	A History of Political Theory
2.	W. Ebenstein	Great Political Thinkers.
3.	E.M. Sait, ed.,	Masters of Political Thoughts
4.	E. Barker	Greek Political Theory.
5.	S. Bhattacharya	Machiavelli
6.	T.Bottomore, ed.	Dictionary of Marxist Thought.
7.	J. Gray	Liberalism, Essays in Political Philosophy.
8.	Q. Skinner	Foundations of Modern Political Thought.
9.	L. Strauss and Cropsey, eds.	A History of Political Philosophy.
10.	D. Miller, ed.	Encyclopaedia of Political Thought.
11.	William T. Bluhm	Theories of the Political System.

ECONOMICS

One Paper Max.Marks : 100
Time : 3 Hours

Unit-I Economic Development

Concept of development and under development; Nature and characteristics of underdeveloped countries; vicious circle of poverty; determinants and obstacles of growth; capital formation in under developed countries; balanced and unbalanced growth.

Concept and types of planning in developing countries : The need for planning and pre-requisites for its success.

International Development

Inter-regional and International trade; Ricardo's comparative cost theory and the opportunity cost approach; The concept of balance of payments.

Unit-II Population and Development

Theory of Demographic transition; population as stimulant and obstacle to growth, strategies for controlling population growth; Economic status of women; nature and type of unemployment in developing countries.

Public Finance

Nature and scope of public finance; Taxation : Cannons, types, shifting and incidence of taxation; effects of taxation; taxable capacity; Public expenditure-cannons, causes of growth, public debt; Its role and burden.

Unit-III Planned development in India

Features and strategies of Economic planning in India, a critical review of our planned development since 1951; outline of the current Five-Year Plan for India; India's population problem and policy to control it. Agricultural Development and transformation in India; Green Revolution; IRDP; Industrial Development in India since 1951; Industrial Policy.

Foreign Trade in India

Volume, Composition and Direction of India's Foreign trade; balance of payment problems and policies to cover it; Export Promotion and Import Substitution.

Indian Public Finance

Tax Structure in India-draw-backs and remedies; sources of income and heads of expenditure of the Centre and State Governments; Centre-State financial relations; Latest Finance Commission report; Deficit Financing in India. Consumer Protection Act in India (Only elementary Ideas). Disequilibrium in B.O.P. - Concept, causes and measures of adjustment; Rate of Exchange; types and determination; multiple and PPP theory; objectives and methods of exchange control.

Note - There will be ten questions in all including one compulsory objective type (Multiple choice) question carrying 40 marks. As far as possible objective type questions having Yes/No answers should be avoided to reduce unfair means. However, reasoning in answers in four or five lines must be emphasised. The remaining four questions will be of 15 marks each. There will be atleast three questions from each unit, out of which one question from each unit shall have to be attempted. Five questions to be attempted in all.

Books Recommended :

1.	A.N. Aggarwal	Indian Economy, Vikas, N. Delhi.
2.	A.K. Bagchi	The Political Economy of Under Development.
3.	Parnab Bardhan	The Political Economy of Development
4.	Ruddar Dutt & KPM Sundharam	Indian Economy, S. Chand, N. Delhi.
5.	Alok Ghosh	Indian Economy, World Press, Calcutta.
6.	G.M.Meier Robert E. Baldwin	Economic Development.
7.	S.K. Mishra & V.K. Puri	Indian Economy.
8.	Benjamin Higgins	Economic Development.
9.	C.P. Kindleberger	International Economic.
10.	Question Bank in Economics	Association of Indian Univ.
11.	M.C. Vaish & Sudama Singh	International Economics.

PUBLIC ADMINISTRATION

Outline of Test

One Paper		Max.Marks	Time
Option-I	Development Administration	100	3 Hours
Option-II	Local Government and Administration in India	100	3 Hours

Syllabus and Courses of Reading

Option I **Development Administration** Max.Marks : 100
Time : 3 Hours

Note: There shall be one objective type (multiple choice) question in the paper.

Meaning and Scope of Development Administration. Concept of Welfare State and Constitution of India and the Directive Principles of State Policy.

Organisation of Planning Agencies. Planning Commission, National Development Council. State Planning Boards. Preparation of Five Year Plans. Centre State relation regarding Planning.

Social Welfare Administration in India-Programme of Centre and State Government's for the welfare of Scheduled Castes, Backward Classes, Women and Children. Central Social Welfare Board and Voluntary Agencies.

Rural Development Policy, Programmes and Administration.

Planning and Development and Five Years Plans-an over all view.

Note: 1. Ten questions in all will be set, out of which only five are to be attempted by the examinees.

2. Objective type (Multiple Choice) question shall be compulsory.

Books Recommended :

1. Development Administration (ed) by V.A. Pai Panandikar.
2. Development Administration (ed) by S.P. Verma & S.K. Sharma.
3. Development Administration in India by S.K. Sharma.
4. Development Administration in India by S.L. Goel.
5. Development and Development Administration by R.K. Sapra.
6. Economic Administration in India by S.K. Sharma.
7. Social Administration in India by G.B. Sharma.
8. India's Development Experience by Tarlok Singh.
9. Bharat Kee Arthic Samasyain (Select chapters) by Dr. Chaturbhuj Mamoria and Dr. S.C. Jain.
10. Bhartiya Krishi Kee Sankshipt Ruprekha-Published by Directorate of Economics and Statistics, Ministry of Agriculture and Rural Development. Govt. of India.
11. Five Year Plan (Govt. of India, Publications).
12. Development Administration by Swinder Singh.

Option II Local Government and Administration in India

Max.Marks : 100
Time : 3 Hours

Note: There shall be one objective type (multiple choice) question in the paper.

Local Government-meaning and significance, Evolution of Local Government in India since 1882.

Municipalities : Composition, functions, finances, personnel, general working of Municipal bodies with special reference to Haryana and Punjab State Government's control over Municipal bodies.

State Department and Directorate of Municipal bodies-organisation and functions.

Role of the Ministry of health and Family Welfare as well as the Central Council of Local Self Government in regard to municipalities.

Municipal corporation : composition, functions and finances, Town and Metropolitan Planning in India.

District Administration : its features, purposes, problems, Deputy Commissioner-role and position, administrative changes in the context of planning and development at district level, Divisional Commissionery role and position. State Headquarters control over district administration.

Rural Local Govt. Zila Parishad, Panchayat Samiti, Gram Panchayat, Composition functions, finances personal. State Government's control over their working. Role of political parties in Panchayati Raj.

Role of State and Union Govt. with regard to panchayat Raj Institution in policy, assistance, training and general control.

Problems of rural-urban relationship.

Note: 1.Ten questions in all will be set, out of which only five are to be attempted by the examinees.

2. Objective type (Multiple Choice) question shall be compulsory.

Books Recommended :

1. Local Government in India by S.R. Maheshwari.
2. Bharat Mein Sthaniye Shasan by S.R. Maheshwari.
3. Local Government in India (Hindi) by K.K. Puri and G.S. Barara.

4. Bharat Mein Sthaniya Prasashan by Harish Chander Sharma.
5. Municipal Govt. & Administration in India by R.L. Khanna.
6. Municipal Administration in India byi A. Avasthi.
7. Local Govt. in India by B.B. Gupta.
8. The Municipal Administration in India by R.k. Bhardwaj.
9. Local Government in India by M.P. Sharma.
10. Local Self Govt. in India by M.P. Sharma.
11. District Administration in India by S.S. Kehra.
12. Essays in Urban Govt. by Mohit Bhattacharya.
13. Panchayati Raj in India by R.L. Khanna.
14. Community Development and Panchayati Raj in India by S.C. Jain.
15. Local Government (ed.) by T.N. Chaturvedi and Abhijit Datta.

PHILOSOPHY

Outline of Test

Either of the following two options :		Max.Marks	Time
Option-I	Moral Philosophy	100	3 Hours
Option-II	Philosophy of Religion	100	3 Hours

Syllabus and Courses of Reading

Option I **Moral Philosophy** Max.Marks : 100
Time : 3 Hours

Note: 1) Ten questions in all are to be set.

2) Out of the ten, only five questions are to be attempted by the examinees.

*3) One question will be of objective type in the **strict** sense of the term.*

4) Questions will be equitably distributed over all the units of the syllabus.

5) All the questions will be of equal marks.

Unit-I : The Definition, Problems and Uses of Ethics (**Moral** Philosophy) Relation of Ethics to Psychology, **Political** Science and Religion.

Unit-II : Evolution of Moral Consciousness : Instinctive, Customary and Reflective Morality. Meaning & Criteria of Moral Progress.

Unit-III : Nature and object of Moral Judgement.

Unit-IV : Plato's and Aristotle's Conceptions of Virtues.

Unit-V : Bentham & Mill : Utilitarianism. Kant : Categorical Imperative. Bradley : My Station & Its Duties.

Unit-VI : Theories of Punishment : Preventive, Deterrent and Reformative.

Unit-VII : Indian Ethics : Karma Yoga of Gita, Ahimsa (Non-Violence) and Satyagraha (Firmness of Truth) of Gandhi.

Unit-VIII : Moral Education : Its Nature. Its role in the Eradiction of the Evils of Alcoholism, Drug-addiction, Sex-perversion, Environmental Pollution and Economic, Social and Political Corruption.

Books Recommended :

1. Pandeya, Sangamalal — Nitishastra Ka Sarvekshana
2. Sinha, J.N. — Manual of Ethics
3. Singh, B.N. — Nitisastra
4. Mishra, H.N. — Nitisastra
5. Education for Moral Character' (pp.55-64), by Ernest M. Ligon in **Philosophies of Education**, Edited by Philip H. Phenix, John Wiley & Sons, Inc., New York, 1961.
6. 'The Moral Values' (pp. 233-254), in Building a **Philosophy of Education**, by Harry S. Broudy, Prentice Hall of India (Private Ltd.) New Delhi, 1965.
7. 'Moral Education' (pp. 493-511) in **Eclectic Philosophy of Education**, Edited by J.S. Brubacher, Prentice Hall, Inc., Englewood Cliffs, N.J., 1965
8. 'Contemporary Moral Problems', in **Ethics in Perspective**, Edited by Karsten J. Struhl and Paula Rothenberg Struhl, Random House, Newyork, 1975.
9. नैतिक शिक्षा शिक्षण के०सी०मलैया, विनोद पुस्तक मन्दिर, आगरा।

Option II **Philosophy of Religion** Max.Marks : 100
Time : 3 Hours

Note: 1) Ten questions in all are to be set.
2) Out of the ten, only five questions are to be attempted by the examinees.
*3) one question will be of objective type in the **strict** sense of the term.*
4) Questions will be equitably distributed over all the units of the syllabus.
5) All the questions will be of equal marks.

Unit-I : Nature and Scope of Philosophy of Religion and Its Relation with Theology.

Unit-II : Approaches to the Study of Religion : Historical, Sociological and Psychological.

Unit-III : Foundations of Religious Belief : Reason, Revelation. Faith and Mysticism.

Unit-IV : Different Theories about God : Deism, Theism and Pantheism. Proofs for God's Existence.

Unit-V : Natural and Moral Evil : Their nature and the Differences between the Two. The Problem of the Reconciliation of Evil with God's Existence.

Unit-VI : Immortality of Soul : Proofs. Disproofs. Kinds.

Unit-VII : Equality, Unity and Universality of Religions. Religious Tolerance, Conversion, Secularism.

Unit-VIII : Hinduism, Christianity, Islam and Sikhism : Distinguishing Features.

Books Recommended :

1.	John Hick	Philosophy of Religion (English and Hindi Versions).
2.	Mishra, H.N.	Dharma Darshan.
3.	Mashih, Yakub	Samakalin Dharma Darshan.
4.	Mashih, Yakub	Introduction to Philosophy in Religion.
5.	Verma, V.P.	Samakalin Dharma Darshan Ka Visleshanatmak Vivechana.
6.	Sinha, Harendra Prasad	Dharma Darsana.

DEFENCE STUDIES

Outlines of Test

Paper-I (Theory)		Max.Marks	Time
Option-A	National Defence and Security	70	3 Hours
Option-B	Inter-National Relations (Defence Aspects)	70	3 Hours
Paper-II	(Practical)	30	3 Hours

Syllabus and Courses of Reading

Note: 1) There will be one theory paper of 70 marks and one paper of practical having 30 marks.

2) Two theory papers (Opt.-A and Opt.-B) have been prescribed. The candidates will offer any one of them.

3) Examiner should set at least ten questions including one objective type (multiple choice) question covering the entire syllabus. Candidates are required to attempt any five questions. No question is compulsory.

4) The candidates are required to pass separately both in theory and in practical papers.

Paper-I (Option-A) **National Defence & Security** Max.Marks : 70 Time : 3 Hours

1. Meaning of National Defence and Security.
2. Essentials of National Defence :
   a) Geographical Factors, Location, Frontiers, Terrain Climate,
   b) Economic Factors Resources, Industrial and Scientific development, transport and communication.
   c) Internal Political conditions.
   d) Defence Mechanism of Modern State.
3. India's Defence Problem from 1947 to date.
4. India's Defence Policy.
5. Nuclear Policy of India.
6. Civil Military relations of India.
7. Civil Defence :
   a) Definition.
   b) Need and Importance of Civil Defence.
   c) Organisation and measures of Civil Defence.
8. Military in Aid to Civil power.

9. Geostrategic location of India.
10. Importance of Indian Ocean in India's Defence.
11. India;s Relations with :-
    a) Pakistan
    b) China
    c) Bangla Desh
    d) Sri Lanka
    e) Nepal
    f) Afganistan
12. War Finance Taxation, Borrowing and Inflation.
13. Cost of War (Real cost of war)
14. Economic Mobilization.
15. Comparative study of defence budget of India and Pakistan.

Books Suggested :

1. India's Defence Problem : S.S. Khera.
2. Defence without Drift; P.V. Rao.
3. India in the Search of Power : M.K. Chopra.
4. India the Indian Ocean :K.M. Panikar.
5. Rastriya Partiraksha : Maj. K. Kumar.
6. India's Quest for Security : L.J. Kevic.
7. Economic Problems of War and Peace : Robbins.
8. Defence Mechanism of the State : Dr. Nagender Singh.
9. Rastriya Partiraksha : B.M. Maliwal.
10. Economic and Commercial Geography of India : A Das Gupta.
11. India Nuclear Estate : Dhirender Sharma.
12. Dimensions of National Security by Prof. M.C. Maheshwari & Dr. Ashok Kumar Singh.

Option-B **Inter-National Relations (Defence Aspects)** Max. Marks : 70 Time : 3 Hours

Group-A

1. **Power** : Definition, methods of exercising power and the measurement of power.
2. **National Power** : Definition, elements of National power and their relative importance and the limitations of National Power.
3. **Ideology** : Its definition, types and the role of ideology in International Politics.

4. **International Morality** : Definition, International moral code pertaining to the protection of human life in peace and war times; Morality of the ruling clite; difference between the state morality and individual morality; its role in International relations.

Group-B

5. **Causes of the First World War :**
6. **The Peace Settlement 1919-23**

The treaty of Versailles; the treat of St. Germans, the treaty of Trianon; the treaty of nuilly, the treaty of Serves and the treaty of Lausanne; creation of New states.

7. **League of Nations :**

Its purpose and organisation; league and the Problem of collective security, estimate of League's work and causes of the failure of the League.

8. **Causes of the World War-II**
9. **United Nations Organisation :**

Its purpose and principle organisation, estimate of its work; its superiority over the League of Nations proposals, for strengthing it. UNO and the problem of collective Security merits and limitations of the UNO Collective system.

Group-C

The Theory of Balance of Power and the New Balance of Power; various meaning, evolution of the Balance of Power, methods of the Balance of Power.

11. **National Interest**

Definition, National Interest and Foreign Policy, Security and National Interest.

12. **Foreign Policy of USSR (Current)**

Books Recommended :

1. Politics Among Nations : H.J. Morgenthau.
2. Theoretical Aspects of International Politics : Mahender Kumar.
3. International Relation : Raghuvir Chakarvarty.
4. International Relation : Palmar and Perkine.
5. International Relation : D. N. Verma.

6. The study of International Relation : Quincy Wright.
7. The Foreign Policy of Soviet Russia: M. Bellof.

Paper-II Practical Max. Marks : 30
Time : 3 Hours

Practical Records	4 Marks
Lecture	4 Marks
Laboratory Work	18 Marks
Viva	4 Marks

Elementary Tactics Upto-Infantry Platoon Level

1. Sand Model-Meaning, Importance and Preparing.
2. Detailed study of an Infantry Platoon including organisation weapons and equipments.
3. Study of field craft with reference to the following
   a) Ground b) Cover c) Camouflage d) Concealment
   e) Observation.
4. Application of Fire-Fire control and Fire Control orders.
5. Tactical Formations - Section and Platoon.
6. Verbal order.
7. Patrol-Types and stages of Patrolling.
8. Battle procedure.
9. Military Appreciation of a situation in Attack and Defence.
10. Platoon in Attack-Types, Principles of defence, defence exercises.
11. Platoon Attack-Types, Principles of Attack, Stages of attack, Battle craft for platoon in attack and platoon attack exercises.
12. Military Message Writing.
13. Ambush-Organisation of ambush party, Ambush operation.
14. Lecture on any theory topic.

Note :The course mentioned above shall be carried out on sand models with a view to prepare candidates upto command of an Infantry platoon. Atleast five exercises of platoon in attack and five exercise of platoon in defence be carried out.

PSYCHOLOGY

Outlines of Test

		Max. Marks	Time
Paper-I	Abnormal Psychology	70	3 Hours
Paper-II	Practical	30	3 Hours

Syllabus and Courses of Reading

Paper-I Abnormal Psychology Max. Marks : 70
Time : 3 Hours

Note: 1) In total ten questions including one objective type would be set in such a way that there are three questions each from Units II & III and two questions each from Units I & IV.

2) Total number of questions to be attempted-5 (at least one question from each Unit).

3) One objective type multiple choice (four choices) question would be set from any of the Units. It will, however, have, atleast seven sub-parts.

Unit-I

Introduction : Concept of normalcy and abnormalcy, Criteria of abnormalcy.

General Causes of abnormal behaviour, Biological, Psychological and Socio Cultural.

Structural aspects of Freudian theory and defence mechanisms.

Unit-II

Classification : Need for classification, DSM system of classification DSM-III.

Neurosis (Symptoms, Actiology and treatment); Phobic disorder, obsessive-Compulsive, generalized anxiety conversion disorder dissociative disorders.

Psychosomatic disorders : Hypertension and peptic ulcers.

Unit-III

Psychotic disorders (symptoms, Actiology and treatment). Functional Psychosis - Depressive disorders, manic depressive Psychosis, Schizophrenia.

Drug Abuse : Alcohol, Narcotics-
Stimulants-amphetamines
Hallucinogenis-LSD
Marujuna-hashish

Unit-IV

Assessment : Need, types, Psychological assessment, case history interview, observation.

Treatment : Psychotherapies, Psychoanalysis and Behaviour Therapy, Physical and Chemotherapics : ECT, Antipsychotic drugs Anti-anxiety drugs, Anti-depressant drugs.

Note: A short visit to any nearby mental hospital/Psychiatric ward would be desirable.

Books Recommended :

1. Carson, R.C., Butcher, J.N., and Coleman,J.C.(1988) Abnormal Psychology and Modern Life Illinois : Scott, Foresman
2. Neale, J.M. and Davidson, G.C. (1978) Abnormal Psychology : An Experiment Clinical approach, New York : John Willey.
3. Srivastav, D.N. (1985) Adhunik Asamanya Manovigyan, Sahiytya Agra.

Paper-II Practicals Max. Marks : 30
Time : 3 Hours

List of Practicals in Abnormal Psychology

Notes : 1. Any ten to be performed in the Class room.
2. One practical to be performed by the students at the time of examination

1. Interview.
2. Case study.
3. EPI/MPI
4. Projective test-TAT.
5. Projective test-Sentence completion/Word association
6. Projective test-Research Inkolot test.
7. Adjustment inventory.
8. Frustration test.
9. Defence Mechanism test.
10. Anxiety scale.
11. Memory scale.

Sixteen Personality Factor Questionnaire.

Books Recommended :

Anastasi, A. (1982) Psychological Testing New York : Macmillan.

MUSIC (VOCAL)

Outlines of Test

		Max.Marks	Time
Paper-I	Theory	40	3 Hours
Paper-II	Practical	60	20 to 30 Minutes

Note: The question paper will be divided into three Sections. Section A will have two compulsory questions i.e. first question in the form of sixteen objective type (½ mark each) covering the entire syllabus and the second question related to Notation writing. There will be five questions in all in the Section B & C and candidates will be required to attempt any three of them selecting atleast one question from each section. All questions will carry equal marks.

Syllabus and Courses of Reading

Paper-I Theory Max. Marks : 40
Time : 3 Hours

Section - A

(a) Sixteen objective type questions covering the entire syllabus.

(b) Notation of the Talas and compositions in the Ragas prescribed as follows :

(1) Todi (2) Puria Dhanashree (3) Basant (4) Kamod
(5) Bhimplasi (6) Gaud Malhkar

Talas : Dhamar, Sultal, Teental, Jhaptal and Keharwa in Dugun, Tigun and Chagun.

Section-B

(a) Origin and development of notation system. Merits and demerits of notation system.

(b) Shruti Swar relationship in the following Granthas : Sangeet Ratnakar, Swarmelakalanidhi, Sadragohandrodaya, Sangeet Parijat.

(c) Comparison of Uttari and Dakshini Tala System.

(d) Detailed study of the prominent gharanas of Khayal Gayan.

(e) Contribution of the following Scholars to Indian Music :-

(1) Acharya K.C.D. Brihaspati (2) Lal Mani Mishra
(3) Thakur Jaidev Singh

Section-C

(a) Detailed description of the Ragas and Talas prescribed.
(b) Essay on "Teaching of the Music through Gharana and Educational Institutions".
(c) Elementary knowledge of the Folk Music of Haryana & Punjab.
(d) Contribution of the following to Indian Music :
(1) Pt. Vinayak Rao Patwardhan (2) Ustad Amir Khan
(3) Gangubai Hangal (4) Krishna Rao Shankar Pandit

Paper-II Practical Max. Marks : 60
Time : 20 to 30 Minutes

(a) One Drut Khayal with Alaps, Boltans and Tans in each of the following Ragas :
(1) Tori (2) Puria Dhanashree (3) Basant
(4) Kamod (5) \Bhimplasi (6) Gaud Malhar
(b) Two slow Khayals with extempore Alaps and Tanas in different Talas in any one of the prescribed Ragas.
(c) One Dhruped and one Dhamar with Dugun, Tigun and Chaugun.
(d) Ability to demonstrate by hands the following Talas in Dugun, Tigun, Chaugun Layakaries : Dhamar, Sultal, Teental, Jhaptal and Keharva as on tabla also.
(c) One Tarana with simple and technical demonstration, its style.
(f) Tuning of Tanpura.

Note : (1) Harmonium will not be allowed as accompaniment in Vocal Music.
(2) The candidate will be required to sing Vilambit and Drut Khayal in Ragas of the Examiner's choice.

MUSIC (INSTRUMENTAL)

Paper-I Theory Max. Marks : 40
Time : 3 Hours

Section - A

(a) Sixteen objective type questions covering the entire syllabus.
(b) Notation of the Talas and compositions in the Ragas prescribed as follows :

(1) Todi (2) Mian Malhar (3) Puria Dhanashree
(4) Tilak Kamod (5) Darbari Kanada (6) Bageshwari

Section-B

(a) Origin and development of notation system alongwith their merits and demerits.

(b) Shruti Swara relationship of the following Granthas :-
Sangeet Ratnakar, Chaturdandi Prakashika, Rag Tatva Vibodh.

(c) Development of Indian Classical Music during Medieval Period.

Section-C

(a) The contribution towards the development of Sitar
Playing of the following :
(1) Mushtak Ali Khan (2) Nikhil Banerjee
(3) Ali Akbar Khan (4) Vilayat Khan

(b) The role of Electronic media in popularising Indian Classical Music.

(c) The role of Music in international cultural exchange.

Paper-II Practical Max. Marks : 60
Time : 20 to 30 Minutes

(a) One Drut Gat with Alap, Jor, Toras and Jhal in each of the following Ragas :-
(1) Todi (2) Mian Malhar (3) Puria Dhamashreewari
(4) Tilak Kamod (5) Darbari Kanada (6) Bageshree

(b) Two slow Gats with extempore Alaps and Toras in any of the prescribed Ragas.

(c) One Dhun in any or the following Ragas :-
Pahari or Maand.

(d) One Gat in Jhaptal or Rupak Tal in Medium Tempo with Toras in any of the prescribed ragas.

(e) Ability to demonstrate by hand the following Talas in Dugun, Tigun and Chaugun,Layakaries :
Dhamar Sultal, Teental, Jhaptal and Keherva (Thekasion Tabla also).

MUSIC (Tabla)
Outline of Test

		Max.Marks	Time
Paper-I	Theory	40	3 Hours
Paper-II	Practical	60	30 Minutes

Syllabus and Courses of Reading

Paper-I Theory Max. Marks : 40
Time : 3 Hours

(a) Evaluation of Tala and Tala-yantras.
(b) Popular Gharanas of Tabla or Pakhawaj Vadan.
(c) Comparison of Uttari and Dakshini tal system.
(d) Life history of the following :
Kadar Baksh, Pandit Chatur Lal, Parvat Singh, Allaharakha.
(e) Importance of Tala in Music.

Paper-II Practical Max. Marks : 60
Time : 30 Minutes

(a) Tals prescribed - Ada, Chautal, Tiwara, Dhamar, Mattal Swari and Tappa Tals including the Tals prescribed in the previous courses.
(b) Knowledge of Dholak and Mridang.
c) Playing of all the prescribed tals with Vocal and Instrumental performances as well as sole item.

Note : The students should be able to play teental and jhaptal with efficiency for fifteen minutes each.

INDIAN CLASSICAL DANCE (Kathak)
Outlines of Test

		Max.Marks	Time
Paper-A	Theory	40	3 Hours
Paper-B	Practical	60	30 Minutes

Syllabus and Courses of Reading

Paper-A Theory Max. Marks : 40
Time : 3 Hours

1. Detailed study of Nayak-Nayaka Bheda.
2. Knowledge of Dakshni and Hindustani Taal Padhati.
3. History of Kathak Dance and its development since Vedic Period to 20th Century.

4. Knowledge of the techniques required for composing and India Ballet (Nritya Natika).
5. Biographies and contribution of the following dancers in their field of specilisation.
   i) Udeyshankar
   ii) Sitara Devi
   iii) Rukmani Arundal
   iv) Birju Maharaj
   v) Narayan Parsad
6. Knowledge of the Role of Kavit and Thumri in Kathak.
7. Knowledge of the accompaniment values of an Orchestra in Indian ballet (Nritya Natika).
8. Knowledge of the main folk dances of different states of the country with their origin, constumes and background Music.
9. Detailed study of Abhinaya with all its variations.

Note : 1. Eight questions set out of the syllabus as given above.
2. One question on notation is compulsory.

Paper-B Practical Max. Marks : 60
Time : 20 Minutes

1. A systematic performance of Teen Taal.
   a) Advance Tatkar, Paltas, Tihais of different varieties.
   b) Amad with all its types.
   c) Advanced Paran, Chakardar Paran, Jati Paran, Parmala, Farmaishi Paran.
   d) Kavit, Vandana.
   e) Gat Bhav on any one of the following Panghat ki Cher Char; Holi, Makhan Chori.
1. Ability to dance skillfully in the following taals :
   a) Dhamaar, Swari (15 Matra), Jhaptal, Ektal.
   b) Thhat
   c) One Amad
   d) Four Advanced Paran
   e) Two Chakardar Paran
   f) One Kavit
   g) Tatkar with Tihai

3. Ability to demonstrate any Folk Dance.
4. Ability to compose Dance on a theme (to be given during practical examination).
5. Ability to do PADHANT in all the Taals included in the syllabus.
6. Ability to play Tatkars and Nagmas of all the Taals included in the syllabus.
7. Practical demonstration of all the mudra learned.
8. Demonstration of Tatkar in Thha, Dugun, Chogun in the following tals :
   Laxmi (18) Ashtmangal (22)

Note : Distribution of marks in practical will be as under :

a)	Choice of the students	15 marks
b)	Choice of the Examiner	20 marks
c)	Thheka on Tabla	05 marks
d)	Playing Nagma	05 marks
e)	Padhant	10 marks
f)	Viva	05 marks

ART

Outlines of Test

		Max.Marks	Time
Paper-I History and Appreciation of Art		30	3 Hours
A) History of Art	18	30	
B) Application of Art	12		
Paper-II (Practical) Composition		20	6 Hours
Paper-III (Practical) Poster		20	6 Hours
Paper-IV (Practical) Life Drawing		20	6 Hours
Sessional Work		10	

Syllabus and Courses of Reading

Paper-I History and Appreciation of Art Max. Marks : 30
Time : 3 Hours

A) History of Art Marks : 18

The Art of theRenaissance - the Art of the Baroque, Rococo and Neo-Classicism Modern Movements, Impressionism, Expressionism, Cubism, Surrealism, constructivism.

B) Appreciation of Art Marks : 12

General principles of Art-appreciation-main qualities of Art technical aspects of art-subject matter and expressive content of art-beauty in Art.

Appreciation of some celebrated specimens of Art-

(a) Sarnath Budha image (b) PadmapaniAvalokitesvar of Ajanta (c) The Mother and Child of Ajanta (d) Natraj image of Shiva (e) Death of Inayat Khan (Mughal) Painting (f) Ravana shaking Mt. Kailash (Ellora) (g) Krishana and Radha (Krishangadh Painting) (h) Krishna quelling Serpent Kaliya (Pahari, Kangra painting).

Paper-II (Practical) Composition Max. Marks : 20

Time : 6 Hours

Candidates should paint and compose village scenes from the memory and get the effects in colours, light and shade. Total effect of the composition should be bold.

Paper-III (Practical) Poster Max. Marks : 20

Time : 6 Hours

Poster should be bold lay-out, using flat colours.

Medium-Poster colours

18"×26"

Note: The thinking of Mahatma Gandhi, Vinobha Bhave and Prohibition Policy be included in Poster Making.

Paper-IV (Practical) Life Drawing Max. Marks : 20

Time : 6 Hours

Simply study of male and female figures in action motionless position.

Students are required to study proportion size : Half-Sheet.

Sessional Work. 10 Marks

1.	Sketches	50
2.	Composition	04
3.	Poster	04
4.	Life Drawing	04

Note: The students must submit specimens of his/her work done during the course duly attested by the teacher concerned. The pieces of work include drawing painting related to the

study executed by the students and also private candidates are required sessional work duly attested by the teacher concerned.

Note: 1. Each theory paper shall be divided into two sections A & B. Section-A will carry six Questions out of which the candidate shall be required to attempt any three. Section B will contain four questions out of which the candidate will be required to attempt any two questions. All the questions shall carry equal marks.

2. Questions are to be set as to test the broad survey of the topics and not minute details.

CLAY MODELLING

Outlines of Test

Paper-I	(Theory) History and Appreciation of Art		Max. Marks 30	Time 3 Hours
	A) History of Art	18	30	
	B) Appreciation of Art (including Canon of Indian Art)	12		
Paper-II	(Practical) Life Study		30	6 Hours
Paper-III	(Practical) Imaginative Composition		30	6 Hours
	Sessional Work		10	

Syllabus and Courses of Reading

Paper-I (Theory) History and Appreciation of Art

Max. Marks : 30
Time : 3 Hours

A) History of Art Marks : 18

The Art of theRenaissance - the Art of the Baroque, Rococo and Neo-Classicism Modern Movements, Impressionism, Expressionism, Cubism, Surrealism, constructivism.

B) Appreciation of Art Marks : 12

General Principles of Art-appreciation-main qualities of Art technical aspects of art, subject matter and expressive content of art- beauty in Art.

Appreciation of some celebrated specimens of Art :-

(a) Sarnath Budha Image
(b) Padmapani Avalokitesvara of Ajanta.
(c) The Mother and Child of Ajanta.
(d) Natraj image of Shiva.
(e) Death of Inayat Khan (Mughal) Paintings.
(f) Ravana shaking Mt. Kailash (Ellora).
(g) Krishan and Radha (Krishanagadh Painting).
(h) Kriahna quelling Serpent Kaliya (Pahari, Kangra painting).

Paper-II (Practical) Life Study Max. Marks : 30
Time : 6 Hours

Life Study Half size.
Knowledge of waste moulding, casting and calaving.

Paper-III (Practical) Imaginative composition Max. Marks : 30
Time : 6 Hours

Clay modelling as medium of imaginative presentation of abstract compositions.

Note :The thinking of Mahatma Gandhi, Vinobha Bhave and Probibition Policy be included.

Sessional Work. 10 Marks

Three each specific model with practical paper IInd and IIIrd.

Note: The students must submit specimens of his/her work done during the course duly attested by the teacher concerned. The pieces of work include drawings, painting related to the study executed by the students and also private candidates are required sessional work duly attested by the teacher concerned.

Note:1. Each theory paper shall be divided into two sections A & B, Section-A will carry six Questions out of which the candidate shall be required to attempt any three. Section B will contain four questions out of which the candidate will be required to attempt any two questions. All the questions shall carry equal marks.

2. Questions are to be set so as to test the broad survey of the topics and not minute details.

HISTORY OF ART

Outlines of Test

One Paper carrying 100 marks of 3 hours duration.

Syllabus and Courses of Reading

A brief survey of European painting and sculpture upto 1850 A.D. The Background, Prehistoric and early paintings from the East. Greek Art, Roman Art, Early Christian and Byzantine Art, Romanesque and Gothic.

The Renaissance the succeeding trends : Mannerism Baroque Rococo, Neo-Classicism and Romanticism.

Note: 1. Each theory paper shall be divided into two sections A & B, Section-A will carry six Questions out of which the candidate shall be required to attempt any three. Section B will contain four questions out of which the candidate will be required to attempt any two questions. All the questions shall carry equal marks.

2. Questions are to be set so as to test the broad survey of the topics and not minute details.

SOCIOLOGY

Optional : Paper-I Marriage and Family in India — Max. Marks : 100, Time : 3 Hours

I. **Conceptual** : Issues Indian social structure : its components and characteristics : Unity and diversity.

II. **Familiy** : Concept and functions of family; Household dimensions of family; types of family;conjugal, extended and joint family; disintegration of family; its causes; future of family.

III. **Marriage** : Meaning and types of marriages; Rules of Mate Selection stability of Marriage; symmeterical and Asymmetrical exchange; Patterns of marriage among Hindus, Muslims and christians; way of acquiring mates among the tribals.

iV. **Kinship** : Inheritance, succession and descent; North Indian and South Indian Kinship patterns.

V. **Status of Women** : Gender-inequality : marital-adjustment : working mothers; conjugal Tension and violence.

Note: Ten questions will be set, two questions from each section. The candidates will be required to attempt five questions in all, selecting one question from each section.

References :

Jeede, R.J.	The family, Prentice Hall, Angle Cliffs; 1964
Winner Robert P.	Family organisations, Free Press, New York; 1974
Meir Away '	Marriage
Shah, A.M.	The household dimensions of family in India, Orient Longman, Delhi; 1973.
Sclinmeta & Stress	Violence in the Family, Meal & Co. New York; 1974.
Srinivas, M.N.	indian Social structure, Hindustan Publishing Co. Delhi 1988.
Mayor A.C.	Caste and Kinship in Central India Routledge & Kegan Paul London 1968.
Bose N.K.	Tribal life in India, National Book Trust, New Delhi, 1971.
Hassan Philip (ed.)	India & Cylon Unity and Diversity, Oxford University Press, London, 1976.
Beattie, John	Other Cultures, Colen & West London, 1967.
Fox Robin	Kinship Marriage Penguin Books, 1967.
Kapadia, K.M.	Marriage & Family in India, Oxford Univ. Press Bombay, 1958.
Karve, I.	Kinship organization in India, Asia Publishing House, Bombay, 1958.
Harshman Paul	Panjabi Kinship and Marriage, Hindustan Publishing Co. Delhi, 1981.
Bose, N.K.	The Structure of Hindu Society (Tr. by Andra Betwella) Orient Longman, New Delhi, 1975.
Mondelbasin D.O.	Society in India, University of California, Berkeley, 1928.
Sharma K.L.	Indian Society, NCERT, Delhi, 1987.
Dube, Leela	Sociology of Kinship, Popular Prakashan Bombay 1974.
Madan T.N. & Majumdar	An Introduction to Social Anthropology. Asia Publishing House, Delhi, 1980.
Sharma K.L.	Indian Society, N.C.E.R.T., New Delhi, 1990.

Optional : Paper-II Social Change Max. Marks: 100
Time : 3 Hours

I. **Concept and forms of Social Change** : Evolution, progress, revolution, development and social change.

II. **Theories of Social Change** : Linear, Cyclic, Fluctuation, Conflict.

III. **Factors of Social Change** : Demographic, environmental Technological, Economic, Educational, Cultural, Religious, Legislative.

IV. **Processes of Social Change in India** : Sanskritization, Urbanization, Westernization, Secularization, Industrialization, Modernisation, Parochialization & Universalization.

V. **Social Movements in India :**
   (a) Freedom struggle in India and Haryana.
   (b) Peasant Movements, Social Reform Movements and Sarvodaya Movements (Mahatma Gandhi and Vinobha Bhave).

Note: Ten questions will be set, two questions from each section. The candidates will be required to attempt five questions in all, selecting one question from each section.

References :

Dube, S.C.	Contemporary India & its Modernization, Delhi Vikas, 1974.
La Piere, R.T.	Social Change : Mc. Graw Hill Book Co., New York, 1965.
Moore, E.W.	Social Change Prentice-Hall Book Co.; New Delhi, 1965.
Srinivas, M.N.	Social Change in Modern India and other Essays. Allied Bombay, 1966.
Singh, Yogendra	Social Stratification and change, Delhi Manchar Book Service, 1977.
Singh, Yogendra	Modernization of India Tradition, Thomson, Delhi 1973.
Parson, T.	Societies Evolutionary & Comparative Perspective Prentice Hall, Englewood Cliffs, New Jersay 1966.
Hagen, E.E.	On the theory of Social Change, The Dorsey Press Illinois, 1963.

Nordskog, J.E.	Social change, Mc. Graw Hill, New York, 1969
Loomis, C.P.	Social-Eco-Change and Religions Factors in India, Affiliated East-West Press, New Delhi.
Kappuswamy, B.	Social change in India, Vikas Delhi, 1972.
Srinivas, M.N.	Dimensions of Social Change in India, Bombay Allied Publishing House, 1977.
Mathur, Hari Singh	Anthropology in the Development Process, Vikas Publishing House, 1977.
Bisaria, S. and Dinesh Sharma	Social Change, NCERT, New Delhi.

Optional : Paper-III Social Problems Max. Marks : 100
Time : 3 Hours

I. Conceptual and Theoretical Issues: Nature and meaning of Social Problems; Anomie and Deviance : Differential Association Theory (Sutherland) : Labelling Theory (Becker).

II. Economic Problems; Poverty, Beggary Un-employment and bonded labour.

III. Social Problems : Dowry, Prostitution, Youth unrest, regionalism Casteism, Communalism, corruption, drug addiction alcoholism and Prohibition, crime, juvenile, delinquency and Acquired Immune Deficiency Syndrom (AIDS).

IV. Problems of Weaker Sections : Descremination and atrocities on Scheduled Caste, Scheduled Tribes, Backward Castes, Other Backward Castes and Women.

V. Social Lagislation : Legal measures to eradicate social problems including 'Consumer Protection Act'. Environmental Degradation and Legislation.

Note: Ten questions will be set, two questions from each section. The candidates will be required to attempt five questions in selecting one question from each unit.

References :

Merton, R.K & M.A. Hiabe (eds.)	Contemporary Social Problems, Marcourt Brace & World, New York.
Delhi School of Social Work	The Beggar Problem in Metropolitan Delhi..

Chandra Sushil	Sociology of Deviation in India. Allied Publishers Delhi, 1971.
Mehta Prayag	The Indian Youth Somaiya Publication, Bombay, 1971.
Paul M.C.	Dowry and position of women, Inter-India Publication Delhi.
Jeerdar	Prostitution, D.Publications, New Delhi.
Joshi & Joshi	India Social Scene, Deep and Deep Publishers Delhi, 1989.
Problems of India Society	Published by NCERT, New Delhi.
Memoria C.B.	Social Problem and Social Disorganisation in India Kitab Mahal Allahabad, 1981.
Nagla B.K.	Youth unrest in contemporary Indian Society in Journal of Higher education 1989, Vol. 8 No. 3 289-92.
Madan D.R.	Social Problems, Allied publishers, Bombay 1973.
Ahuja Ram	Social Problems in India, Jaipur Delhi Publications, 1992.
Nagla B.K.	Women Crime and Law Jaipur Delhi Rawat Publications, 1991.
Loomis, C.P.	Social-Eco-Change and Religious Factors in India, Affiliated East-West Press, New Delhi.
Kappuswamy, B.	Social Change in India, Vikas Delhi, 1972.
Srinivas, M.N.	Dimensions of Social Change in India, Bombay Allied Publishers, 1977.
Mathur, Hari Singh	Anthropology in the Development Process, Vikas Publishing House 1977.
Bisaria, S. and Dinesh Sharma	Social Change, NCERT, New Delhi.

ANTHROPOLOGY

Outlines of Test

		Max.Marks	Time
Paper-I	(Theory) Human Genetics and Biochemical Anthropology	50	3 Hours
Paper-II	(Theory) Human Ecology	50	3 Hours
Paper-III	(Practical)	50	3 Hours

N.B. : 20% of marks in Practical are reserved for laboratory records and Viva-Voce.

Details of Course Content

Paper-I Human Genetics and Biochemical Anthropology

Max. Marks : 50

Time : 3 Hours

1. Physical basis of inheritance, chemical nature of gene, structure of DNA, Role of DNA and RNA in protien synthesis, genetics code.
2. **Mendalis in Man** : Pedigree analysis, Linkage and crossing over, Sex linkage.
3. **Genetics Markers in blood** : ABO and Rh blood Group system.
4. **Dermatoglyphics** : Dermal ridge configuration on fingers and palms, classification and inheritance.
5. **Population Genetics** : Hardy-weinberg law, Selection, mutation genetics drift, migration, in breeding and outbreeding.
6. **Application of Physical Anthropology** : Human genetics, Forensic Anthropology and Medicine (including growth, nutrition and sports).

Books Recommended :

1. Harrison, H (Ed.) Human Biology.
2. Das, B.M. Outlines of Physical Anthropology.
3. Comas, J. Manual of Physical Anthropology.
4. Laster, G.W. Physical Anthropology.
5. Buetner Janusch,J. Origins of Man.
6. Curt Stern Principals of Human Genetics.
7. Winchester, M.A. Genetics.
8. Race, R.R. and Sanger, R. Blood groups in Man.

9. Gates, R. Human Genetics.
10. Frankilin C.A. (Ed.) Modi's Medical jurisprudence and Technology.

HUMAN ECOLOGY

Paper-II Max. Marks : 50
Time : 3 Hours

Part-A Group differentiation and adaptation.

1. **Human Ecology** : definition, objectives and relationship with other disciplines.
2. **Adaptation and acclimitization** : individual and population adaptation genetic and non-genetic factors (infectious/non-infectious/genetic diseases or abnormalities).
3. Adaptation to varied ecological conditions : climate high, altitude hot desert, and nutrition.
4. **Human Growth** : Pre-natal and post-natal growth with special reference to pubertal growth spurt. Factors affecting growth : genetic, nutritional and endoctrines.

Part-B Races

5. **Race** : Definition and contemporary concept of race-Biologic and cultural.
6. **UNESCO statement on race** : Critical appraisal.
7. **Primary Races of Man** : Distribution and Physical characters of three major groups.
8. **Differences in Physical characters** : Skin, eye, hair, nose, head and variations in other bodily proportions of three major races.
9. **Ethnic elements in Indian populations.**
10. Distribution of ABO blood groups in various population groups.

Books Recommended :

1. Das, D.M. Outlines of Physical Anthropology.
2. Harrison, G.H.(Ed.) Human Biology
3. Hooton, E.A. From the Age.
4. Buettner Jaunisch,J Origins of Man
5. Buettner Jaunisch,J Physical Anthropology a Perspective.
6. Lasker, C.W. Physical Anthropology
7. UNESCO Race question in Modern Science
8. Victor Barmow Physical Anthropology and Archaeology

9. Tanner, J.M. From Foetus to Man
10. Falkner, F and Tanner, J.M. Human Growth
11. Garn, S.M. et.al. Races

Paper-III (Practical) Max. Marks : 50
Time : 3 Hours

1. Sociology : Determination of A^1 A^2 BO and Rh (Test with anti Rh) blood groups of 15 subjects.
2. Dermatoglyphics : Identification formulation and analysis of finger and palm prints of 15 subjects. Statistical treatment of data collected.
3. Other genetic variables : Colour blindness, PTC testing ability.

GEOGRAPHY

Outlines of Test

		Max.Marks B.A.	Max.Marks B.Sc.	Time
Paper-I	Geography of India	40	60	3 Hours
Paper-II	Human Geography	20	30	3 Hours
Paper-III	(Practical) Statistical Method and Surveying	40	60	4 Hours

Syllabus and Courses of Reading

Paper-I Geography of India Max. Marks
B.A. 40
B.Sc. 60
Time : 3 Hours

1. Structure and relief, climate and climatic regions, the problem droughts and floods, soils and natural vegitation.
2. Population growth and distribution patterns, Age, Sex, Composition, fertility and mortality and rural/urban migration in India.
3. Nature and trends in urbanization.

Part-II 1. Agriculture land-use patterns, a detailed study of the distribution and production of wheat, rice sugarcane; cotton, tea, modes of irrigation, regional imbalances in levels of Agricultural development.

2. Natural resources :- Fisheries, Mineral resources, iron, ore, manganese, mice and energy resources : their production and future prospects.

Part-III 1. Industries : Sugar, Cotton textiles, paper; iron and steel fertilizers, industrial regions.
2. Regional imbalances in levels of industrial development.
3. Comparative study of different modes of transportation roads, railways and inland waterways.
4. India's foreign trade.

Note :- There will be 10 questions in all; three questions each on part-I and II and four questions on part-III. Candidates will be required to attempt 5 questions in all, selecting at least one from each part.

Paper-II Human Geography

Max. Marks		Time
B.A.	B.Sc.	
20	30	3 Hours

Part-I 1) Nature and scope of settlement Geography.
2) Factors Favouring linear, nucleated and dispersed settlements in India with special reference to south, western and central Haryana.

Part-II Theories of special organization of settlements–an introduction to Christaller's central placy theory.

Part-III 1) Nature and scope of urban Geography.
2) Patterns and processes of urbanization in developed and developing countries.

Part-IV 1) Origin of cities : The pre-industrial, colonial, Functional classification of town.
2) Urban morphology the concentric, sectoral and multiple nuclie theories. The nature of the C.E.D. in western and non-western countries.

Note : The question paper shall contain 8 questions in all, two in each part. Candidate shall attempt four questions in all selecting at least one question from each part.

Paper-III (Practical) Statistical Methods and Surveying

Max. Marks		Time
B.A.	B.Sc.	
40	60	4 Hours

a) Statistical Methods.
   i) Mean, Median and Mode.
   ii) Standard Deviation.
   iii) Co-effficient of Variability.
   iv) Co-efficient of Correlation.

b) Surveying :
   Theory and practice of prismatic compass survey, sketch and traverse (Open and close) (four exercises).

Note : Practical notebook for exercises on statistics shall prepared (minimum 8 exercises).

Laboratory Work

a) Three questions in statistics will be given and candidates will be required to attempt two questions (15/22½) marks
b) Exercises on surveying with prismatic compass will be given (15/22½) marks
c) Practical record and viva-voce (10/15) marks

ANCIENT INDIAN HISTORY, CULTURE & ARCHAEOLOGY

Outlines of Test

Option-I	Indian Thought and Culture (From earliest times to C.1200 A.D.)	Max. Marks : 100 Time : 3 Hours
Option-II	Indian Archaeology	Max. Marks : 100 Time : 3 Hours

Syllabus and Courses of Reading

Option-I	**Indian Thought and Culture** (From earliest times to C.1200 A.D.)	Max. Marks : 100 Time : 3 Hours

Note : i) At least ten questions shall be set in the paper spread over the entire syllabus more or less proportionately, out of which the candidates shall be required to attempt five questions in all. All questions shall carry equal marks.

ii) There shall be one objective type question in the paper.

This question will be divided into three sections, Section-I will have snap short type questions of 10 marks. Section-II will have multiple choice questions of 5 marks. Section-III will have matching type questions of 5 marks.

The fundamentals of Indian Culture; religious beliefs and practices of the Indus Valley people; Vedic culture, religious and Spiritual thought; The Upanisadic thought. The teachings of Mahavira and Buddha; the main characterstics of Indian Philosophy, Puranic Hinduism : Vaisnavism and Seivism : A survey of India, cultural contacts with outside world.

Books Recommended :

1.	Lunia, B.N.	सभ्यता और संस्कृति का विकास, आगरा, 1927
2.	Dinkar, Ramdhari Singh	संस्कृति के चार अध्याय, पटना, 1977
3.	Damodaran, K.	Indian Thought, New Delhi, 1967.
4.	Chatterji and Datta	Introduction to Indian Philosophy.
5.	Jairazbhoy	Foreign influence in Ancient India, Bombay, 1963.
6.	Roy A.K.	A History of Jains, New Delhi, 1984
7.	Kane P.V.	History of Dharamsatra Poona, 1969.
8.	A.K. Warder	Indian Budhism, Delhi, 1870.
9.	Wagle, N.	Society at the time of Buddha Bombay, 1966
10.	Banerjee, J.N.	Puranic and Tantric religion.

Option-II **Indian Archaeology** Max. Marks : 100
Time : 3 Hours

Note : i) At least ten questions shall be set in the paper spread over the entire syllabus more or less proportionately, out of which the candidates shall be required to attempt five questions in all. All questions shall carry equal marks.

ii) There shall be one objective type question in the paper. This question will be divided into three sections, Section-I will have snap short type questions of 10 marks. Section-II will have multiple choice questions of 5 marks. Section-III will have matching type questions of 5 marks.

Archaeology : Its history and importance; relationship with other disciplines; and introduction to site surveying and excavations.

Epigraphy : Its importance as source of Ancient Indian History, nature of subject matter of inscriptions written/engraved on different types of material; origin of Brahmi script.

Numismatics : Coins as a source of ancient Indian history; origin, antiquity and early history of coins in India.

Art & Architecture : Aim and functions of Art : Origin and development of image, worship in India, origin and development of architecture temples and staps.

Books Recommended :

1. रामनिहारजन भारतीय कला का अध्ययन, दिल्ली, 1972
2. उपाध्याय वासुदेव प्राचीन भारतीय मुद्रायें, पटना, 1971
3. खरे करुणा प्रतिभा विज्ञान, लखनऊ, 1977
4. मजूमदार प्रभात कुमार भारत के प्राचीन अभिलेख, दिल्ली।
5. उपाध्याय, वासुदेव प्राचीन भारतीय अभिलेख, पटना, 1970
6. पुरी बैजनाथ पुरातत्त्व विज्ञान।
7. Daniel, Glyn. A short history of Archaeology, London, 1981
8. Krudson, S.J. Culture in retrospect : An introduction to Archaeology, Chicago, 1978.
9. Khanna Amarnath .Archaeology of India, Delhi, 1981.

MATHEMATICS

Outlines of Test

		Max.Marks B.A.	Max.Marks B.Sc.	Time
Paper-I	Real Analysis	50	75	3 Hours
Paper-II	Vector Calculus Hydrostatics And Linear Algebra	50	75	3 Hours

Syllabus and Courses of Reading

Paper-I Real Analysis

Max. Marks B.A.	Max. Marks B.Sc.	Time
50	75	3 Hours

UNIT-I

Denumerable and non-denumerable sets. Denumerability of integers and rationals and non denumerability of real numbers. Properties of the real number system as a complete ordered field. The concepts of bounds, neighbourhoods, interior points, isolated points and limit points in R. Open and closed sets with their properties in R. Bolzano-Weiorstrass theorem. Heine-Borel Theorem.

UNIT-II

Real sequences and their convergence, Cauchy sequences, Cauchy's general principle of convergence, Superema and infima of bounded sets. Monotonic sequences, limit superior and inferior of bounded sequences. Infinite series of real numbers and their convergence as well as divergence. Comparison, ratio, root, integral Leibnitz's Gauss and Cauchy's condensation tests.

UNIT-III

Absolute convergence and re-arrangement of series, product of two absolutely convergent series. Cauchy product of two series. Convergence of infinite products.

UNIT- IV

Properties of Continous functions, definition of uniform continuity. Statement of theorem : A continuous function in closed bounded interval is uniformly continuous. Types of discontinuities with examples. Regorous profs of Roll's Lagrange's Mean value and Taylor's theorems.

UNIT-V

Definition and existence of Reimann integral of a bounded function, Darboux condition of intergrability, Reimann integrability of continuous function and monotonic functions. Reimann integral of functions with finit number of discontinuities and of limit points. Reimann integral as the limit of a sum. The fundamental theorem of integral calculus.

UNIT-VI

Improper integral, convergence of an improper integral, comparison test. Dirichlet's test. Beta and Gama functions, their properties and relationships. Differentiation under integral sign.

Sequence and series of functions and their pointwise convergence Uniform convergence of sequence and series of functions. Weirstrass M-Test, Statement of theorems on term by term continuity integration and differentiation of sequences and series of functions. Improper integral, convergence of an improper integral comparison test. Beta and Gama functions their properties and relationships. Differentiation under integral sign.

Note : The examiner is requested to set 12 questions in all, two questions from eacn unit. The candidate will be required to attempt six questions selecting one question from each unit.

Paper-II Vector Calculus Hydrostatics and Linear Algebra

Max. Marks		Time
B.A.	B.Sc.	
50	75	3 Hours

UNIT-I

Vector valued functions, directional derivative of vector valued functions along co-ordinate axes. Gradient, divergence and oral of vector valued functions. Gauss, Green and Stoke's Theorems and their Simple applications.

UNIT-II

Pressure at a point, Conditions of equilibrium, Surfaces of equal pressure and density, Thrust on plane surfaces. Centre of pressure.

UNIT-III

Principle of Archimedes. Thrust on curved surfaces. Floating bodies. Stability of floating bodies (i.e. Metacentre, formula for Metacentric height etc.).

UNIT-IV

Vector spaces, sub spaces. Sum and intersection of sub spaces of a vector space. Linear dependence and independence of vectors. Generators and basis of a vector space. Dimension of a vector space. Quotient space and its dimension.

UNIT-V

Linear transformations of vector space. Matrix associated with a linear transformation. Change of basis i.e. the relationship between the matrices of a linear transformation relative to two different bases of the vector space. One to one and on to linear transformations. Isomorphism of vactor space (Ist and second isomorphism theorem for vector spaces).

UNIT-VI

Quadratic forms and their associated matrices. Congruences of quadratic form and matrices. Congruent reduction of a symetric and skeo symetric matrices. Reduction of a real quadratic form to the canonical form over the field of real numbers. Rank and index of a quadratic form. Definite, Semidefinite and indefinite real quadratic forms and their characteristic properties. Gram matrices. Hermitian and skew Hermition forms and their reduction to canonical form.

Note : The examiner is requested to set 12 questions in all, two questions from each unit. The candidate will be required to attempt six questions selecting one question from each unit.

STATISTICS

Outlines of Test

		Max. Marks B.A.	Max. Marks B.Sc.	Time
Paper-I	Applied Statistics and Computing	35	50	3 Hours
Paper-II	Quality Control Sampling and Design of Exaperiments	35	50	3 Hours
Paper-III	Practical	30	50	3 Hours

Syllabus and Courses of Reading

Paper-I Applied Statistics and Computing

Max. Marks B.A. : 35
B.Sc. : 50
Time : 3 Hours

Index Numbers

UNIT-I

Problems in the construction of Index Numbers, Calculation of Index Numbers, Tests of Index Numbers, Chain Index, Cost of living Index Numbers, Uses and Limitations of Index Numbers.

Time Series

UNIT-2

Components of Time Series, Trend, Seasonal, Cyclic and Irregular Components Methods of measurement of trend and seasonal variation.

Vital Statistics

UNIT-3

Measurements of mortality and Fertility. Gross and Net Reproduction rates. Elements of Life tables and its uses.

Computing

UNIT-4

Introduction, origin Development, Uses and limitations, Types of computers, computer Structure, Input Unit, CPU. Output Unit, Secondary storage. High level and low level languages, Compiler and Interpreter.

Number systems, Binery, Decimal number systems and their conversions into each other. Binary Arithmatics (addition, subtraction, multiplication and division) Floating point representation of numbers, arithmatic operations with normalized floating point numbers.

UNIT-5

Introduction of FORTRAN, constents, variables, Arithmatic Operations/Expressions, Mathematical functions, Arithmatic Assignment statements, Simple Input/Output Statements.IF, GOTO, DIMENSION and DO Statements. Flow charts and FORTRAN Programs for Mean, Median, Mode Standard deviation, Straignt Line fitting, Simpson's $^1/_3$ and $^3/_8$ rules Trapeodial rule.

Note : The examiner is requested to set 10 questions in all, two questions from each unit. The candidate will be required to attempt five questions selecting one from each unit.

Paper-II Quality Control, Sampling and Design of Experiments

Max. Marks B.A. : 35
B.Sc. : 50
Time : 3 Hours

Quality Control

UNIT-I

Statistical Quality Control and its uses. Product and process control. Control charts for variables, $\overline{X}$, R and σ-charts. Control charts for attributes, p and c-charts. Acceptance Sampling by Attributes, A.Q.L, L.T.P.D., Process average fraction defective, consumer's risk and Producer's Risk.

Sampling

UNIT-2

Advantages of Sampling, Principal staps involved in a sample survey, bias, accuracy and precision, Sampling and Non-Sampling errors, Use of random number tables.

Simple random sampling (with and without replacement), merits and demerits, Estimation of population mean, population total, population mean square, Variance of the estimates of population mean and total, Estimation of sample size. Sampling for proportions.

UNIT-3

Stratified random sampling, advantages, estimation of population mean and total variance of the estimates of population mean and total proportional and optimum allocation. Systematic sampling, Estimation of population mean, variance of the estimate of population mean.

Design of Experiments

UNIT-4

Experiments Treatment, Experimental Unit, Blockes, Experimental Error Replication, Precision, Efficiency of a design, Basic principles of design, Replication, Randomisation and Local control. Size and shape of plots and blocks.

Analysis of variance, Analysis of one way and two-way (with one observation per cell) classified date (Fixed effect models only).

UNIT-5

Completely Randomised Design (CRD), Randomised Block Design (RBD) and Latin square Design (LSD) with their layout and Analysis. Their advantages and Disadvantages.

Note : The examiner is requested to set 10 questions in all, two questions from each unit. The candidate will be required to attempt five questions selecting one from each unit.

Paper-III Practicals

Max. Marks B.A. : 30
B.Sc. : 50
Time : 3 Hours

It will consist of three experiments and the record of practical work and oral tests

The allotment of marks will be as follows :

i) Three experiments (B.A.: 24 marks and B.Sc. : 40 marks)

ii) Record of practicals work and oral tests (B.A. : 6 marks B.Sc. : 10 marks).

The following topics are prescribed for the practicals work : Index Number, Time series, Vital Statistics; Quality Control $\overline{X}$, R and C charts; Standard error of estimates of population mean/total for simple Random Sampling and Strafied Random Sampling CRD, RBD and LSD; Running of FORTRAN, Programs mentioned in the syllabus on computer.

HOME SCIENCE

Outlines of Test

	Subject	No. of Periods	Time	Max. Marks B.A.	B.Sc.
Paper-I	Foods & Nutritions	4 per week	2 Hrs.	30	45
Paper-II	Child Psychology & Mother Craft	4 per week	2 Hrs.	30	45
Paper-III	Practical	6 per week	3 Hrs.	40	60

Syllabus and Courses of Reading

1. *The examiner will set six questions in all two questions from each unit.*
2. *The candidate shall attempt three questions in all selecting one from each unit.*
3. *All questions carry equal marks.*

Unit-I Food-classification & functions of food, food groups.

Essential food constituents :

Carbohydrates, Protein, Fats, Water

Vitamins–A, D, E, K, C, B1, B2, Niacin.

Minerals–Calcium, Phosphorus, Iron, Iodine & Sodium.

Food source, functions, recommended daily allowances, effects of deficiency & excess of the above.

Unit-II Principles and methods of cooking-Advantages of cooking the food. Effect of cooking on different nutrients.

Following methods of cooking, their advantages and disadvantages:

Moist heat-Boiling, stewing, steaming.

Dry heat-Roasting, grilling, baking.

Frying-Shallow and deep.

Methods of enhancing nutritive value of food stuffs :

(a) Importance of enhancing nutritive value of food stuffs.

(b) Methods of enhancing nutritive value of food stuff, sprouting, fermentation, combination and supplement.

Food Preservation :

(a) Importance of food preservation.

(b) Causes of food spoilage.

(c) Principles of food preservation.

(d) Methods of food preservation with special emphasis on Household methods.

Unit-III

Meal Planning :

(a) Concept of Balanced diet.

(b) Principles of Meal planning, factors affecting it.

(c) Planning meals for :-

Children – 3 to 5 years old, school going child, Adolescents. Adults.

Pregnant women and lactating mother.

Introduction to the Study of Therapeutic Nutrition :

(a) Therapeutic adaption of the normal diet–normal, soft & Fluid diets.

(b) Planning of diet in following conditions :

1. Typhoid fever.
2. Diarrhoea.
3. Constipation.
4. Diabetes.
5. High Blood Pressure.

Paper-II CHILD PSYCHOLOGY AND MOTHERCRAFT

Max. Marks : B.A.: 30/B.Sc.:45

Time : 2 Hours

Note :

1. *The examiner will set six questions in all two questions from each unit.*
2. *The candidate shall attempt three questions in all selecting one from each unit.*
3. *All questions carry equal marks.*

Unit-I

Definition, aims, subject matter, objective of studying Child Psychology.

Learning :

(a) What is learning, importance of learning.

(b) Methods of learning.

(c) Factors affecting learning.

(d) Role of reward and punishment in learning.

Intelligence–Definitions, Measurement of intelligence–Group and individual tests, intelligence Quotient, Factors affecting intelligence quotient.

Unit-II

Personality Development : Nature of personality, Definitions, Types of personality factors affecting the development ot personality.

Play : Definition, features of play, Difference between work and play, Types of play, importance of play in childhood.

Stages of the development of the child, characteristics of : (a) Infancy, (b) Childhood, (c) Adolescence – problems of an adolescent child, role of parents and teachers in solving them.

Unit-III

The Expectant mother :

(a) Signs of pregnancy.
(b) Discomforts of pregnancy.
(c) Care of the Expectant mother in brief.
(d) Ill effects of an early marriage.

Care of the newborn infant :

Bathing, clothing & hygiene of infancy.

Feeding of an infant :

(a) Breast feeding, (b) artificial feeding and (c) Weaning.

Common ailments of childhood :

(a) Cold, cough, fever.
(b) Digestive disturbances-Diarrhoea, Constipation and Vomitting.
(c) Skin infections-prickly heat, allergy.
(d) Convulsions.

PRACTICAL
FOODS & NUTRITION

Max. Marks : B.A.: 40/B.Sc.: 60
Time : 3 Hours

I. Preparation of various dishes under following heads using different methods of cooking :

(a) Beverages - hot and cold (2 each)
(b) Soups - Clear, thick and heavy (3 each)
(c) Desserts - 5
(d) Snacks - using all methods of cooking (2 each)
(e) Salads - Indian & continental
(f) Breakfast dishes

(g) Main meal dishes
(h) Soft diet
(i) Paccked lunch

2. Food preservation - Pickle, Chutney, Jam, Squash, Morrabba. (atleast two each).
3. Planning and preparation of meals for -
   (a) Pre-school going child and school going child.
   (b) Adolescents - Boys and Girls.
   (c) Adult - belonging to low, middle and high income group.
   (d) Pregnant and lactating mother.
4. Planning of invalid diets for the patient suffering from :
   (a) Typhoid fever.
   (b) Diarrhoea.
   (c) Constipation.
   (d) Diabetes.
   (e) High blood Pressure.
5. Special dishes : 2-4 (Novelty dishes).

PHYSICS

Outlines of Test

		Max. Marks	Time
Paper-I	(Theory)	55	3 Hours
Paper-II	(Theory)	55	3 Hours
Paper-III	(Practicals)	40	3+3 Hours (on two days)

Notes : (Common for both the Theory Papers)

1. *The syllabus in each theory paper is divided in 5 units. Only 5 questions are to be set, one from each unit. Each question is to be provided with an alternate question also from the same Unit. A student is to attempt 5 questions in all, one from each unit.*
2. *Use of simple (non-programmable) calculator is permissible.*
3. *Each question should contain two or more parts.*
4. *20% numerical problems are to be set.*

Notes : (for practical)

1. *The practical examination will be held in two sessions of 3 hrs. each (first session starting in the evening of first day and the second session in the following morning).*

2. *Two experiments in all, one from each section are to be done in the two different sessions of the practical tests.*
3. *Distribution of Marks :*
   Experiments : 12+12=24 marks
   Lab. Record : = 6 marks
   Viva-voce : 5+5 =10 marks

   Total = 40 marks

Syllabus and Courses of Reading

Paper-I Theory Max. Marks : 55
Time : 3 Hours

Unit-I Basic Ideas of Statistical Physics : Scope of Statistical Physical, Basic Ideas of probability, distribution of four distinguishable particles in two compartments of equal size, concept of a microstates, microstates, thermocynamic probability, effect of constraints on the system, deviation from the state of dynamic system, distribution of indistinguishable particles in two compartments of nonequal sizes. Classical statistics : Phase space and its division into elementary cells, three kinds of statistics, the basic approach to three statistics, M.B. statistics and its application to an ideal gas in equilibrium.

Unit-II Quantum Statistics : Need for quantum statistics, B.E. statistics & derivation of Planck's law of radiation, F.D. statistics, Fermi energy, comparison of M-B, B-E and F-D statistics.

Statistical interpretation of Energy : Statistical definition of entropy, change of entropy of system, additive nature of entropy, law of increase of entropy, reversible and irreversible processes, examples of reversible processes, work done in a reversible process, example of increase of entropy in natural processes, entropy and disorder.

Unit-III Classical Mechnics : Mechanics of a particle, mechanics of system of particles, generalised co-ordinates, constraints, Hamilton's Principle, Derivation of Lagrange's equations from Hamilton's principle, Applications of Lagrange's equation : (a) Simple pendulum (b) Linear Harmonic Oscillator (c) Atwoods Machine (d) Double pendulum.

Unit-IV Wave Mechanics : Inadequacy of old Quantum theory, wave particle dualism, Davission and Germer experiment, Compton scattering, wave packets, Development of Schrodinger equation, Significance of uncertainty principle, uncertainty of position and momentum, Energy time uncertainty Illustration of uncertainty principle (Diffraction of electron and Gamma Ray Microscope).

Unit-V Application of Quantum Mechanics : Application of Schrodinger equation to one dimensional problems :

i) Particle in a box
ii) Potential step
iii) Potential barrier
iv) Simple Harmonic oscilleetor with special emphasis to the concept of ground state energy, oscilleetor egenfunctions.
v) Rectangular potential well

References :

Unit-I & II
1. Statistical Physics and thermodynamics by V.S. Bhatra, Publications Bureau, Punjab University, Chandigarh, 1977.

Unit-III
2. Classical Mechanics by Herbert Goldstein, 2nd edition, Addision-Wesley Publishing Co. 1980.

Univ-IV & V
3. Quantum Mechanics by L.I. Schiff (2nd ed. 1955) Mc-Graw Hill Book Company, Inc.

Paper-II Theory Max. Marks : 55
Time : 3 Hours

Unit-I Vector Atom Model and spectra of Alkali Metals : Vector atom model (concept of the spinning electron and Spatial Quantization, Quantum numbers associated with the vector atom model). Penetrating and nonpentrating orbits spectral lines in different series of alkali spectra, spin orbit interaction and double term separation L-S or Russel-Saunder coupling, JJ coupling, Is coupling, J coupling. Expressions for interaction energies (factors) for Is and JJ coupling required.

Unit-II Atom in an external force filed : Zeemen effect (normal and Anomalous) and Paschen Beck effect of (one valence electron system) using vector atom model, Stark effect of hydogen

atom, Hyper fine structure of spectra and its origin.

Unit-III **Solid State Physics** : Crystalline state Bravias Lattices in two and three dimensions, Miller idices, X-ray diffraction (Bragg's law). Reciprocal Lattice Vectors (Analysis of diffraction condition in terms of Reciprocal Lattice vectors not required), Reciprocal lattice to a simple cubic, BCC, FCC lattice vibrations of one dimensional monoatomic lattices, specific heat of solids, Einstein's theory of specific heat. Debye model of specific heat of solids.

Unit-IV Elements of Laser : Main features of a laser, directionality high intensity, monochromaticity, high degree of coherence. Spatial and Temporal coherence, Einstein coefficients and possibility of amplification, Momentum transfer, life time of a level, kinetics of optical absorption.

Basic principles of lasers. Thershold condition and pumping. He-Ne and RUBY laser (Principle, Construction and Working), Semiconductor Lasers : Main features and conditions of laser action.

Unit-V Nuclear Physics : Energetics of alpha decay, experimental informations on alpha decay, Nuclear stability, Decay mechanism and fine structure. Types of beta decay and energetics, neutrin hypothesis, Energetic of gamma decay and recoil effects.

Nuclear reactions, conservation laws, Q-value and reaction threshold, Nuclear fission and fusion, reactors (Basic principle, construction, working and uses).

References :

Unit-I & II
1. Introduction to Atomic Spectra by H.E. White.
2. Atomic Spectra by G.Herzberg.

Unit-III
1. Introduction to Solid State Physics (5th Edition) by C. ;Kittal, Wiley, Eastern Limited.

Unit-IV
1. Lasers, Theory and Applications (2nd edn.) Thyargrajan and Ajay Ghatak.
2. Lasers and nonlinear optics by B.B. Laud (2nd edn.)
3. Introduction to optics by Frank

L. Pedrotti and lens S. Pedrotti, Prentice Hall. 1987.

Unit-V 1. Nuclear Physics by D.C. Tayal, Umesh Prakashan, 125, Govind Dev Khurja (U.P.)

Paper-III (Practical) Max. Marks : 40
Time : 3+3 Hours
(on two days)

Note : Atleast six experiments from each section are to be completed.

Section - A

1. e/m by Thomson method.
2. Transistor as Voltage amplifier in common base configuration.
3. Transistor as Voltage amplifier incommon emitter configuration.
4. Study of B.H. Curve by osilloscope.
5. Half life period of a radio active source by G.M. Counter.
6. Study of Hartley oscillator (calibration of gang condenser).
7. Radio receiver experiments (to study sensitivity and selectivity).
8. To draw characteristics curves of a silicon controller rectifier.
9. Four probe method to measure band gap.
10. To study halfeffect.
11. To solve simultaneous equations by elimination method using computer.
12. Integration by Trapozoidal method using computer.
13. To convert a given integer into Binary and Octal system and Vice-versa using computer.

Section-B

1. Rydberg constant by H2 Gas spectrum.
2. Wavelength of Na light by Fresnel biprism.
3. Velocity of Ultrasonic waves by gratting formation CCl_4.
4. Diameter of Lycopodium powder particles by Carone rings.
5. To study double slit interference by He-Ne laser.
6. Young's modulus by Newtons rings methods.
7. Diandeter of a wire by diffraction.
8. Resolving power of a prism.
9. Thickness of a thin plate or a thin paper by using air wedge.
10. Comparison of illuminating power by a photometer.
11. To study the characteristics of a solar cell.

CHEMISTRY

Outlines of the Test	Max. Marks	Time
Paper-I (Theory) Inorganic Chemistry	37	3 Hrs.
Paper-II (Theory) Physical Chemistry	37	3 Hrs.
Paper-III (Theory) Organic Chemistry	36	3 Hrs.
Paper-IV (Practicals)	40	8 Hrs.
	150	

N.B.: 20% marks are reserved for laboratory record and viva-voce.

Paper-I Theory Inorganic Chemistry Max. Marks : 37
Time : 3 Hours

Note :Ten questions will be set, two questions from each section. The candidate will be required to attempt five questions in all selecting one question from each section. As far as possible questions will be short answer type and not essay type.

Section-I

(a) d-Block-elements

General trend in groups, electronic configuration, ionic., covalent and atomic radi, electronegativity, elecrtron affinity, ionisation potential, colour, magnetic properties, oxidation states, interstitual compounds and complex formation.

(b) The f-block elements

(i) Lanthanides, Electronic configuration and position in the periodic table, oxidation states, colour and magnetic properties, lanthanide contraction and its consequences, occurrence and separation of lanthanide elements.

(ii) Actinides : Electronic configuration and position in the periodic table comparison with lanthanides, oxidation states, Chemistry and extraction of uranium from its ores. Mention of transuranic elements and their production. (8 hrs.)

Section-II

(a) Oxidation-Reduction

Oxidation-reduction as an electron transfer process, standard electrode potential and electrochemical series, sign convention, electrode systems involving two ions, Applications of oxidation potentials (FEASIBILITY of reactions and determination of equilibrium constants from half-cell potentials). Comparative mention

of MnO^-/Mn^{2+} (acidic medium)$C_3O_7^{2-}/Cr^{2+}$ (acidic medium), Cl_2/Cl^-, Fe^{3+}/Fe^{2+}, Sn^{4+}/Sn^{2+} and Hg^{2+}/Hg_2 systems. Limitations of the standard electrode potential data.

(i) Cement Industry :

Portland Cement, Raw materials, manufacturing processes and setting of cement (Chemistry only).

(ii) Fertilizers :

Brief description of Nitrogen, phospate and potash fertilizers, Constituents and brief outlines of methods of preparation and percentage availabillity of N P or K. (Examples of CAN Ca $(CN)_2$ and superphosphate. (8 hrs)

Section-III

(a) Noble cases and their Compunds :

Separation of noble gases, preparation, properties and structures of xenon fluorides, nature of bonding (valence bond treatment).

(b) Coordination Compounds :

Isomerism in coordination compounds, idea of valence bond & crystal field theories to explain bonding geometry, magnetism and colour of coordination compounds (octahedral, tetrahedral, Square planar, high spin & low spin) comparison of C.F.S.E. of high spin tetrahedral and octahedral complexes with different number of 'd' electrons (other things being equal). Stability of complexes (methods of determination excluded). Effect of central ion on stability (ionic size ionic charge, electronegativity), effect of ligand on stability (size and charge of ligand, basic character, steric effects, chelation & size of the chelate ring). (8 hrs)

Section-IV

(a) Environmental Chemistry :

An elementary study of air and water pollution, Detining-TLV, pollution, contamination, COD, BOD and their relevance to pollution, greenhouse effect and its implications. Air quality standards, sources and sinks of primary air pollutants (suspended particulates, sulphur dioxide, nitrogen oxides, carbon oxides), water quality parameters and standards, primary water pollutants, pesticides, detergents, radioactive wastes.

(b) Non-Aqueous Solvents :

Auto ionization and coordination models (examples of $FeCl_3$ in

$PoCl_3$ and $PO(OET)_3$. Study of liquid ammonia and liquid sulphur dioxide as solvents : Effect of polarity, dielectric constant, chemical nature (acidity-basicity), solvation energy of the solvlent (solubility of metals and non-metals), acid-base reactions, redox reactions, precipitation reactions; solvolysis reactions, amphoteric reactions and complex reactions. (8 hrs)

Section -V

(a) Qualititative Inorganic Analysis :

Chemistry of analysis of various groups of basic and acid radicals, chemistry of identification of acid radicals in typical combinations (Examples–$Co_2^{2}/C_2O_4^{2}$, $CO_3^{2-}/SO_3^{2}/NO_2^{1-}$, $Cl^{1-}/Br^{1-}/I^{4}$, S^{2}/SO_3^{2-} $S_2O_3^{2}/SO_4^{2-}$, $F^{4-}/C_2O_4^{2}$).

(b) Quantitative Inorganic Analysis

Theory of precipitation, completness of precipitation, types of precipitates and conditions required to ensure purity in various types of precipitates, co-precipitation, post-precipitation, factors affecting completness of precipitation (solubility product, pH, temperature and excess of precipitant, common ion effect and salt effect), selective precipitation by complex formation (masking and demasking).

(c) Elementary ideas of separation of inorganic compounds by :

(i) Solvent extraction,

(ii) Ion exchange chromatography.

(8 hrs)

Paper-II (Theory) Physical Chemistry Max. Marks : 37

Time : 3 Hours

Note :Ten questions will be set, two questions from each section. The candidate will be required to attempt five questions in all selecting one question from each section. As far as possible questions will be short answer type and not essay type. SI units should be used. Use of non-programmable calculator is allowed.

Section-I

Quantum Mechanics :

Black body radiation, Kirchoff's law, spectral distribution of black body radiation, Planck's radiation law.

Postulates of quantum mechanics, discussion of operators, Schrodinger wave equation (time independent only). Eigen values and Eigen functions, Use of wave function to evaluate $\bar{u}$ $\bar{p}_x$,–x and $\bar{p}_x$.

Statistical Thermodynamics :

Importance of Statistical Thermodynamics, ensemble approach, Microcanonical ensemble, cononical ensemble, macrocanonical ensemble macrostate and microstates, configuration and probability, thermodynamic probability and its relation with entropy, molecular basis of residual entropy, Boltzmann distribution law. (8 hrs)

Section-II

Distribution Law

Definition, conditions for its validity, thermodynamic derivatiion, modification in the distribution law when the solute undergoes association, dissociation in one of the solvents or combination with one of the solvents applications of the distribution law with special reference to the study of complex ions, process of extraction and determination of degree of hydrolysis. (8 hrs)

Section-III

Phase Rule

Definition, explanation of the terms involved i.e. phases, components and degrees of freedom, thermodynamic derivation of phase rule, one component systems-water system and sulphur system, interpretation of phase diagrams of two components systems, lead-silver system, FeCl3-H2O system, Na2So4-H2O system, experimental determination of the phase diagram of two component systems, General qualitative discussion of the phase diagram of two component systems (solids) that are miscible in the liquid phase.

(8 hrs)

Section-IV

Crystelline State

Crystalline and amorphous solids, classifications of crystalline solids, law of constancy of angles, elements of symmetry law of rational indices, Miller indices, crystal classes and crystal systems, space lattice, unit cells, Dravais lattices, Bragg's equation, Bragg's X-ray spectrometer, application of Bragg's equation in deciding Bravais lattice, liquid crystals (elementary idea).

(8 hrs)

Section-V

Physical Properties and Molecular Structure :

(i) Optical rotation, dipole moment, magnetic susceptibility and its applications.

(ii)(a) NMR spectroscopy (Principle and technique only, without mathematical details ideas of chemical shift taking example of ethyl alcohol only).

(b) Molecular spectra-molecular energy levels, rotational spectrum (calculation of moment of intetia and bond distance) vibration-rotational spectrum (Calculation of moment of inertia, bond distance, bond dissoication energy (Mathematical) details excluded), concept of zero point energy.

(c) Raman Spectra, Raman effect and its mechanism (study of bond distance and bond angles). (8 hrs)

Paper-III (Theory) Organic Chemistry Max. Marks : 36

Time : 3 Hours

Note :Ten questions will be set, two questions from each section. The candidate will be required to attempt five questions in all selecting one question from each section. As far as possible questions will be short answer type and not essay type.

Section-I

PMR :

Principle of nuclear magnetic resonance, the PMR spectrum, number of signals, peak areas, equivalent and non-equivalent protons, positions of signals and chemical shift, shielding and deshielding of protons, proton counting, splitting of signals and coupling constants, magnetic equivalence of protons. Discussion of PMR spectra of the following molecules; ethyl bromide, n-propyl bromide isopropyl bromide, 1,1-dibromoethane, 1,1,2-tribromoethane ethanol, acetaldehyde, toluene, benzaldehyde acetophenone, p-anisidine and p-nitrotoluene. Simple problems on PMR spectroscopy for structure determination of organic compounds. (8 hrs)

Section-II

Cycloalkanes :

Synthesis of cycloalkanes and their derivatives-addition of carbenes to olefins, Simmons-Smith reaction, photo-chemical (2+2)-Cycloaddition reaction, Deils-Alder reaction, dehalogenation of W

dihalides, Dieckmann cyclizatiion, pyrolysis of calcium or barium salts of dicarbozylic acids, Blanc's rule, Thorpe-Ziegler reactions, Demjanove rearrangement, and by the use of malonic ester and acetoacetic ester, Relative stability of combustion of cycloalkanes, Sachse-Mohr theory of strainless rings, difficulties encountered in the synthesis of large-membered rings. Orbital picture of angle strain. (4 hrs)

Conformations :

Concept of conformational isomers and conformers, difference between conformation and configuration, factors affecting the relative stability of conformations-angle strain, torsional strain, steric strain and dipole-dipole interactions. Change of dipole moment of 1,2-dibromoethane with temperature preferred conformations of chlorohydrin, ethylene glycol and stilbene dichloride (meso and dl-forms). Conformations of n-butane-staggered, gauche eclipsed and their relative stability, 2,3-dimethylbutane, 2,2,3-trimethylbutane and their conformation enantiomers, conformations of cyclonezane-chair, boat, half chair, twist boat and their relative stabilities, Axial and equatorial bonds in cyclohexane, 1,3,-diaxial interactions. (4 hrs)

Section-III

Carbohydrates :

Classification of carbohydrates, reducing and non-reducing saccharides. Determination of open chain and cyclic structure including configuration of glucose and fruclose, clycosides, Haworth projection formulae and conformational formulae of glucose, fructose and their methyle glycosides. Mutarotation, killiani-Fischer synthesis, Ruff and wohl degradation. Conversion of glucose into fructose and vice-versa. Lobry de Bruyn-van Eikenstein rearrangement. Disaccharides-only structure (Fischer and Haworth projection formulae) of sucrose, maltose and lectose. A general introduction to polysaccharides-point of difference in the structure of starch and cellulose. (8 hrs)

Section-IV

Polycyclic Aromatic hydrocarbons :

Reactions of naphthaline, anthracene and phenanthrene, Haworth synthesis of naphthalene and phenathrene, Pschorr synthesis of phenanthrene, synthesis of anthrancene involving Friedel-Crafts acylation of benzene with pathalic anhydride and Diels-Alder reaction between 1,3,-butadiene and 1,4-naphthoquinone, Relative reactives at different

position and mechanism of electrophilic substitution reactions in naphthalene, anthracene and phenanthrene. Orientation of substitution in naphthalene derivatives/mono-and di-substitution. Mechanism of addition reactions of phenanthrene.

Heterocyclic Compounds :

Preparation of furan derivatives by dehydration of 1,4-dicarbonyl compounds and Fierst-Benary synthesis; synthesis of thiophenses from 1,4-dicarbonyl compounds and synthesis of pyrrole and its derivatives by Paal-Knorr synthesis, Knorr pyrrole synthesis, Molecular orbital structures of furan, thiophene and pyrrole and their relative aromatic character. Mechanism of electrophilic substitution reactions of furan, thiophene and pyrzble. Basicity of pyrrole and its resemblance with phenols and aromatic amines, addition of dichlorocarbene to pyrrole Ilantzsch synthesis of pyridine derivatives, structure of pyridine and its basicity, machanism of electrophilic, free radical and nucleophilic reactions in pyridien and chichibabin reaction.

(4 hrs)

Section-V

Aminoacids and proteins :

Dipolar structure of a-aminoacids, iso-electric point. Synthesis of a-aminoacids by direct amination of a-haloacids, cabriel-phthalimide synthesis, phthalimidomalonic ester synth is, Strecker synthesis and Erlenmyer azlactone synthesis. Reacti -a mo acids.

(3 hrs)

Structure of peptides and their synthesis. Classification and biological importance of proteins. Determination of primary structure of proteins. Elementary idea about secondary, tertiary and quaternary structures of proteins.

(2 hrs)

Synthetic Drugs :

Synthesis and uses of the following drugs :

Aspirin, phenalcetin, paracetamol, sulphanilamide, sulphaguanidine, chloroquine and chloroamphenicaol.

Insecticides and Pesticides :

Methods of preparation and uses of the following : DDT, BHC, Melathion and Parathion.

(1 hr.)

Paper-IV (Practicals) Max. Marks : 40
Time : 8 Hours
(Spread over two days)

Section-I (Inorganic)

1. Qualitative analysis of mixture containing not more than four radical (including interferring and excluding insolubles).

BOTANY

Paper	Nomenclature	Max. Marks	Time Allowed
Paper-I (Theory)	Angiosperme and Economic Botany	55	3 Hours
Paper-II (Theory)	Ecology and Applied Botany	55	3 Hours
Paper-III	(Practical)	40	4 Hours (in one session of 4 hours)

Syllabus & Courses of Reading

Paper-I Theory Max. Marks : 55

Angiosperms and Economic Botany Time : 3 Hours

Note :Two questions will be set from each unit. Candidates have to answer five questions in all selecting one question from each unit.

Unit-I

1. **Principles of systematics** : Classical and modern taxonomy : concept of species, cenus and family; important rules of nomenculature.
2. Bentham and Hooker's system of classification.
3. **Diagnostic floral features of the families** : Ranunculaceae, Cruciferae (Brassicaceae) Malvaceae, Labiatao (Lamiaceae), Leguminosae, Compositae (Asteraceae) Solanaceae, Euphorbiallae, Oraminae (poaceae), Liliaceae.

Unti-II

4. Anatomy : Tissue structure, function and distribution of simple and complex tissues.

5. (a) Anatomy of primary monocot and dicot roots, Secondary growth in roots.
   (b) Anatomy of primary monocot and dicot stem, Secondary in stems.
6. Anomalous secondary growth in Dracaena and Boerhaavia.
7. Anatomy of monocot and dicot leaves.
8. Basis anatomical differences among hydrophytes, mesophytes and xerophytes.

Unit-III

9. Structure and development of anther and pollen; Structure and development of male gametophyte. Structure and development of polygonum type of embryosac.
10. Polination, synemy and triple fusion (Double fertilization).
11. Structure, development and function of endosperm.
12. Structure of mature Typical monocot and dicot embry.
13. Structure of mature seed with special reference to gram and mize.

Unit-IV

14. Vavilov's concept of centre of origin on cultivated plants.
15. Morphology of plant parts used and brief idea of the cultivation of the following; (wheat and rice), sugarcane, cotton and jute, oil yielding plant (Groundnut, Beassica) Pulses (Cajanus cajan, Cicer arietinum, Pisum sativum).
16. **Spices : Corinadrum sativum, Ferula asafoetida Ginger and Turmeric.**

Unit-V

17. Morphological nature and economic importance of tea, coffee Rubber plant, and Timber yielding plants and Teak Shisham, Sal and Chir.
18. Medicinal plants : **Cinchona, Ranwolfia, Atropa, Opium, Cannabis Neem.**
19. Vegetables : Potato, tomato, cucurbita. Fruits : Apple, Banana, Mango.

List of Text Books :

1. Lawrence, G.H.W. (1976). Taxonomy of vascular plants. Oxfore & IBH Publ. Co. New Delhi.
2. Mathur, R.C. and Chauhan, S.V.S. :(1989). Systematic Botany, Agra Book Store, Agra.

3. Sivarajan, V.V. (1985). Introduction to principles of Plant Texonomy. Oxford & IBHK Publ. Co., New Delhi.
4. Bhojwani. S.S. and Bhatnagar S.P. (1985). The Embrylogy of Angiosperms. Vani Educational Books, New Delhi.
5. Eames, A.J. and Mac Daniels L.H. 1947. An introduction to plant Anatomy. Mc. Graw Hill Book Co. New York.
6. Esau, K. :(1985). Plant Anatomy, Wiley-Eastern, New Delhi.
7. Kocchar, S.L. (1981), Economic Botany in the Tropics, Mac Millan India, Delhi.
8. Sambumurty, A.V.S.S. and subrahmanyam, N.S. (1989), A Text book of Economic Botany, Wiley Eastern Ltd. New Delhi.

Ecology and Applied Botany

Paper-II (Theory) Max. Marks : 55
Time : 3 Hours

Note :Two questions will be set from each unit. Candidates have to answer five questions in all selecting one question from each unit.

Unit-I

1. Importance and scope of ecology, components of environment, environmental factors; edaphic, climatic and biotic.
2. Population characteristics, exponential and sigmoid growth curves ecotypes.
3. Plant community-concept, characteristics and methods of analysis, species diversity, ecological niche, ecological succession.

Unit-II

4. Ecosystem-concept, structure and functions. Food chain and food web, ecological pyramids, energy flow, biogeochemical cycles-C, N and Hydrological cycle; Biomagnification.

Unit-III

5. Air, water and land pollution-types, sources and control; Waste water recycling; acid rains, global warming.
6. Renewable and non-renewable energy resources-a general account; concept and uses of biodiversity conservation of biodiversity-in situ and ex situ methods in practice.
7. Endangered and threatened plants, extinction, and biosphere reserves.

Unit-IV

8. Tissue culture : Basic Techniques; Media preparation, explants choice and sterilization procedures, applications of tissue culture.
9. Another culture and production of haploids and their significance. A brief account of protoplast culture, Somatic hybrids and cybrids.

Unit-V

10. Recombibnant DNA technology; Cloning vectors; plasmids, acteriophages, cosmids; gene libraries.
11. Gene transfer methods : Agrobacterium mediated gene transfer and direct gene transfer by electroporation, microinjection, biolistics. Transgenic plant-herbicide, fungal, virus and insect resistance.

List of Text Books

1. Sharma, P.D. (1993). Ecology and Environment. Rastogi Publications, Meerut.
2. Odum, E.P. (1971). Fundamentals of Ecology. (3rd Ed.) Saunders & Co. Philadelphia.
3. Cunnigham, W.O. 1994. Understanding our Environment : An Introduction. Wm. C. brown publishers, Oxford.
4. Tyler Miller, Jr. C. 1990. Living in the Environment Wadworth Publishing Company, Belment, California.
5. Botkin, D.D. and E.A. Keller, 1995 Environmental Science : Earth as a Living Planet. John Wiley and Sons Inc. New York.
6. Rao, M.N. and H.V.N. Rao 1989. Air Pollution Analysis Tata Mc. Graw Hill Publishing Co. Ltd., New Delhi.
7. Khopkar, S.M. 1993, Environmental Pollution Analysis Wiley Eastern Ltd. New Delhi.
8. Misra, R. 1968. Ecology Workbook, Oxford and IBH Publishing Co., New Delhi.
9. Bhojwani S.S. 1990, Plant tissue culture : Applications and Limitations. Elsevier Amsterdam, Oxford.
10. Bhojwani S.S. and Rajdan M.K. 1983. Plants tissue culture Theory and practice, Elsevier Amsterdam Oxford.
11. Trehan, Keshav 1994, Biotechnology, Wiley, Eastern, New Delhi.

Paper-III (Practicals)

Angiosperms, Economic Botany, Ecology, Applied Botany

Max. Marks : 40
Time : 4 Hours
(In one session)

1. Describe/compare the give flowers A and B in semitechnical language giving V.S. of flowers, T.S. overies and floral diagrams. Also give their floral formulae. Identify and assign them to their respective families giving reasons. 7
2. Cut T.S. of given material C. prepare a double stained permanent mount of it. Identify giving reasons and show it to the examiner. 6
3. Dissect out a globular/heart shaped embryo from the given material. 2
4. Ecological experiment (as per the list of syllabus) 6
5. Identify and classify spots, 1,2, and 3 from the point of view of their economic importance and the morphology of the plant part used. 3
6. Applied Botany experiment as per the list attached. 4
7. Note Book, collection and field report. 4+4
8. Viva-voce. 4

Part-III (Practicals) Ecology Practicals

1. Determination of pH of soil and water samples.
2. Study of community structure by quadart and line transect methods.
3. Determination of abundance and frequency of species by quadrat method.
4. Morphological and anatomical features of hydrophytes, xerophytes halophytes and parasites in relation to their habitats.
5. To prepare a report on local visit to an industry to identify the source and types of pollutants.

Applied Botany Practicals

1. To prepare any one of the tissue culture medium.
2. Sterilization techniques, culturing and sub-culturing of cell, tissues and organs.
3. Demonstration of a DNA model.
4. Demonstrating of another culture, protoplast isolation and culture, using suitable model/charts/photographs.
5. To demonstrate amylase activity of starch.

ZOOLOGY

Outlines of Test

		Max. Marks	Time
Paper-I	Physiology Bio-Chemistry and Immunology	55	3 Hours
Paper-II	Applied Zoology	55	3 Hours
Paper-III	(Practical)	40	3 Hours

Syllabus & Courses of Reading

Theory Paper-I : Physiology, Biochemistry & immunology

Max. Marks : 55
Time : 3 Hours

Section-A (Mammalian Physiology)

Nutrition : Nutritional components, carbohydrates, fats, lipids and other requirements. Vitamins and Minerals.

Types of nutrition & feeding. Digestion of dietary constitution viz, lipids, proteins, carbohydrates & nucleic acids. Symbiotic digestion. Absorption of Nutrients & assimilation; control of enzyme secretion.

Circulation : Origin, conduction and regulation of heart beat, cardiac cycle, electrocardiogram, cardiac output, fluid pressure and flow pressure in closed and open circulatory system.

Composition and functions of blood & lymph, coagulation of blood, coagulation factors, anticoagulants, haempoiesis :

Respiration : Exchange of respiratory gasses, transport of gases, lung air volumes, oxygen dissociation curve of haemoglobin of respiration.

Excretion : patterns of excretory products viz. Amonotelic ureotelic, uricotelic, ornithine cycle (Krebs-Henseleit cycle) for urea formation liver, Urine formation, counter-current mechanism of urine concentration, osmoregulation, micturition.

Muscles : Types of muscles, ultra-structure of skeletal muscle, bio-chemical and physical events during muscle contraction.

Mechanics of muscle contraction : Isotonic, Isometric, concentration, single muscle twitch, tetanus, muscle fatigue, muscle tone, oxygen debt, coris cycle, single unit smooth muscles & non-modullated nerve fibres-their physical and functional properties.

Neural Integration : Nature, origin and propagation of nerve impuse alongwith modulrated & non-modullated nerve fibre : conduction of nerve across synapse.

Chemical Integration or Endocrinology : Structure and mechanism of hormone effect, physiology of thyroid, parathyroid, adrenal, hypothalamus, pituitary, pancreas and gonads.

Reproduction : Spermatogenesis, capacitation of spermatozoan, evaluation, formation of corpus luteum, oestrous, anoestrous cycle, Menstrual cycle in human fertilization, implantation, gestation parturation.

Section-B (Biochemistry and Immunology)

1. Introduction, classification, structure and functions of proteins, carbohydrates and lipide.
2. General account of vitamins.
3. Introduction, classification and mechanism of euzyme action.
4. Osmotic pressure, diffusion, Hydrogenion concentration, buffors, transport through biomembranes.
5. Metabolism : EMP, TCA & Krebs cycles.
6. History, definition & principles of Immunology.
7. Types of immunity-innate, acquired, acquired active and passive.
8. Antigens-definition, characteristics and types.
9. Antibodies-definition, structure, properties and functions of each class.
10. Cell mediated and humoral immune responses.

Instruction : Nine questions are to be set in all. The candidate is required to attempt five questions, including the compulsory question.

1. Question one is compulsory. It will have ten parts, each of 1.5 marks. Answer should not exceed twenty words.
2. Remaining eight questions, are to be set from both the sections A & B, four from each sections. The candidate is required to atempt atleast 2 questions from each unit.

Theory Paper-II : Applied Zology

Max. Marks : 55
Time : 3 Hours

Section-A (Parasitology Patnogens, Vectors, Diseases)

1. Introduction to poarasitology (pertaining to various terminology in use.
2. Brief account of arthopod vectors of human diseases such as malaria (Anopheles stephensi, A. culicifacies). filaria (Culex/ fatigans, Mansonia, sp.), Japanese encephalitis (C. bitaenio-

rhynchus) Dengue (Aedes aegypti, A subpictus), epidemic typhus (Pediculus).

3. Brief account of communicable diseases such as–Tuberculosis; AIDS, Leprosy and Jaundice.

Section-B (Plests and their control)

1. Study of important insect pests of crops and vegetables :

Sugarcane :

(a) Sugarcane leaf-hopper **(Pyrilla perpusilla).**
(b) Sugarcane whitefly **(Aleurolobus barodensis)**
(c) Sugarcane top border **(Scirpophaga nivella)**
(d) Sugarcane root borer **(Emmalocera depresella)**
(e) Gurdaspur borer **(Bissetia steniellus)**

with their systematic position, habits and nature of damage caused. Life cycle and control of **Pyrilla perpusilla only.**

Cotton :

(a) Pink boloworm **(Pectionophora gossypiella)**
(b) Red cotton bug **(Dysdercus Cingulatus)**
(c) Cotton grey Weevil **(Myllocerus undecimpustulatus)**
(d) Cotton Jassid **(Amrasca devastans)**

with their systematic position, habits and nature of damage caused. Life cycle and control of **Pectinophora gossypiella.**

Wheat :

(a) Wheat stem borer **(Sesamia inferens)** with its **systematic** position, habits, nature of damage caused, life cycle and control.

Paddy :

(a) Gundhi bug **(Leptocorisa acuta)**
(b) Rice Grasshopper **(Hieroglyphus banian)**
(c) Rice stem borer **(Scirpophaga incertullus)**
(d) Rice Hispa **(diceladispa armigera)**

with their systematic position, habits and nature of damage caused. Life cycle and control of **Leptocorisa acuta.**

Vegetables :

(a) Raphidopalpa faveicollis-The Red pumpkin beetle.
(b) Dacus cucurbitas - The pumpin fruit fly.
(c) Tetranychus tecarius - The vegetable mite.
(d) Epilachna - The Hadda beetle.

their systematic position, habits and nature of damage caused. Life cycle and control of **Aulacophora foveicollis.**

Stored grains :

(a) Pulse beetle **(Callosobruchus maculatus)**
(b) Rice weevil **(sitophilus oryzae)**
(c) Wheat weevil **(Trogoderma granarium)**
(d) Rust Red Flour beetle **(Tribolium castaneum)**
(e) Lesser grain borer **(Rhizopertha dominica)**
(f0 Grain & Flour moth **(Sitotroga cerealella)**

Life cycle of Pulse beetle & control measures of all the pests.

2. **Insect control** : Biological control, its history, requirement and precautions and feasibility of biological agents for control.
3. Chemical control : History, categories of pesticides. Important pesticides from each category of pests against which they can be used. Insect repeliants and attractants.
4. Integrated pest management.
5. Important bird & Rodent pests of Agriculture & their management.

Section-C (Beneficial animal culture)

Detailed Study of sericulture, apiculture, Lac culture, Pisciculture, Poultry & Piggery.

Instruction : Nine questions are to be set all. The candidate is required to attempt five questions in all, including the compulsory questions.

1. Question one is compulsory and shall be cover the entire syllabus It will have ten parts, each of 1.5 marks. Answer should not exceed twenty words.
2. Remaining eight questions are to be set from the Sections A, B and C three from Section A, three from Section B and two from Section C. The candidate is required to atempt atleast one question from each Section.

Paper-III Practicals Max. Marks : 40
Time : 3 Hours

Mammalian Physiology

Effects of isotonic, hypotonic and hypertonic solutions on erythrocyte.

Study of haemolysis : haemolytic effects of acid and alkali; preparation of haemin and haemochromogen crystals.

Erthocyte sedimentation rate (ESR).

Estimation of haemoglobin.

R.S.C W.B.C. counts using haemocytometer.

Detection of abnormal constituents of urine : specific tests for albumin and sugar.

Study of the action of salivary amylase, pepsin and trypsin using tissue extracts.

Effect of PH and Temperature on the enzymatic action of salevary anylase.

Study of reflex action and reflex time in the frog.

Simple muscle twitch with mechenical, thermal and chemical stimulation of gastrochemius muscle-sciatic nerve preparation in frog.

Biochemistry :

(a) Qualitative test for proteins, carbonhydrates and fats.

(b) Identification of food-stufrs, starch, glucuse, proteins and rats in solution.

(c) Demonstration of osmosis and diffusion.

(d) Determination of coagulation and bleeding time of blood of man, rat, pigeon.

(e) Analysis of urine for urea, chloride, glucose and uric acid.

Applied Zoology :

(a) Permanent proparation of blood smear showing different stages of Plasmodium.

(b) Preparation of mouth parts of honey bee, butterfly, red cotton bug and housefly.

(c) External morphology, isentification marks, nature of damage and host of the following pests.

Sugarcane : Sugarcane leaf-hopper, Sugarcane whitefly, Sugarcane topborer, Sugarcane root borer, Gurdaspur borer.

Cotton : Pink bollworm, Red Cotton bug, Cotton gray weevil, cotton jassid.

Wheat : Wheat stem borer.

Paddy : Gundhi bug, Rice grasshopper, Rice stem borar, Rice Stem Barar Rise hispa.

Vegetables : Aulocophore faveicollis, Dacus cucurbitas, Tetranychus tederious, Epliachna.

Pests or stored grains : Pulse beetle, Rice Weevil, Grain & Flour moth, Rust-red flour beetle, lessergrain borer.

(d) Life stage of silk moth and honey bee.

Pisciculture :

(a) Identification of riverine and pond fishes : **Catla, Laoeo rohita, L. Calbasu, Cirrhina mrigala, barbus sarana, Ophiocephalus punctatus, O. Marulius, O. Stariatus, Trichnogaster, Fasciata, Mystus seenghala, M.cavasius, M. tengara, Callichrous pabola, C. Bimaculature, wallago attu,** using keys based on morphometric and meristic date.

(b) Study of some aspects of the life history of cultivable species, e.g., food fecundity of Catle/Rohu/Cirrhina.

(c) A study of the slides showing different stages in the growth of ova and changes in pituitary.

(d) Chemical analysis of pond water and soil for pH, Oxygen, nitrates, phosphates and chlorides.

(e) A study of the slides of fish parasites.

(f) A study of the different types of nets, e.g. cast net, gill net, drift net and drag net.

(g) A visit to lake/reservoir/fish breeding centre.

GEOLOGY

Outlines of Test

		Max. Marks	Time
Paper-I	(Theory) Structural Geology & Stratigraphy	45	3 Hours
Paper-II	(Theory) Economic Geology & Indian minerals	45	3 Hours
Paper-III	(Practical)	60	3 Hours

Syllabus & Courses of Reading

Paper-I (Theory) Structural Geology & Stratigraphy

Max. Marks : 55

Time : 3 Hours

Note :-Nine questions may be set and the candidates will be required to answer five questions in all.

A systematic study of rock structure, their origin and significance, Elementary Geology of Dams and Tunnels.

Test

Billings. M.P. : Structural Geology.

Stratigraphic correlation, study of various strartigraphic formation of India.

Text Book

Wadia, D.N.	Geology of India (Macmillan).
Krishanan, M.S.	Geology of India and Burma.

Paper-II (Theory) Max. Marks Time

Economic Geology & Indian minerals 45 3 Hours

Note : Nine questions may be set and the candidates will be required to answer five questions in all.

Indian Minerals

Classification and origin of one deposits, Study of india occurance of mineral fuel and common metallic and non-metallic economic minerals of India.

Test Books

Bateman, A	Economic Mineral Deposits
Brown Coggin	Mineral Deposits of India,
Dey, A.K.	Burma and Pakistan
Sharma L.N. and Ram K.S.V.	Introduction of Indian's Economic minerals.

Paper-III (Practical) Max. Marks Time

60 3 Hours

Note: Emphasis may be laid on field work which should be compulsory for all candidates.

Map reading, study of geological maps, interpretation of their sections and drawing of section, simple dip and strike problems, study of important Indian Economic Minerals, their identification and geographical distribution.

Applied Art (Commercial Art, Designing and Painting)

Outlines of Test

		Max. Marks	Time
Paper-I	Theory	25	3 Hours
Paper-II	Practical (Lettering and Layout)	20	5 Hours
Paper-III	Practical (Poster/Book Illustration)	20	5 Hours
Paper-IV	Practical (Photography or Interior Decoration)	20	5 Hours
	Sessional Work	15	

Syllabus & Courses of Reading

Paper-I (Theory) Max. Marks 25
Time : 3 Hours

Note : Candidates are required to attempt five questions in all.

Commercial Art-its meaning and scope; Aims and objects, need and importance; Impact of photography on Commercial Art; A brief knowledge of the following terms and their techniques Inter-Decoration, holdings, slides, typography and silk screen printing and block-making.

Paper-II Practical (Lettering and layout) Max. Marks : 20
Time : 5 Hours

Prepare placards in the following; lettering : Roman, Block, Script Lettering and Free Brush Lettering. Make for layouts of Suitable size; i.e. Press Layout Magazine Layout. Book Cover Design and Greeting Cards.

Size of the placards : 11" × 15"

Medium : Ink and Poster Colour

Paper-III Practical (Poster/Book Illustration) Max. Marks : 20
Time : 5 Hours

The students will prepare the following Poster/Book Illustration during the session.

1. Family Planning 2. Educational 3. Green Revolution 4. Indian Handicrafts 5. Literacy.

Maximum Colours Three (including back-ground).

For Book illustration two in colour and two in black, white in suitable size.

Paper-IV Practical (Photography or Interior Decoration) Max. Marks : 20

Time : 5 Hours

Handling of the Camera, Film developing and enlarging, retouching, Photographs should include Figurative, Composition, Portrait Landscape. The student will prepare two photographs each subject in cabinet size.

OR

For Interior-Decoration :-

It should cover the following topics

1. Drawing Room, 2. Bed Room 3. Principal's Office
4. A Room in the Hostel.

Size : 9" x 12"

Medium : Poster Colour/Wax Colour

Sessional Work Max. Marks 15

1. Collection of Reference Album 100 cuttings (Press layouts Magazine Layouts Poster, Folders (Newspaper and Magazines)
2. Layout and Placards Three each
3. Poster/Book Illustration Three each
4. Photographs/Interior Decoration Three each

(To be assessed by the external examiner)

(File duly signed by the class teacher to be maintained by the students.)

Books Suggested :

1. Fundamental of layout : F.H. Wills.
2. Photography : Neblette.
3. Commercial Art : Curtis Peter

ELECTRONICS

There will be two theory papers of 45 marks each and a Project examination of 60 marks. The paper-wise instructions shall be as follows :

Paper-I (Theory) Max. Marks : 45 Time : 3 Hours

Note : Set Nine questions. Five questions to be attempted at least one from each Section.

Section-A	Section-B	Section-C	Section-D	Section-E
Two questions (9 marks each)	Two questions (9 marks each)	Two questions (9 marks each)	Two questions (9 marks each)	One conceptual question on sections. A,B,C & D consisting of 5-10 short parts where answer should not be in Yes/No (9 marks)

Paper-II Max. Marks : 45
Time : 3 Hours

Note :Set Nine questions. Five questions to be attempted, atleast one from each Section.

Section-A	Section-B	Section-C	Section-D
Two questions (9 marks each)	Three questions (9 marks each)	Three questions (9 marks each)	One conceptual question on Section A, B & C consisting of 5-10 short part where answer should not be in Yes/No (9 marks.)

Paper-II (Practical) Max. Marks : 60
Project : 30
Experiments : 30
Time : 3+3 Hours

Project : 30 marks

(A) Laboratory Record and Demonstration 20 marks

(B) Viva-Voce examination (Time 15 minutes on each project for each candidate) 10 marks

Experiments : 30 marks

Syllabus & Courses of Reading

Paper-I Max. Marks : 45
Time : 3 Hours

A. Principles of Anlog Computation.

Introduction, Solution of linear differential equations with con-

stant co-efficients using a combination of op-emps, analog computer symbols, modes of operation in analog computers, repectitive operations of computers, time scaling, amplitude scaling estimation of the maximum values.

B. Combinational Circuits Commonly used in Digital Systems : half-adder, full-adder, code converter, multiplexer, demultiplexer.

C. Sequential Switching Circuits :
A basic sequential circuit, asynchronous sequential circuits, synchronous sequential circuits; flip-flops RS flip-flop, JK flip flop, sequential circuits with master slave memories, master slave J K flip-flop binary counters synchronous binary counter shift registers, some applications of shifts registers, synchronization.

D. Digital Systems :
Digital; to analog converter, analog to digitals, convert memory unit random access memory (RAM), read only memory (ROM) the central processing unit (CPU), input/output units, input-output interfacing, microcomputers.

Paper-II

Max. Marks : 45
Time : 3 Hours

A. Principles of modulation amplitude modulation, frequency modulation and phase and modulation, demodulation, Basic circuit for generation AM/FM Signals :

B. Television :
Basic television system aspect ratio, vertical resolution, kell factor, horizontal resolution and video bandwidth interlaced scanning composite video signal, video modulation and vestigial side-band transmission, televition camera tubes: the image orthicon, the vidicon. Frequency band and resolution. Television transmitters. Television receiver, Receiver sweep circuits and their synchronization, colour television, fundamental concepts of a three colour systems, colour television transmitter colour television fundamental concepts of a three colour systems, colour television transmitter colour television receiver.
Television antennas, Hartzian dipole, folded dipole, Yagiantenna Colour television camera, the Liminance and colour difference signals shadow mask colour picture tube, PAL-D colour television

system, block diagram of PAL-D encoder, block diagram of PAL-D colour television receiver.

C. Detail Design Principles of the following :

i) Digital Frequency Meter

ii) Super-heterodyne Reciever using I.C.

iii) Time Base Generator for C.R.O.

iv) Stabilised power supply, usual output to be 15V/1A using IC regulators.

v) Multipurpose transformerless public address system.

vi) Digital voltmeter

vii) Digital clock

viii) Stereo amplifier

ix) Inverter, output 40 watt at 220/230 volts a.c.

Paper-III (Practical) Max. Marks : 60
Project : 30
Experiments : 30
Time : 3+3 Hours

Section (A) Project

At least one project out of the list mentioned under *C be completed by each student in the third year of B.Sc.

To this list, it would be possible to add many more useful design jobs subject to the approval of Board of Studies.

i) I (one) project to be completed by each student laboratory record and demonstration 20 Marks

Viva-Voce (10-15 minutes) as per details given below : 10 Marks

a) Lab record (project report) given relevant experimental data on the project completed. A copy of the project report duly certified by the teacher incharge and Principal of the College should be sent to the external examiner at least two weeks before project examination. 5 marks

b) Demonstration of the working of the project Examiner may examine the project work by asking the student to measure and show the voltage/wave forms etc. at various points or units of the system and then demonstrate the working of complete system. 15 marks

c) Viva-Voce question of functioning of each unit/component, technical details/data of the systems. 10 marks

ii) The marks will be awarded only by the external examiner.
iii) Normally not more than 6 students be examined in one session of 3 hours duration.
iv) The project evaluation will be done before the theory examination and by the External Examiner only.

Section-B Experiments

At least 6 experiments out of the list mentioned below be completed by each student in third year of B.Sc.

List of Experiments :

1. To study the operation of (a) a, J.K. Flip-flop (b) a. D-type Flip-flop
2. To construct a four bit ripple counter and study its operation.
3. To study the operation and characteristics of a four bit BCD Counter.
4. To study the operation and characteristics of a shift
5. To construct a 3-input multiplexer and study its operation.
6. To construct a full adder using NAND gats and study its operation.
7. To study the operation of C-Mos decade counter/7 Segment decoder.
8. To identify the various stage of a monochrome TV receiver and to study the waveforms of vertical output and horizontal oscillators out put.
9. To study the operation
10. To study the operation

I) i) Each student will be examined in one experiment which will be allotted by lottery system.
   a) Lab. record giving relevant experimental data on the experiment performed. 5 marks
   b) Performance of the experimental alloted and measurement of relevant data. 15 marks
   c) Viva-Voce questions on experiments. 10 marks

II) i) The marks will be awarded only by the external examiner.
   ii) Normally not more than 6 students be examined in one session of 3 hours duration.
   iii) Each student will be examined in both project and experiments.
   iv) The practical examination will be conducted before the theory examination.

Guidelines Notes

i) Components, test equipments and other accessories for the projects in each class will be provided by the college concerned.

ii) Since this course is of practical nature, the number of students in a practical group should not exceed 10.

References :

1. Electronics for Scientists and Engineers by Viswanathan Mehta and Rajaraman.
2. Electronics Devices and Circuits – Discret and Integrated by Y.N. Bapat.
3. Electronics Devices & Circuits by Mattershead.
4. Monochrome and colour television by R.R. Gulati.
5. Digital Electronics Practice by using ICs by MMS Anand and R.P. Jain (Tata Mc Graw Hill).
6. Electronics for Scientists and Engineer, Malmstant and Enks.
7. Electronics Fundamentals and Applications (Vth Edition) by John D. Ryder.

B.Sc. (COMPUTER SCIENCE)
B.A. (COMPUTER APPLICATIONS)

Outlines of Series

		Max. Marks	Time
Paper-I	Business Data Processing-II	45	3 Hours
Paper-II	PC Software & C Language	45	3 Hours
Paper-III	Project work & Viva-Voce	60	

Paper-I Business Data Processing-II — Max. Marks : 45, Time : 3 Hours

Note : Twelve questions will be set in the paper with two questions from each Unit. Candidates shall be required to attempt in all six questions selecting one from each unit. All questions shall carry equal marks.

Objectives of the Course

i) To introduce logical & physical database design.

Course Contents

UNIT-I

Logical Database Design Concept of database, objectives of database organization, advantages & disadvantages of database Entites

and attributes. Data Models; Relational, Hicrarchical & Network Entity relationship diagram.

UNIT-2

Functions of DBMS. Data definition & data manipulation language. Relational database design, normalizations, Database administration.

UNIT-3

Physical Database Design : Criteria affecting physical organisation, addressing techniques, indexed sequential organisation, Hashing pointers, chains ring structers.

UNIT-4

Multiple key retrieval, Indexed organisation, inverted files, data compaction.

UNIT-5

Data Structures : Basic concept of data & their representation, Sequential & linked representations. Arrays, Stocks and Gueues, Chains, Circular lists and Doubly linked lists.

UNIT-6

Dynamic Storage managements, Garbage collection and storage compaction, strings, binary trees & trees. Tree traversal Algorithms, Graphs.

Suggested Books

1.	Martin, J.	Computer Data-Base organization (PHI).
2.	Desai, B.S.	Introduction to Database Systems (Galgotia Publications Pvt. Ltd.).
3.	Date, C.J.	Introduction to Database Systems. (Narosa Publishing House, New Delhi).
4.	Tremblay, J.P and Soronson, P.G.	Introduction to Data Structures with Applications (McGraw Hill).S.
5.	Saymour, Lipschutz	Theory and Problems of Data Structures. (McGraw Hill Book Company).

Paper-II PC Software and C Language Max. Marks : 45
Time : 3 Hours

Note : Twelve questions will be set in the paper with two questions from each Unit. Candidates will be required to attempt in all six questions selecting one from each unit. All questions shall carry equal marks.

UNIT-1

DOS Commands : DOS Commands for file and process management. Introduction to UNIX; Brief discussion of UNIX in general and details about a few important commands (viz. date, cal, cls, grep, I, 's' who, chmod, rm, cp, mv, mkdir, rmdir & cat). Comparison of DOS with UNIX Operating System.

UNIT-2

Word Processing (Word Star) : Creation, Editing, Formatting of documents, Global Search & Replacement of Text, Special Print Features, Mail Merge, Spelling checker.

UNIT-3

LOTUS 1-2-3 :- Spreadsheet, Building a Computer Spread-Sheet, Application using formule, Conditional calculations, functions like NPV and IRR, Writing macros and Spreadsheet Menus to build a user interface to the spreadsheet applications. Using the graph plotting capabilities of the spreadsheet package. Interfacing the spreadsheet with Data Base System.

UNIT-4

Data Base Management System (DBASE IV): Creating and editing data base files, Report Generation, Label Generation, Building Menu-based Applications.

UNIT-5

Brief history of development of C, Why this name ? Operating system with which it runs; importance of C; basic structure of a C Program, Programming style of C; Steps involved in executing a C Program; constants, variables and data types.

Operators and expressions; Managing input and output operations; decision making, branching and looping.

Arrays ; Handling of character strings; User-Defined functions; Development of C Programms.

Suggested Books :

1. Manuals of PC Software.
2. Held G:IBM PC & PCXT User's Reference Manuals and Edd Publications 1987.
3. Coffron, J.W. The PC Connection. BB Publications 1987.
4. Russell A Stultz : The Illustrated D Base IV.

5. Parmod Koparkar : UNIX for you (Tata Mcgraw Hill).
6. Brain W.Kirnighan & Dennis M. Ritchie : The C Programming Language (PHI).
7. E. Balagurusamy : Programming in ANSI C (Tata Mc Graw Hill).
8. Ralph Myllus : The Illustrated Lotus 1-2-3 (BPB Pub).
9. Hayens WORDSTAR (Jayco Pub./BPB)
10. TAXALI : Lotus 1-2-3.
11. REE CAANDIGARH/D BASE-IV
12. - do- WORD STAR
13. - do- LOTUS 1-2-3

Paper-III : Project Work and Viva-voce Max. Marks : 60
(To be submitted by 31 March)

Distribution of marks :

Project Report Evaluation 30 marks
Viva-Voce & Demonstration 30 marks

Project Work :

Each student shall be required to undertake a real life project problem during the final year under the supervision of a faculty member in computer science of college concerned. The project work may be development of a software embodying novel ideas or it may be commercial/industry software development assignment in a real environment.

Note (1) Three copies of nicely bound project reports should be submitted by each student.

(2) A student can do his project work in any of the following programming languages/software packages.

FORTRAN, COBOL, PASCAL, C, d Base pacage.

Report of project work will consists of the following :

1. Index
2. A duly signed certificate from supervisor certifying that the candidate has done the project under his supervision and the work done in project is the result of candidate's own effort.
3. A certificate from college Principal certifying that the candidate is the student of this college and he has attended the college computer centre for required no. of days.
4. Acknowledgement duly signed by student.

5. Introduction of topic.
6. Objective of the project.
7. Definition of the problem.
8. Input design, output design, file design.
9. System documentation and flow chart.
10. Listing of the software developed alongwith sample inputs and outputs.
11. Conclusions.
12. Advantages and disadvantages of the software developed.
13. Further scope of the project.
14. References.

HEALTH & PHYSICAL EDUCATION

Theory Max. Marks : 60
Time : 3 Hours

Note : The syllabus has been divided into two parts. Ten questions will be set, at least five from each part, concerning all the syllabus and five questions will have to be attempted by the examinees selecting not more than three from each part.

Part-I

1. Health and Health set up in the country, Organisational set up and functions.
2. Posture-concept of posture, values of posture, causes of poor posture types of postural deformities, their causes and precautions.
3. Functions of various systems and effects of exercise on the systems :
   (a) Respiratory system
   (b) Circulatory system
   (c) Excretary system
   (d) Digestive system
4. Blood composition and function. Blood pressure and its measurement. Effects of exercise on the blood pressure.
5. Fatique-meaning, types of fatique, symptoms of fatique and the causes of fatique and work.
6. Prevention of sports injury and rehabilitation :
   (a) T Sports injury and various factors causing injury.
   (b) Principles of prevention of sports injury.

(c) Meaning and scope of rehabilitation.
(d) Services available for rehabilitation and role of teachers in rehabilitation.

Part-II

7. Psychological aspect of Physical Education :
   (a) The psycho-physical unity of human organism.
   (b) Laws of learning, their application to situations on play grounds.
   (c) Theories of play.
   (d) Individual differences.
   (e) Adjustment
   (f) Motivation.
8. Sociological aspect of physical education :
   (a) Social nature and learning of man
   (b) Traditions and their influence on behaviour patterns (Social Inheritance).
   (c) Physical Education as a socialising agency.
   (d) Socio-economic status and sports.
   (e) Spectators and Crowd behaviour.
9. Leisure and recreation- Types of Recreation Indoor, Outdoor, active and passive, commercial recreation; agencies promoting recreational activities. Hobbies as leisure time activities and their education values.
10. Ergonic aids in work and sports : Alcohol, Nicotine, Cacaine, Fruit Juices, Dopping.
11. Conditioning; - Need and Importance, Methods of conditioning.
12. Concepts of Health and Diseases in Yoga : various Yogic practices for maintaining good health in yogic literature.

Practical Max. Marks : 40

Part-A :

The student is required to select three athletic events one out of the following three groups

1. Track events
2. Jumping events
3. Throwing events 5+5+5+5 viva for three event

Part-B :

The student is required to select one game, each of the following groups :

(B-i)	(B-ii)
1. Hockey	1. Badminton
2. Football	2. Table-Tennis
3. Cricket	3. Lawn-Tennis
4. Basket ball	4. Yoga
5. Volley ball	5. Kabadi
6. Wrestling	6. Kho-Kho

Note: The assessment will be based on the basis of their performance. (Individual skill test and game situation) Yoga: performance in 10 asanas and one kriya will be assessed.

Books Recommended :

1. Charles, A. Bucher — Foundations of Physical Education. The C.V. Nos. by company, 1961 S.T. Louis.
2. Steinhaus A.H. — Towards Understanding of Health and Physical Education. W.M.C. Brown Co.1963.
3. Parrot, J. — Anatomy and Physiology for Physical Education Teachers, London Edward.
4. Kilander, H.F. — Arnold School Health Ed. Machmillan.
5. Bograt, J. J. — Company Nutrition and Physical Fitness.
6. Verma, K.K. — Health and Physical Education, Prakash Publications, Jalandhar.
7. Kamlesh, M.L. — Principles and History of Physical Edu. (Prakash Brothers, 1978).
8. Aykrold, W.R. — The nutritive Value of Indian Foods and Planning of satisfactory diet, New Delhi, Indian Council of Medical Res., 196.
9. Butter, G.D. — Introduction to Community Recreation, New York Mc Graw Hill Co.
10. Swami Kuvalaynanda — Asanas.
11. Swami Kuvalayananda & S.L. Vinekar. — Logic Theraphy.
12. Swami Digambar ji and Pt. R.G. Koka ji (Edited) — Hathapradipika of Sareatmarama, Kevalayadhama, S.W.M. Samiti Lonavala-410403.

13. Gore, M.M. Anatomy and Physiology of Yogic practices Kanchan Prakashan Lonavala-410403.

14. Gharote, M.L. Guidelines for Yogic Practices: Medha Pub. Kevalayadhama, Lonavala.

15. Joshi, K.S. Yoga and Personality, Udayana, Pub. Allahabad.

16. Gadre, R.K. Biodynamics of Shadanga Yoga & Principles and Practice of Yog Theraphy D.B. Traproveala Sons and Co. Pvt. Ltd. 210, Dr. Nauroji Road, Bombay.

FRUIT AND VAEGETABLE PRESERVATION, APPLIED NUTRITION, BAKERY, TAILORING AND HOSIERY

Paper-I (Theory) **Cutting & Tailoring** B.Sc. B.A.

Max Marks 45 30

Time : 3 Hours

Syllabus and Courses of Reading

(A) Different kinds of materials generally used in various types of dress. Methods of trimming suitable for specific materials and styles.

(B) Calculation of quantity of material of different with required for different types of garments and its approximate costs.

(C) Method of taking measurements from body and from tailored garments. Applications of measurements in drafting and developing patterns. Alteration of patterns prepared for different types of figures.

(D) Construction of style and cut in relation to figure of a person Planning, cutting, fitting, correcting and making of garments Pressing and finishing garments.

(E) Technical terms peculiar to dress making. Different parts of a sewing machine and their functions. Special attachment and their uses. Types of sewing threads in number used for different materials and sewing needles.

(F) Normal and abnormal human figures, erect body, stooping, semi-corpulent, corpulent, hunch-back, prominent chest square shoulder and stopping shoulders.

HOSIERY

Paper-II (Theory) (Knitting with hand and machine)

Max. Marks
B.Sc. B.A.
45 30
Time : 3 Hours

Syllabus and Courses of Reading

1. Knitting yarns, their classifications, description, properties and uses. Counts and size of yarn. Conditioning of yarn, their strength, twist and elasticity. Principal source of supply. Testing of yarn for count, uniformity and colour fastness.
2. Knitting machines, their nomenclature and uses, mechanism and adaptability for various purposes. Components, their names and descriptions; functions and adjustment. Care and maintenance. Hand knitting needles, their types and uses. Sketching of chief functional parts of knitting machinery.
3. Machine gauge and its estimation Methods of selection of yarn of right count for different gauges of knitting machines.
4. Bleaching, dyeing and finishing of knitting yarns and knitted fabrics. Carbonising and bleaching processes, variety of bleaches, unshrinkable processes Dyes their classification and uses. Application of acid dyes on wool and silk, basic and direct colours on cotton, wool and artificial silk etc. Acid mordant colours on wool sulphur colours on cotton and silk, aniline black on cotton, Colour matching. Correcting of dyeing faults. Identification of dyes on the fibre.
5. Systems of manufacture, full fashioned circular and seamless. Methods of yarn, a feed and wing up tackle. Stitches employed in knitting, their description and application Cutting and sewing, drawing and clocking. Trimming and making up Choice of materials.
6. Knitted fabrics, their trade name and description, styles and standard specifications, Tuck, lace and embroidered fabrics. Imperfections and their remedies.
7. Colour and designs, theory and colour, blending of colours. Principles of colour harmony and contrast, lace tuck, vertical trimming and pearl stitch designs of classes.

8. Scouring, milling, calendering and pressing of knitting fabrics, labelling and packing methods.

9. Calculations, measurements, and their systems. Yarn numbering system. Determination of counts of folded yarn; average counts in knitted fabrics : weight percentages of mixture articles, speed of frames and production.

10. Costing of raw materials and yarn. Costing of Hosiery products for the trade, Marketing of finished products.

11. Practical training.

PRACTICAL

(Four periods per week spread over 2 days)

Max.Marks

B.Sc.	B.A.
45	30

Time : 3 Hours

Practical Exercises

Students are required to provide themselves with material to be used in the laboratory work.

The following exercises will be carried out by individual trainees under the guidance of the instructor to avoid any wastage of raw material and will be confined as far as possible to the production of such articles as are required for use at the Institute/Centre or for which there is a ready demand in the locality, in order to eliminate accumulation of stocks :

(A) Children Garments :

Baby's, frocks, boy's suit or jeans suits with different types of collors, sleeves.

(B) Ladies Garments :

Blouse, petticot, kurtas and salwars, suit, night suit or nightie, house coat or gown.

(C) Gents Garments :

Shirt or T-Shirt, pant or bellbottoms, pajama and kurtas.

(D) Knitting dyeing, embroidery etc.

1. Bleaching and dyeing of knitting yarns and knitted fabrics Souring of woollen yarns.

2. Knitting of cotton and silk is arbends, cottons and woolen vests of styles, plain and artistic socks and stockings of cottons silk and wool.
3. Knitting of mufflers, pullovers, slipovers, etc. of sizes and stales.
4. Knitting designs of the plain and fancy machine and on house tops.
5. Knitting of emproidered hosiery.
6. Testing of yarn and analysis of fabrics.

RURAL INDUSTRILIZATION

Rural Industrialization in Haryana : Max. Marks : 50
Practice, Policies and prospect Time : 3 Hours

Rural Industrialization Development Strategy with special reference to Haryana.

1. Resource availability in rural areas of Haryana for rural industrialization : Raw materials, power, technical guidance, financial agencies, labour.
2. Problems of choice of techniques for rural indusrtrialization, Labour versus Capital Intensive techniques.
3. Gandhian Philosophy of rural industrialization.
4. Modernisation of the vocational facilities of village artisans and their training.
5. Major rural Industries in Haryana : Traditional sector, modern sector.
6. Govt. Policy towards rural industrialization in Haryana.
7. Integrated Rural Development programme with special reference to rural industries under the Five Year Plans.

Project Report Max. Marks : 50

Project report be submitted by students by 15th of March. The Vice-Chancellor may extend the date for submission of report in exceptional circumstances.

LOCAL SELF-GOVERNMENT

Comparative Local Government Max. Marks : 100
Time : 3 Hours

This paper will include Local Government system of England and France.

OFFICE MANAGEMENT

Business Communication and Typing Max. Marks : 100
Time : 3 Hours

Note : 1. The paper will consist of two parts, i.e. Part-A and Part-B. For Part-A six questions will be set by the paper-setter out of which the candidates will be required to attempt three questions.

2. Separate question papers for both Part-A and Part-B will be set. For Part-A the paper will be set in English with Hindi Version. For Part-b 'Typewriting' two separate question-papers are to be got set, one for English Typewriting and the other for Hindi Typewriting.

Part-A Business Communication Max. Marks : 40
Time : 2 Hours

Importance of correspondence in business house and Governments offices. Essentials of good business and official correspondence; various forms of correspondence.

Maintenance of Secrecy and keeping records of income and outgoing correspondence.

Drafting and Noting, Techniques of Drafting and Noting, Precis Writing.

Part-B Typing Max. Marks : 60
Time : 1 Hour

1.	Typing of a Passage	20 marks
2.	Typing of a letter	20 marks
3.	Typing of a table	20 marks

(Maximum speed 20 words per minute)

LABOUR WELFARE

Labour Legislation in India Max. Marks : 100
Time : 3 Hours

1. Labour Legislation; Needs and Evolution of Labour Legislation in India and U.K.
2. Social Security in Indian Industries.
3. Employees State Insurance Scheme, 1948.
4. Elements of Industial Disputes Act, 1957.
5. Elements of Factories Act, 1947.

6. Women Compensation Act.
7. Trade Unionism in India.
8. Collective Bargaining in India.
9. Worker's Participation in Management with special reference to India.

MARKETING

Advertising and Sales Management Max. Marks : 100
Time : 3 Hours

Note : Atleast ten question shall be set in the question paper. The paper shall be divided into five units containing two questions from each unit. The candidates shall be required to attempt five questions in all, selecting atleast one question from each unit.

Unit-I **Advertising** : Meaning and definition, Characteristics, types functions and importance, Difference among advertising, publicity, Sales promotion and personal selling. Pull vs. Push strategy Objectives of advertising, Objections, against advertising, advertising agency, its functions, selecting advertising agency.

Unit-II **Message Decisions** : Concept of a advertising copy, types of copies salient features of a good copy selection of appeals, copy writing, layout.

Unit-III **Media Decisions** : Concept of media, Types of media and their characteristics, factors considered in media selection.

Unit-IV **Sales Management** : Concept, the job of a sales manager, essential qualities, types duties, responsibilities and functions of sales manager, fixation of sales territories.

Unit-V **Sales Organisation** : Meaning, need, importance, principle, forms, functions and limitations of sales organisation; steps in setting a sales organisation, fixation of sales quotas.

TOURISM

Paper-I Max. Marks : 100
Time : 3 Hours

Note : Atleast ten question shall be set in this paper with two questions each from Section 1 and 2 and three questions each from Section 3 and 4. The candidates shall be required to attempt any five of questions. All the questions shall carry equal marks.

The questions set in the paper shall be of an elementary nature, not requiring any advanced or specialised knowledge of the topics prescribed. The students shalll be required to visit some of the important monuments prescribed in the course.

Syllabus and Courses of Reading

1. Meaning, scope and importance of Tourism. A brief history of Tourism in India.
2. Tourism as an Industry. Tourist services and Hotel Industry, Tourism and Planning Management.
3. Study of the following ancient monuments in historical and cultural perspective :
   Sachi, Somnath, Ajanta, Mahabalipuram, Khajuraho, Chittorgarh, Fatehpur Sikri, Taj Mahal, Pinjore, Deegh Palaces.
4. Study of the following palaces of Tourist interest :
   Delhi, Bombay, Mysore and Srinagar.

Books Recommended :

1.	Bhatia, A.K.	Tourism Development-Principles and Practices (New Delhi : Sterling, 1981).
2.	Bhatia, A.K;	Tourism in India-History and Development (New Delhi : Sterling, 1978).
3.	Anand, M.M.	Tourism and Hotel Industry in India(New Delhi : Prentice Hall of India, 1976).
4.	Seth, P.N.	Successful Tourism Planning and Management (New Delhi : Cross Sector Publications, 1978).
5.	Marshall, J.	A Guide to Sanchi.
6.	Brown Percy	Indian Painting.
7.	अजय मित्र शास्त्री	अजन्ता
8.	कन्हैया लाल अग्रवाल	खजुराहो
9.	Debela Mitre, A.S.I.	Ajanta.
10.	Maulvi Mohumudin Ahmed	The Taj and its Environment (2nd Ed.) (Printed by R.G. Bansal & Co. 3399 Kasairat Bazar, Agra).

ACTURIAL SCIENCE

Max. Marks : 100
Time : 3 Hours

Note : Atleast ten question shall be set in the question paper. The paper shall be divided into five units containing two questions from each unit. The candidates shall be required to attempt five questions in all, selecting atleast one question from each unit.

Unit-I Compound Interest : Cumulative sinking funds, (Simple problems only). The effect of tax. The determination of the rate of interest in a transaction. Construction of tables. Use the teachnique of Discounted Cash Flow for investment appraisal.

Unit-II Life Contingencies : Construction of life tables (including select and ultimate tables) form graduate series of mortality rates; determination and use of functions based thereon. Premium for and values of annuties and assurance on a single life. Alteration of policies, including paid up policies, Surrender values Law of mortality, Statistical applications of mortality tables.

Unit-III Life and Other Contigencies :Construction of mortality sickness, multiple decrement and other similar tables from graduate data. Determination and use of the functions based thereon. Values of premiums for annuties and assurance on one or more lives. Values and contributions for sickness benefit, pension benefits, disability benefits and widow's and orphans benefits.

Unit-IV Further Probability and Statistcs : Further probability addition axiom for general events and Warnglas theorem compound distribution and branching process. Elementary stochastic process. Chi-square tests, maximum likelihood estimation. Decision theory, Time series.

Unit-V Mortality and other Acturial Statistics : Concepts of rates and other indices. Analysis of experience data and derivation of exposed to risk formulae. The calculation on mortality

sickness and other decremental rates (including multiple-decrement rates). Graduation methods and their application, including curve fitting by methods of least square; tests of graduation. Sources and collection of data for the continuous Mortality Investigation. Features of principal tables in common use. National vital statistics. Population porojection methods.

COMMERCE

Principles of Management Max. Marks : 100
Time : 3 Hours

1. Introduction : Concept and Significance of Management, Functions of Management, Evolution of Industrial Management, Contribution of Taylor, Fayol, and Mayo to the Science of Management.
2. The Management Process, Planning, Organising, Motivating. Controlling and Co-ordination.
3. Authority and Responsibility, Delegation of Authority.
4. Planning : Planning promises. Kinds of Plans the Process of Decision-making.
5. Organising : Principles of Organisation, Organisational structure, Departmentation, Organisation Charts.
6. Motivation and Leadership Styles.
7. Control : Concept of Managaement control. Process of control, Principles of control, Control Aids.

B.A. (Computer Applications) - Vocational Course

SCHEME OF EXAMINATION

The existing scheme of Examination applicable to B.A. (Part-I, II and III) will continue to be operative. A new subject Computer Applications will be added to the existing list of elective subjects. The students desiring to offer Computer Applications as a subject will be required to take one more elective subject from the existing list of elective subjects. The details about the papers in Computer Applications in Parts-I, II and III B.A. Examinations are as under :-

Examination	Title of Paper		Max.Marks B.A.	B.Sc.	Time
B.A./B.Sc.(Part-I)	C.A.I	Computer Fundamentals & Introduction to IBM PC	35	45	3 hrs.
	C.A.II	Operating Systems and Business Data Processing	35	45	3 hrs
Practical Examination		Ist Sitting	7.5	15	4 hrs.
		IInd Sitting	7.5	15	4 hrs.
REPORT ON :	On-The-Job Training of 4 weeks duration during autumn & winter breaks		15	30	
B.A./B.Sc.(Part-II)	C.A.III	Data Base Management Systems	35	45	3 hrs.
	C.A.IV	Structured Programming and Computer graphics	35	45	3 hrs
Practical Examination	Ist Sitting		7.5	15	4 hrs.
	IInd Sitting		7.5	15	4 hrs.
REPORT ON :	On-The-Job Training of 4 weeks duration during autumn & winter breaks		15	30	
B.A.(Part-III)	C.A.V	Computer Aided Drafting & Advanced topics in Computer	35	45	3 hrs.
Practical Examination			15	30	4 hrs.
	C.A.VI	Project Report	50	75	

(Last date for submission of Project Report will be 31st March of the Academic Year concerned).

The duration of this Vocational Course shall be three Academic Years and the candidates shall be issued the Degree of B.A. (Pass) (Vocational) with Computer Applications. The degree will be considered at par with B.A. (pass) degree for the purpose of admission to Master Degree Course.

Details about Practical Examination

The practical examination will be given jointly by two examiners, one internal and one external to be appointed by the University.

A common typed/printed question paper will be provided to each student of the class (or group in case it is not possible to conduct practical examination for all the students of a class together due to non-availability of adequate number of computers). The question paper will contain questions, test-data, if required, format in which results are to be produced by the students and the documents the examiners are expected to submit.

An answer-books will also be provided to each student.

The students will be permitted to do their theoretical work, if any, in the examination hall before they move to computer lab for working on the computers.

Each student will be provided a computer to work on it independently. The students will submit their results in the form detailed in the question paper. The two examiners will jointly evaluate it. They may, if they so desire, discuss the results produced by a student with him while evaluating the paper.

The evaluation will be completed on the day of examination and will be sent to the University in the award list prescribed by the University.

The University will plan for the practical examination to be conducted in each college offering this course, after collecting details from the college well in advance. The details will be communicated to practical examiners well in advance to enable them to plan for the examination. The external examiner may have to go to the Centre/College of examination to get the paper prepared/typed in consultation with internal examiner, a day before the date of examination.

B.A./B.Com. (Computer Applications) Part-III

(Vocational Course) *Max. Marks*

Paper-CA-V Computer Aided Drafting (B.Com.) 70
&
Advanced Topics in Computers (B.A.) 35
(B.Sc.) 45
Time : 3 Hrs.

Note : Examiner should set five questions from each section, making a total of ten questions covering the entire syllabus. Candidates are required to attempt any five questions selecting two questions from each section.

Section : A

Introdction of AUTOCAD (Release 12), Advanced features of this package. Drawing the plan of a building using AUTOCAD. Analysis features of Autocad.

Section : B

Computer animation. Artificial intelligence. Dedicated computers. ATMS. Data encryption. Data communication and net-working.

Note : Course to be modified every year to take care of the latest developments. Visits to computer industry.

Paper-CA-VI Project Report** Max. Marks
(B.Com.) 100
(B.A.) 50
B.Sc. 75

(Last date for submission will be 31st March of the year concerned)

Practical Examination	**Max. Marks**	**Time**
Design of layout of a building. Design of interior of its rooms. Printing and plotting the prepared drawings	30 (B.Com.) 15 (B.A.) 30 (B.Sc.)	4 hrs.

***Notes:*

(i) Each student will be required to undertake real life project problem related to the development of software embodying novel idea or it may be form the part of Commercial/Industial software development assignment. The project report will be evaluated jointly by two examiners (One External & one Internal). In case of difference of opinion among them, average of the marks awarded by both examiners will be taken.

(ii) Theoretical and practical work of Paper CA-V will be completed in the first half of the session. The second half of the session will be utilised by the students solely for project work.

INDUSTRIAL CHEMISTRY
(Vocational Course)

Scheme of Examination

The students of B.Sc. III shall be required to appear in two theory papers and the practical examination at the end of the session.
The distribution of marks shall be as under :-

Paper-I	Max. Marks	Time Allowed
	55	3 hours

Unit-1 Chemical Process Economics
Unit-2 Industrial Organisation
Unit-3 Industrial Chemical Analysis.

ELECTIVE SUBJECTS

Paper-II	Max. Marks	Time Allowed
	55	3 hours

Unit-1 Pharmaceuticals
Unit-2 FDA, Important schedules and some legal affects of drugs.
Unit-3 Classification of various types of drugs with examples.

OR

Paper-II
Unit-1 Heavy Inorganic Chemicals
Unit-2 Heavy Organic Chemical
Unit-3 Fine and Speciality Chemicals

OR

Paper-II
Unit-1 Petrochemicals-I
Unit-2 Petrochemicals-II
Unit-3 Petrochemicals-III

OR

Paper-II
Unit-1 Waste Recycling-I
Unit-2 Waste Recycling-II
Unit-3 Waste Recycling-III

OR

Paper-II

Unit-1 Agrochemicals-I

Unit-2 Agrochemicals-II

Unit-3 Agrochemicals-III

OR

Paper-II

Unit-1 Dyes-I

Unit-2 Dyes-II

Unit-3 Dyes-III

OR

Paper-II

Unit-1 Polymers-I

Unit-2 Polymers-II

Unit-3 Polymers-III

Paper-III

Practicals 40 Marks 6 Hrs.

B.Sc. Third Year (Industrial Chemistry)

Paper-I Max. Marks : 55

Time : 3 Hrs.

Unit-1 **Chemical Process Economics**

IC 301 **Factors** involved in Project cost estimation

Methods employed for the estimation of capital investment.	6L
Capital formation, Elements of cost accounting.	5L
Interest and investment costs, Time Value of money-equivalence.	3L
Depreciation, methods of determining depreciation, Taxes	4L
Variation of cost with capacity, Break-even point, Optimum batch sizes, production scheduling, etc.	5L
Some aspects of marketing. Pricing Policy.	4L
Profitability criteria, Economics of selecting alternatives.	3L

Books :

1. Economics of Chemical Industry, Hempel, E.H.

Unit-2 **Industrial Organisation**

IC 302	Concept of Scientific Management in Industry :	4L
	Functions of management, decision making, planning, organising, directing and control;	9L
	Location of Industry	3L
	Materials Management	5L
	Inventory Control	4L
	Management of human resources-selection, incentives Welfare and Safety	5L

Books :

1. Industrial organisation and Management, Bethel, L.L.

Unit-3 **Industial Chemical Analysis**

Industrial Analysis

Sampling procedures, Sampling of Bulks materials	3L
Techniques of sampling solids, liquids and gases collecting and processing of data	2L
Chromatography, paper chromatography TLC, GLC, HPLC	4L
Particle size determination	2L
Rheological properties of liquids, plastics and their analysis	3L
Modern Instrumental Methods of Analysis	3L
UV-visible spectrosophy	3L
IR-Spectroscopy and non-dispersive IR	3L
NMR-Spoectroscopy	3L
Atomic Absorption, Flame photometry	1L
Neutron diffraction	1L
Ion-Selective electrodes	1L
Ion-Chromatography	1L
X-ray fluorescence	

Books

1. Instrumental methods of chemical analysis, Willard, Merrit, Dean Settel.
2. Introduction to instrumental analysis-Braun R.D. McGraw, Hill Publishing Co.
3. Rheology Theory and Application., Vol. 5, Elrich, R.F.
4. Analytical Chemistry, J.G.Dick, McGraw Hill Publishing Co.
5. Quantitative Inorganice Analysis, A vogal Longman Publication.
6. Instrumental Methods of Analysis, Skoog and West.

Elective Subjects

Paper-II Pharmaceuticals Max. Marks : 55

Unit-1 Time: 3 Hrs.

Historical background and development of pharmaceutical Industry in India in brief.	2L
Pharmacopoeias-Development of Indian pharmacopoeia and introduction to B.P., U.S.P., E.P., N.E., and other important pharmacopoeias.	2L
Introduction to various types of formulations and roots of Administration.	2L
Aseptic conditions, needs for sterlisation, various methods of sterilisation.	2L
Various types of pharmaceutical excipients-their chemistry, process of manufacture and quality specifications-Glidants, lubricants, diluents, preservatives, antioxidants, emulsifying agents, coating agents binders, colouring agents, flavouring agents gelatin and other additives, sorbitol, mannitol, viscosity builders, etc.	12L
Surgical dressings, sutures, ligatures-with respect to the process, equipments used for manufacture, method of sterlization and quality control.	5L
Pharmaceutical packaging-Introduction, package selection packaging materials, ancillary materials packaging machinery, quality control of packaging materials.	5L

Unit-2

FDA, Important schedules and some legal aspects of drugs. Phytochemicals-Introduction to plant classification and crude drugs, cultivation, collection, preparation for the market and storage of medicinal plants. 3L

Evaluation of crude drugs-Moisture content, Extractive value, volatile oil content, foreign organic matter. Quantitative microscopic exercises, including of starch, leaf content (Palisade ratio, stomatal number, and Index vein islet number and vein termination number) crude fibre content, introduction to chromatographic method of identification of crude drugs. 6L

Chemical constitution of plants-including carbohydrates, amino acids, proteins, fats, waxes volatile oils, terpenoids, steriods, saponins flavonoids, tannins, glycosides, alkaloids. 9L

Various isolation procedures for active ingradients with examle for alkaloid, e.g. vincaalkaloids, reserpine; one for seroids-sapogenin, disgenin, diagroh. 3L

Pharmaceutical quality control (other than the analytical methods covered under core subject)-sterility testing, pyrogenic testing, glass testing, bulk density of powders, etc.

Unit-3

Classification of various types of drugs with examples Raw materials, process of manufacture, effluent handling, etc. of the following bulk drugs. 15L

i) Sulpha drugs-Sulphaguandine, sulphamethoxazole
ii) Antimicrobial-chloramphenicol, furazolidine, mercurochrome, isoniazid, Na-PAS.
iii) Antagesis-antiniflammatory-salicylic acid and its derivatives, iuprofen, mefenamic acid.

iv) Steridal hormones-Progesterone, testosterone, methyl testosterore.
v) Vitamins-Vit.A, Vit. B6, Vit.C.
vi) Bramiturates-Pentobarbital
vii) Blockers-Propranolol, atenolol.
viii) Cardiovascular agent-Methul dopa
ix) Antihistamines-chloropheneramine maleate.

Product based on fermentation processes 15L

Brief idea of microoprganisms, their structure, growth and usefulness Enzyme, systems useful for transformation, microbial products.
General principle of fermentation process and product processing.
Manufacture of antibiotics-pencilin G and semisythetic pencillins, Refamycin, tetracyclins, Vit. B 12.
Biotransformation processes-for prednisolone-11-hydroxylation in steroids.
Enzyme catalyzed transformation, manufacture of epidrine.

Practicals Max. Maraks : 40
Time : 6 Hrs.

1. Industrial Analysis-Analysis of common raw materials as per the industrial specifications, such as phenol, aniline, formaldehyd, hydrogen, peroxide acetone, expoxide, olefins, oils, etc. 10 expts.
2. Synthesis of common industrial compounds involving two steps reactions-for example 4-Bromoaniline 4-Nitrobenzoic Acid, Dihalo-benzenes 3 miroaniline, sulpharimide, 4 Ammolegoric acid 20 expts.
3. Demonstration of various pharmaceutical packaging materials, Quality control tests of some materials-Aluminium Strips, cartons, glass bottles. 4 expts.
4. Limit test for chlorine, heavy metals, arsenic etc. of two representative bulk drugs. 3 expt.

5. Demonstration of various pharmeceutical products 7 expts.
   Active ingradient analysis of few types of formalations representing different methods of analysis-acidimetery, alkalimetry, nonaqueous complexometry, potentiometry etc.

   Determination of sulphate ash, loss on drying, and other tests of bulk drugs, complete I.P. monograph of three drugs representing variety of testing methods. 5 expts.

   Evaluation of crude drugs-Microscopic examination 7 expts.
   Determination and identification of starch grannules, calcium oxalate.
   Palisate ratio, stomatal index determination. Identification of few drugs TLC method for identification.

   Microbiological testing-Determining of MIC of some antibacterial drugs by zone/cup plate method. 4 expts.

6. Demonstration of various Pharmecutical packing materials quality control test of some materials-Aluminium strips 3 cartons glass bottles. 4 expts.

7. Limit tests for chlorine, heavy metals, organic etc. of two representative bulk drugs. 3 expts.

Books :

1. Practical Pharmacognosy by T.B. Wilis, Practical Pharmacognosy, by T.N. Vassudevan.
2. Modern Pharmacognosy, by Ramstad., Mc Graw Hill.
3. Indian Pharmacopoca 1985
4. British Pharmacopoca 1990
   Hand Book of Drugs Cosmetic Acts. by Mehrotra
5. Pharmaceutical Excipients.
6. Pharmaceutical Dosage Forms.
7. Principles of Medicinal Chemistry, W.D. Foye : Lea and Febigen, Publication, Philadephia.
8. Text book of Organic Medicinal and Pharmaceutical Chemistry Wilson, Gisvold, Derge, Lippinctt-Toppen.
9. Essentials of medicinal Chemistry-Korolkovas and Burkhatter, Wiley Interscience.
10. Organic Chemistry of Drug Synthesis, Daniel Lednice & L.A. Mitscher, Wiley Interscience.

11. An introduction to synthetic Drugs, P.P. Singh and D.W. Rangnekar, Himalaya Publication, Bombay.

Paper-II Heavy and Fine Chemicals Max. Maraks : 55
Time : 3 Hrs.

Unit-I Heavy Inorganic Chemicals

Manufacture of the following with reference to (i) Consumption pattern (ii) Raw Materials (iii) Production Process (iv) Major Engineering Aspects (v) Special Material of Constructions (vi) Quality Control (vii) Hazards and safety (viii) Effluent Management.

Synthetic nitrogen products-ammonia, nitric acid, ammonium nitrate and ammonium sulphate.	4L
Chlor-alkali industrial products-caustic soda chlorine	3L
Phosphorus chemicals-Phosphorus, Phosphoric Acid, Ammonium Phosphote, Superphosphate, Triple Superphosphate.	3L
Industrial Carbon-Carbon blacks, manufacature of graphite, and carbon,	2L
Lime gypsom	2L
Silicon, calcium Carbide, Silicon Carbide	2L
Fluorine, Bromine, Iodine, Hydrobromic acid, interhalogen compounds	4L
Sodium chloride, sodium sulphate, sodium sulphite, sodium thio-sulphate, borax, boric acid.	5L
Industrial Catalysts-Ranney Nickel, other forms of nickel, palladium and supported palladium copper chromate, Vanadium, and Platinum based catalyst.	3L
Aluminium alkoxides, titanium terachloride, and titanates, titanium dioxide.	2L

Unit-2 Heavy Organic Chemicals

Manufacture of the following with reference to (i) Raw materials (ii) Flow Chart (iii) Effluent Management (iv) Kinetics (v) Uses–

Fischer-Tropsch Synthesis-Examples	2L

Applications and uses of zeolites as Catalyst. Their use in isomerization and dehydration/dehydroxyllatioin. 2L

Chemicals derived from acetylene-acetylene, Propargy alcohol, 1,4 butene diol, acrylates, vinyl esters, vinyl chloride. 4L

Pyridine, picolines, phenol, acetone, resorcinol, phthalic anhydride. 3L

Glycerol, sorbitol, melamine, formaldehyde, formic acid. 3L

Triphenyl phosphine, alkyl phosphate chlorination of methane- 2L

to methyl chloride, dichoromethane, chloroform, carbon tetrachloride

Ethanolmines-Mono-,di-tri-ethanolamines, Dialkyl) amino ethoinals (dimethyl, diethyl) 3L

Alkyamines-Methylamine, ethylamine, di-,tri-alkyamines (methyl, ethyl, butyal amines, prophl amines) 3L

Eletene, ethyl and methyl acetoacetates. 1L

Accetaldehyde, paradehyde 1L

Speciality industrial solvents-DMF, DMSO, sulpholane, alkylpyrrolidone, THF, dibuty (ether, diethyl ether, diglyme, dimethoxy ethane, dioxane. 1L

Unit-3 Fine and Speciality Chemicals

Reagents-Laboratory chemicals from heavy chemical industry in required purity-acids, alkalis, carbonates, drying agents; Analytical reagents sodium carbonate, sodium bicarbonate, potassium dichromate, Oxalic acid, perchloric acid, common solutions-Fehling solution, karlfisher reagent. 2L

Chromatographic materials and HPLC solvents-coating material, precoating of plates, Spectroscopy grade chemicals-Methanol, ethanol, potassium bromide, carbon tetrachloride, nujol chloroform.

Biochemical reagents-Ninhydrin, tetrazolium blue, naphtha-quinone-4-sulphonate. 1L

Manufacture of following fine chemicals with reference to (i) Raw

Material of Common industrial compound involving two step rections-for example 4-Bromaniline, 3-nitroaniline, sulphteral (ii) production process (iii) Special material of construction (iv) Hazard and Safety (v) Effluent management (vi) Quality control (vii) Specifications.

Sodium borohyrate, lithium aluminium hydride sodium amide, sodium ethoxide, sodium methaoxide,

Paracetamol,

Indigo, Vat dyes, Reactive dyes

Essential oils-general, organic flavour, comphor, citral, citronellol, menthol

Sufacants and emulsifying agents - PEG, Tweeps, Spans.

Colouring agents - manufacture of some natural colours and synthetic colours

Flavouring agents - Fragrances and Food additives.

Natural tetraic acid, (+) tataric acid Resoulution of trataric acid Citric acid Chemicals required for electronic industry.

Practicals :

Industrial Analysis-Analysis of common raw material as per the industrial specifications, such as phenol, aniline, formadehyde, hydrogen peroxide, acetone, epoxide, olefins, oils, etc.

Synthesis of Common industrial compounds involving two step reactions- for example 4-Bromoaniline, 3-nitroaniline, sulphanilamide, 4-Aminobenzoic acid, 4-Nitrobenzoic acid, Dihalobenzenes, Nitrohalobenenes.

Preparation of Reney-nickel from Ni-AI Alloys and testing its properties.	1
Any one reaction using the above Catalyst.	1
Preparation of synthetic Zeolites	2
Reactions using zeolites	2
Preparation of aluminium isoproxide and reactions using the same	4
Synthesis of trimethyl phosphate and related reagents Applications of this for O-alkylation and N-alkylation.	4
Preparation of reagent grade chemicals-sodium carbonate sulphuric acid, etc., solvents, etc.	
Synthesis of few fine chemicals For example, amyl acetate flavour chemicals, Paracetamol, sulphanilamide.	

Purification of lemon grass oil to obtain citral.
Resolution of fartaric acid and phenyl ethyl amine. 6
Isolation of some natural products, like tartartic acid, citric acid, etc.

Books

1. Chemical Process Industries, Shreve R.N., Mc. Graw Hill Book Co., New York.
2. Applied Organic Chemistry, Kilner E. and Samuel, D.M. Mc Donald & Evans Ltd., Londoaguandine, Sulpha Methozazol Antimicrobial - chloramphenicol, furazolidine, isoniazid, Na-PAS n, 1960.
3. Introduction to Material Science and Engineering, K.m. Rells, T. Courtney and J. Wulff, Wiley Eastern Pvt. Ltd. New Delhi.
4. Unit Process in Organic Synthesis, P.H. Groggins, Mc Graw-Hill Kogakusha Ltd.
5. Outline of Chemical Technology, C.E. Drygen East West Press, New Delhi.
6. Industrial Chemical, Faith et. al. Wiley Interscience, New York.
7. Heavy Organic Chemicals, A.J. Gaite, Pargmon Press, U.K.
8. Chemicals from petroleum, Waddams, ELBS and Johan Marray, 1970.
9. Speciality Inorganic Chemicals, R. Thomson Royal Society of Chemistry, Burlington, U.K.

Paper-II Petrochemicals Max. Maraks : 55
Time : 3 Hrs.

Unit-I

Introduction to crude oil, exploratory methods, oil reservoirs, transportation of crude oil, constitution of crude oil. 6L
Natural Gas-Constituents.
Distilation of crude oil, Separation of natural gas and different fractions based on relative volatilities. 3L
Compositions of different distillates
Meaning of terms such as - Pour point depresents, drag reducers, viscocity reducers, ignition point, flash point, octane number, doctor solution 4L
Types of hydrocarbon fuels and their charactaeristics 2L

Detailed discussion of the following operations with respect to process, mechanism, catalysts used and applications; Cracking - Catalytic cracking, Hydrocracking, Reforming, Isomerization, Alkylation.

Unit-2

Sulphur, hydrogen, petroleum coke and nitrogen compounds from pertoleum.	4L
General discussion of the following reactions with respect to machanism and applications-Oxidation, ammonidation, hydro formylation, hydration.	4L
Manufacture of the following compunds : methane, ethylene, acetylene, prophylene, C-4 hydrocarbons, higher olefins.	6L
Preparation of the following from mathane-methanol, carbon black, hydrogen cynide, chlorinated methanes carbon disulphidez.	7L
Preparation of the following from ethlene-Ethyl chloride, ethanol, ethylene oxide, ethylene glycol, acetaldehyde, acatic, styrene, vinyal acetate, acid, ethanolamines, vinyl chloride, acrylonitrile.	9L

Unit-3

Manufacature of the followinkg from propylene: Isopropanol, cumene, glycerine, acrylonitrile	3L
Manufacature of the following from acetylene :	3L
Vinyl chloride, chloroprene, acrylonitrile, acetaldchyde, manufacure of the following from hydrocarbons Benezene, tolune, xylenes, naphthalene, liner alkyl benzenes, and their sulphonates, detergents.	7L
Various catalyists used in petrochemical Industry, Preparation, structure, applications and selectivity.	6L
Importance of petroleum and petroleum Industry in the context of Indian Economy.	4L
Indian petrochemical Industry-Indian reserves, quality and petroleum distribution. Future.	4L

Books :

1. Handbook of petroleum refining process. R.A. Meyers, McGraw Hill., Book Comp. New York.

2. From Hydrocarbons fo Petrochemicals, L.F. Hatch and S. Master, Gulf Publishing Company, Houston.
3. Petrochemicals - The vise of an industry, Spitz, Wiley.
4. Introduction to Petroleum Chemicals, H. Steiner, Pergaman Press.
5. Catalysts in Petrochemical refining. Trimm.

Practicals Max. Maraks : 40
Time : 6 Hrs.

Industrial Analysis - Analysis of common raw materials as per the industrial specifications, such as phenol, aniline, formaldehyde, hydrogen, peroxide, acetone, epoxide, olefins, oils, etc. 10 expt.

Synthesis of common industrial compounds involving two step reactions-for example 4-Bromoaniline, 3-nitroaniline, sulphanilamide 4-Aminobenzoic acid, 4-Nitrobenzoic acid, Dihalobenzenes, Nitrohalobenzenes. 20 expts.

Viscocity - Viscocity of hydrocarbons and hydrocarbon mixture, Fffect of viscocity reducers

Surface tension-Surface tension of different liquids, effect of surfactants.

Flow measurement in pipes of different materials-effects of drug reducers.

Measurement of flash point, [illegible] point-effect of [illegible]

Determination of Calorific value of fuels.

Preparation of a few catalysts used in petrochemicals industry like doped silica gel, aluminas, treatment of silica gel and alumina with acids,

Characterization of Coke

Characterization of Bitumen

Characterization of petrol, kerosen, diesel, furnace oil, with respect to flash point, viscocity, surface tension, composition, distillation fractions, Hydration of olefins-styrene Dehydration of alcohols-tert butanol Sulphonation of aromatics and preparation of the sodium salt of the sulphonic acid as a detergent.

Paper-II Waste Recycling Max. Maraks : 40
Time : 3 Hrs.

Unit-I

Need for waste recycle : Limitations of raw material resources, waste elimination. 4L
conversion of waste into useful product.

Identification and qualification of industrial, domestic and agro waste. 4L
Feasibility of recycle, Separation of waste solids, liquids, gaseous.

Solid Wastes : Removal of solid contaminants from water by coagulation, sedimentation, floucculation, solid waste, disposal, incineration fuel palletization, soil conditioning. 10L

Water management : Waste water treatment. Biological physical and chemical treatments. Treatment of water and its re-use in industries, agriculture, oil refineries, thermal power station and domestic uses, Re-use of cooling water. 12L

Unit-2

Physical and Chemical Processes used for the recovery of important compounds from wastes. 16L
Activated carbon absorption, ion exchange process, evaporation, extraction, distillation, contrifugation, filtration, configuration membrane process- osmosis, reverse oxmosis, electrodialysis, prevaporation, freezing processes.

Biological processes for the treatment of waste water : Trickle filters, activated sludge process, microbial degradation. 4L

Geseous Wastes : Adsorption, catalytic/non-catalytic conversion, recovery of important gases, CO2, So2, No. etc. Electrostatis preparation, bag filters, wet/dry grid arrestors 10L

Unit-3

Characterization of wastes, their management and recovery of important compounds from the waste from the following industries 28L

Dyestuff, Fertilizers, Textile, Oil, Fats and soap, Iron and Steel plants, Tanneries, Slaughter Houses, Rubber, Sugar heavy chemicals, Fermentation, Thermal power stations, Electroplanting, Paper, Paint. 2L

Economics of recycling of waste.

Books

To be suggested

Practicals Max. Marks : 40
Time : 6 Hours

Industrial Analysis of common raw materials as per the industrial specifications, such as phenol, aniline, formaldehyde, hydrogen peroxide, acetone, epoxide olefins, oils, etc. 10 expts.

Synthesis of common industrial compounds involving two step reactions - for example 4-Bromoaniline, 3-nitroaniline, Suplhanilamide 4-Aminobenzoic acid, 4-Nitrobenzoic acid, Dihalobenzenes, Nitrohalobenzenes.

Estimation of SO2, NH3, NOx

Extimation of hardness, acidity, alkalinity and pH of water.

Estimation of BOC, COD content of effluent water from different industries.

Analysis of the solid contents from the liquid effluent from different industries, separation of the constituents, chromatographic separation TLC, paper chromatography.

Ion exchangers : Ion exchange capacity or resins, softening of hard water, separation of important metals, Fe, Ni, Cr from the effluents and their estimations.

Activated carbon-Efficiency of carbon, Adsorption isotherms, separation of some important chemicals by adsorption of carbon.

Fuel pallets from garbage and solid wastes. Calorific value.

The students are expected to collect solid and liquid wates from nearby industries and analyse with respect to constituents, recovery of important constituents and disposal methods.

Paper-II Agro-chemicals Max. Marks : 55
Time : 3 Hrs.

Unit-I

Pests and Pest control : Types of pests, Types of Chemicals used to control pests, 4L
Types of pesticides; Stomach poison, contact poisons systemic poisions, fumigants.

Insecticides : Inorganic insecticides - Arsenic insecticides. paris green, fluoro insecticides 3L

Insecticides of planto rigin - Nicotine, nornicotine, pyrethoride, roteoids, anabasin, allethrin. 4L

Chlorinated hydrocarbons - DDT, DDD, Nestran, dilan, peprthane, dimite, chlorobenzilate, sulphenex, ovotran, aramite, DFDT, SAR in the class and mode of action. 10L

BHC, chlordane, heptachlor, aldrin, dieldrin, endrin, faodrin, endosulfan, SAR in the class and mode of action. 9L

Unit-2

Organophosphorus insecticides:
Introduction, phosphoric acid derivatives-Dimercron, dichlorovos, naled, phosphinon, etc. SAR in the class. 4L

Dithiophosphonic acid derivatives - Melathion, dimethoate, thiocaron, formothion, mecarbam, etc. 6L

Thiophosphoric acid - Parathion, methyl parathion, thiophos demetron, chlorthiophos, oxydemeton etc. 4L
Pyrophosphoric acid derivatives - TEPP, sulfotepp, schradan

Other organophosphorus insecticides - Isoppenos, dichlorofon, HCN 4L

Carbamate insecticides-Carbaryl, isolan, mesurol, zectran, demetram, Pyrolan, baygon, mode of action. 6L

Unit-3

Fungicides-General introduction 1L

Inorganic fungicides - Sulphur, Lime sulphur, copper sulphate, Bordeaucx mixture, Bordeau paste, Boardeaux paint, Burgundy mixture, copper oxychloride, cuprous oxide, mercurous chloride. 4L

Organomercuric compounds - Ethyl mercuric cholide. Ceresan M-Panagen, agalol, uspulan, puratized germisan, Mode of action, agrosan GN. 2L

Dithiocarbamates - Ziram, ferbam thiram, nabam, zineb, maneb captan, hinosan, vapam, etc. Mode of action. 5L

Miscellaneous fungicides - Diphanon, dichlone, captan, polpet, difolatan, mesulfan, brestan, dodine, glyodin, methyrimol, terrazole. 3L

Herbicides - Introduction; 2, 4-D; 2,4-DB. 2,4-DES: MCPB; 2,3,5,-T, Monujron, Fenuron, TCA, paraquat. 3L

Fumigants - HCN, CS2 ethylene halides, durofume, methyl halides. 2L

Rodenticides - Zice phosphide, warfarin 3L

namaticides - DD mixture, aldicarb, fensulfothion.

Plant growth regulators; Introduction, gibberilic acids, indole acetic and butyric acids 4L

Naphathalene acetic acid, cycocil, Mode of Action.

Formulations of pesticides - Dry formulations, organnules, wettable powders, seed disinfectants, liquide formulations - Emulsions, suspensions, etc. Aerosols and sprays.

Practicals : Max. Marks : 40
Time : 6 Hrs.

Industrial Analysisof common raw materials as per the industrial specifications, such as phenol, aniline, formadchyde, hydrogen peroxide, acetone, epoxide olefins, oils, etc. 10 expts.

Synthesis of common industrial compunds involving two step reactions - for example 4-Bromoaniline, 3-nitroniline, Sulphanilamide 4-Aminobenzoic acid, 4-Nitrobenzoic acid, Dihalobenzenes, Nitrohalobensenes. 20 expts.

Isolation of nicotine from tobacco leaves/waste.

Preparation of copper sulphate, Estim ion of copper in sulphate formulations, Formulations of copper sulphate.

Estimation of arsenic in aresenic insecticides.

Isolation and estimation of acative ingradients of commerically available insecticide formulations.

The form of dusts, emulsions, sprays/

Preparation of selected pesticides formulation in Estimation of pesticide residues in food articles.

Study of degradation of pesticides in soil in the presence of sunlight and moisture, determination of pesticides contents in the soil.

Effect of plant growth regulators on the development of plants and fruits.

Industrial visits to agrochemical industry and submission of reports.

Books

1. Pesticides-Colour Publications, P.L. Bombay.
2. Elements of plant Protection -L.L. Phenson, John Wiley & Sons.
3. Insecticides : Action and Metabolism - O. Brien R.D. Academic Press, New York.
4. Fungicides in plant desease control, Y.L. Nene, Oxfordand IBH Publiching Co., New Delhi.
5. Chemistry of Pesticides, N.N. Melnikoy, Springer-Verlag, NewYork.
6. Chemistry of Insecticis and fungicis U.S. Sree Ramulu, Oxford and IBH Publishing Co., New Delhi.

Paper II Dyes Max. Marks : 55
Time : 3 Hrs.

Unit-1

Chemistry of Intermediates

Introduction to the History of Dyes. Natural to Synthetic dyes. Important Landmarks in the historical development.

Benzene intermediates - Chloronitrobenzenes, Nitroanilines, Bromonitroanilines, Nitroanisoles, Toluene and xylene Intermediates, Zylidines, Dimionbenzenes, etc.

Naphthalene intermediates - H- and J-acid R-acid, N-W-acid, Chicago acid, Schaffer R and G acid, Napthol sulponic acids, Naphthylamine sulhphonic acids.

Anthraguinone intermediates and miscellaneious intermediates.

1-Amino and 2-amino anthraquinones, Bromanine acid, Quinazirin, methyl and methylamino anthraquinones, Disperse dye intermediate, Acid-fyr intermediate.

Unit-2 :

Chemistry of Dyes

Introduction, classification of dyes on the basis of structure and the mode of application to the fibre, Colour and chemical constitution of dyes. Chemistry of the following dyes with respect to general structure features, chemistry mode of application to fibre, colour shades, synthesis of typical 4-5 dyes, uses.

Azodyes-Acid, acid mordant, direct, milling and stiblene azo dyes.

Basic dyes

Anthraquinone (vat) dyes.

Indigoid dyes

Reactive dyes

Disperse dyes

Optical Whiteness Cyanuric chloride based optical whiteners.

Unit-3

Analysis and Application of Dyes and Dye intermediate

Analysis of intermediate-different methods used in the analysis, Nitrite value determination, coupling value, titanous chloride reduction, chromatography, halogen content determination, set point, iodimetry, metal estimations Cu, Ni, Cr, etc.

Dyeing General introduction to dyeing methods. Dyeing methods for the following dyes - Direct, acid, reactive, disperse, vat, Cationic, sulphur, indigo, azoics.

Quality control and factory layout for dyestuf industry.

Effluent treatment and pollution contron in dye stuff industry.

Practicals : Max. Marks : 40
Time : 6 Hrs.

Industrial Analysis - Analysis of common raw materials as per the industrial specifications, such as phenol, aniline, formadehyde, hydrogen peroxide, acetone, epoxide olefins, oils, etc.

Synthesis of common industrial compounds involving two step reactions - for example 4-Bromoaniline, 3-nitroaniline, Sulphanilamide 4-Aminobenzoic acid, 4-Nitrobenzoic acid, Dihalobenzenes, Nitrohalobenenes.

Analysis of intermediates - Nitrite titrations, diazocoupling, titanous chloride titration, estimations of Cu, Ni, Cr, etc. TLC of intermediate paper chromatography dyes.

Dyeing - Dyening of the following dyes on cotton - Direct, aziocs, Acid on wool and silk, TPM - on silm, Vat., Reactive, Sulphur.

Evaluation of the fastness properties of dyes with respect to light washing and sublimation.

Preparation of Methyl orange, Methyl red, Orange II, Flourescein, Anthraquinone.

Books

1. LUBS Chemistry of Synthetic Dyes and Pigments, R.E. Krieger Publishing Company.
2. Chemistry of Dyes and Intermediates, Cain, Thrope and Linstead, 1960.
3. Dyeing and Chemical Technology of Textile Fibres, E.R. Trotman.
4. Development in the Chemistry and Technology of Organic Dyes, J. Griffths, Society of Chemical Industry, Blackwell Scientific Publications.
5. The Chemistry of Synthetic Dyes, K. Venkatraman, Academic Press, Vol. I-VIII.
6. The Analytical Chemistry of Synthetic Dyes, K. Benkatraman, John Wiley, New York.
7. A Laboratory Course in Dyesing,C.H. Gites, The Society of Dyes and Colouristis.
8. The Dyeing of synthetic Polymers and Acetate Fibres. D.M. Nunn, Dyers Company Publishing Trust.

9. Dyes and Their Intermediates, H.A. Abrahart, Pergaman Press.
10. An Introduction to Synthetic Dyes. D.W. Rangnekar and P.P. Singh Himalaya Publishing, Bombay.

Paper II Polymers Max. Marks : 55
Time : 3 Hrs.

Unit-1

Brief history of macromolecular science. General characteristic of polymers in comparison with common organic compounds. Nomenculature. Distinction between plastics, elastomers and fibers.

Natural polymers :

Cellulose, Silk, Gums, Rosin and shellac

Types of polymers-Thermoplastics and thermosettings,

Functionality concept.

Concept of crosslinking-Linear, branched and crosslinked polymers.

Types of polymerization - Addition, condensation, ionic, coordination, addition- polymerisation mechanism; initation, propagation and termination processes initiator, inhibitors, Mechanism of ionic polymerisation.

Methods of polymerization-Bulk, suspension emulsion, solution.

Necessity of co-polymers and co-polymerisation, Blocks and graft co-polymers.

Detailed study of the following thermosetting polymers with respect to **synthesis**, chemistry, properties and applications.

i) Phenolformaldehyde resins.
ii) Amino-resins-Urea (ormaldehyde and melamine formaldehyde resins.
iii) Polyurethanes.
iv) Epoxy resins-Grade of epoxy resins, curing process and its importance with mechanism.
v) Polycarbonates, silicones.

Elastomers-Polysoprene, polybutadine, Neosprene.

Unit-2

Detail study of the following thermoplastic polymers with respect to syntahesis, chemistry properties and applications.

Polyolefins - Polyethylenes ; HDP, LDP, LLDP, polypropylene, Ethylene-propylene copolymers.

Polyvinyl chloride-Grades of PVC, Teflon.

Polystryene-Homopolymers, Copolymers such as SBR, ABS, SAN.

Vinyl polymers - polyvinyl accetate and its modification like PAV, PVB and polyacetals.

Polyamines - Nylon-6 Nylon-66 and other Nylons.

Polythers and polysters - Terephthalates.

Celluloses : Such as esters, ethers, acetaters, butyrate, nitrate, CMC: Regenrated celluloses.

Unit-3

Molecular weigth and molecular weight distribution, Number, weight and viscocity average molecular weights of polymers, Methods of determining molecular weight, practical significance of molecular weight distribution. Size of polymers.

Introductory concepts of kinetics of polymerization and Carother's relation.

Glassy state, glass transition temperaturel TGA, Factors effecting GTT, Crystallininity in polymers.

Viscocity, solubility, optical, properties, electrical properties, thermal properties, mechanical properties of polymers.

Degration of polymers by thermal, oxidative, machanical and chemical methods.

Polymer processing - Compression moulding, casting, extrusion, fibre spinning, injection moulding, thermoforming, vulcantization of elastomers, polymer industry in India.

Practicals : Max. Marks : 40
Time : 6 Hrs.

Industrial analysis - Analysis of common raw materials as per the industrial specifications, such as phenol,aniline, formadehyde, hydrogen peroxide, acetone, epoxide olefins, oils, etc.

Synthesis of common industrial compounds involving two step reactions - for example 4-Bromoaniline, 3-nitroaniline, Sulphanilamide 4-Aminobenzoic acid, 4-nitrobenzoic acid, Dihalobenzenes, Nitrohalobenenes. 20 expts.

Determination of (i) Acid value-Rosin ester gum, Plasticizers, polyster resin, alkyl resin (ii) Iodine number - Linseed oil, castor oil (iii) Sponification value-coconut oil, polyster (iv) Melting point and softening point-Epoxy resin, ester, gum, nylon-6, (v) Viscosity-Nitrocellulose-polystryers, PV acetate (vi) Hydroxl value.

2. Preparation of representative polymers : Bulk polymerization-polysthyrene polyvinyl acetate, polyacrylamide, polyacrylic acid. Solution polyimerization; Phenol-formaldehyde, urea-formaldehyde, alkyd resin.
   Preparation and analysis of the above (viscocity,m.p.mol.wt. determination)
3. Identificationof simple,polymers by simple Physical and Chemical tests.
4. Analysis of raw materials-phenols, formaldehyde, urea malamine, epichlorohlydrin.

Books

1. Billmeyer, Test book of Polymer Science, John "Wiley & sons.
2. V.D. Deshpande, Physical Chemistry of Macromolecules, Vishal Publishing, New Delhi, 1985.
3. Polymer Science, V.R. Gowarikar, N.V. Vishvananthan and J. Sreedhan, "Wiley Esstern Ltd., 1986.

TOURISM AND TRAVEL MANAGAEMENT
(Vocational Course)
Arts Group

A student opting for the above said course will be required to take two Theory Papers each in B.A.I, B.A.II and B.A.III respectively. The allocation of marks and Scheme of examination will be as under :-

B.A.I	Name of Paper	Time	Max. Marks	
Theory Paper-I	Tourism Business	3 hrs.	35 }	
	(Group discussion		}	50
	and assignment)		15 }	
Theory Paper-II	Tourism Products	3 hrs.	35 }	
	(Group discussion		}	50
	and assignment)		15 }	
B.A.II				
Theory Paper-III	Tourism Marketing	3 hrs.	35	
Theory Paper-IV	Travel Agency Tour Business and Accommodation	3 hrs.	35	
	(Field Trips Report)		30	

B.A.III

Theory Paper-V	Emerging concepts for Effective Tourism Development	3 hrs.	35
Theory Paper-VI	Information Communication and Automation	3 hrs.	35
	(Training/Project Report)		30

The students shall be sent for field Trips and Training at the end of B.A.-I and B.A. II examination for a period of 4 weeks and 6 weeks respectively. However, the students will have to submit field trip and training/project report atleast one month before the commencement of B.A. II and B.A. III examination respectively.

Field trips and Training/Project Reports shall be evaluated by both Internal and External examiners appointed by Under graduate Board of Studies.

The students opting for this Course will be awarded B.A. degree with Tourism & Travel Management and they are eligible to seek admission in Post graduate classes just like other Arts graduates.

Note : The paper setter should set 10 questions. The examinee should be required to attempt any five questions.

Paper-V **EMERGING CONCEPTS FOR EFFECTIVE TOURISM DEVELOPMENT**

Max. Marks : 35
Time : 3 Hours

Note : The paper setter should set 10 questions. The examinee should be required to attempt any five questions.

1. Relevant concepts and Preaches for effective Tourism Development.
   - National Development Council Report on Tourism Development.
   - National Action Plan, 1992.
   - New Policies on Tourism and Civil Aviation.
   - Tourist Traffic and its Improvision.
   - Destination Development.
   - Substainable Development.
2. Man-Power Development Needs.

3. Management Strategies.
4. Tourism Policy Analysis.
5. Tourism Legislation - A Necessity.

Suggested Readings

1. National Development Council Report.
2. National Action Plan, 1992.
3. Reports of World Tourism Organisation.
4. Report-Workshop on Tourism Legislation-August 10-11, 1987 IITTM, New Delhi.
5. Report-Workshop on Tourism Legislation-February, 22-23, 1988 IITTM, New Delhi.

Paper-V INFORMATION-COMMUNICATION AUTOMATION

Max. Marks : 35
Time : 3 Hours

Introduction

Note : The paper setter should set 10 questions. The examinee should be required to attempt any five questions.

The course cover Techniques of communication. Presentation & collection information Data. It also includes Basic knowledge of computers in travel Fields. The attitude and behaviour. The Pattern W.P.T. Customer Services and their Expectation Profile of Visitors from various Destinations in part of the Study.

- Consumer Expectation and Services & Legislation.
- National Tourism Civil Aviation & Policy.
- Information Technology.
- Market Research
- Data Collection
- Consortiums of Airlines Hotel & Wholedalers.

संस्कृत (अनिवार्य)

कुल अंक : 100
समय : 3 घंटे

1. शिवराज विजय–प्रथम निःश्वास 20 अंक
   क) सप्रसंग व्याख्या (दो खण्ड) 6×2=12 अंक
   ख) लेखक, पात्र तथा पाठ्यांश से सम्बद्ध प्रश्न 8 अंक

2.	भर्तृहरि--नीतिशतक (पद्य 1 से 50 तक)	30 अंक
	क) व्याख्या	8×3=24 अंक
	ख) पाठ्यांख से सम्बद्ध एक प्रश्न	6 अंक
3.	संस्कृत साहित्य का इतिहास--अश्वघोष, कालिदास, भारति, भवभूति, शूद्रक, बाणभट्ट, जयदेव, भर्तहरि	30 अंक
4.	व्याकरण (क) कारक उपपद्ध विभक्ति सहित सामान्य परिचय एवं प्रयोग	15 अंक
	ख) अशुद्धि शोधन--कारकों के आधार पर	5 अंक

संस्कृत (ऐच्छिक)

कुल अंक : 100
समय : 3 घंटे

1.	नाटक अभिज्ञानशाकुन्तलम्	50 अंक
2.	संस्कृत साहित्य का इतिहास	25 अंक
3.	संस्कृत में निबन्ध	10 अंक
4.	व्याकरण	15 अंक

संस्कृत साहित्य का इतिहास

रामायण, महाभारत, भास, अश्वघोष, कालिदास, भारथि, माघ, श्री हर्ष, बाण, सुबन्धु, दण्डी, जयदेव, भर्तृहरि, भवभूति, कथा सरित्सागर, बृहत्कथा मंजरी, पंचतंत्र, हितोपदेश।

व्याकरण

सन्नन्त	3 अंक
नामधातु, वयङ्, काम्यच् विवण	3 अंक
तद्धित--इन्, मतुप्, वतुम, त्व, अण्	3 अंक
मुख्य समास अव्यवी भाव, तत्पुरुष, बहुब्रीहि, द्वन्द्व	6 अंक

Electronics

* The syllabus in each theory paper is divided into 5 units. Only 5 questions are to be set. One from each unit. Each question is to be provided with an alternate question also from the same unit. A student is to attempt 5 questions in all.
* Use of simple (non-programmable) calculator is permissible.
* 20% numerical problems are to be set.
* Instructions should be imparted using SI system of units. Familiarity with CGS system of the units should also be ensured.

Theory Paper	1	50 marks	3 hours.
Theory Paper	2	50 marks	3 hours.
Practical paper and project	3	50 marks	3+3 hours. (on two days)

Note on practical papers :-

* The practical examination will be held in two sessions of three hours each (first session starting in the evening of the first day and the second session in the following morning)
* Distribution of the marks :

Experiment	12 marks	Project Demonstration	12 marks
Lab. Record	7 marks	Project Report	7 marks
Viva voce	6 marks	Viva voce	6 marks

* Laboratory notebook & Project report will be assessed by both the external and internal examiners on the basis of laboratory record and Viva voce examination and practical experiment concerning the syllabus.
* Use of simple (non-programmable) calculator is permissible.

B.Sc. - III Max. Marks : 50
Time : 3 Hrs.

Unit-I Simple as possible Computer (SAP-I), Architecture Instruction Set, Programming SAP-I, Fetch cycle Execution cycle, SAP-2, Architecture, Memory reference instruction, Register instructions, JUMP & Call instructions, logic instructions.

Unit-II SAP 3 Programming model, MOV & MVT, arithmatic instructions, increments, Decrements and rotates, Logic instructions, Arithmatic and logic immediates, jump instructions, Extended register instructions, indirect instructions (STACK instructions, 8085 block diagram) instructions set of 8085 timing diagrams.

Unit-III Computer programme, flow charting, Fortran programming preleminaries reading, simple fortran programmes, constant and variables, arithmatic expressions.

Unit-IV Input-Output statements, Simple Computer programmes, Control statments, the DO Statements.

Unit-V Format specifications function and subroutines, Fortran programme examples, Additional Fortran 77, Features, Simulation of circuits using PSPICE.

Paper - II Max. Marks : 50
Time : 3 Hrs.

Unit-I Modulation and Demodulation : Principle of modulation, Amplitude modulation, percent modulation, Upper and lower side frequencies, Upper and Lower sidebands, mathematical analysis of a modulate; carrier wave, power relations in an AM wave, simple idea about different forms of amplitude modulation, Basic circuit for generation and detection of AM/FM signals.

Unit-II Basic television aspect ratio, veritcal resolution Kell-factor, Horizontal resolution and video bandwidth interlaced scanning composite video signal, video modulation and vestigial side hand transmission, Television camera tubes, The image orthicon, The Vidicon. Frequency band and resolution.

Unit-III Monochrome Television transmitter, Television receiver, Receiver sweep circuit and their synchronization. Colour Television, Fundamental concepts of a three colour systems, colour television transmitter, colour television receiver.

Unit-IV Television antennas, horizontal dipole, folded dipole, Yagianteena, Colour Television Camera, the Luminance and colour difference signals, shadow mask colour picture tube, PAL-D colour television system, block diagram of PAL-D encoder, block diagram of PAL-D colour television receiver.

Unit-V Detailed Design Principle of following :

i) Digital Frequency matter ii) Super-hatrodyne receiver using IC iii) Time base generator for C.R.O. iv) Stabilized power supply usual output 0-15 volt, 1 Amp. using IC regulators v) Digital volt meter vi) Digital Clock vii) Stereo amplifier viii) Interior with given specification.

References :

1. Digital Computer Electronics by A.P. Malvino.
2. Principle of Computers programming FORTRAN 77 for IBNPC by V. Rajaraman.
3. FORTRAN 77 by Ram Kumar
4. Monochrome and colour television by R.K. Gulati.
5. TV Engineering, by Arvind Dhake.
6. The SPICE book by Anderi Valadimirescu.
7. Semi-conductor device modelling with SPICE by P. Antogneth and G.Massobroi.
8. Digital Electronics Practice by using ICs by M.S. Anand and R.P. Jain (TMH).

Paper - III Practicals

NOTE : Five experiments are to be performed, by each student.

i) Familirazation with microprocessor kit.

ii) Study the instruction set of 8085 on microprocessor kit.

iii) Programme writing with simple arithematic operations.

iv) To study the operation of decade counter/7-segment decoder.

v) To identify and study the main parts of a monochrome TV receiver.

vi) Computer programming in FORTRAN language (using the statements) READ, WRITE, IF THEN ELSE, DO TO DO LOOPS

vii) Computer programming in FORTRAN language (using arrays and subscribed variables).

viii) Study the operation of J-K Flip Flop, D & T flip flops.

ix) To study the operation of Shift resister.

x) To design the D to A converters (Ladder type) and study the operation of A to D convertor.

xi) Circuit simulation using PSPICE.

Lists of projects :

One project based on one of the following topics :

i) Digital Frequency meter.

ii) Digital volt meter.

iii) Digital Clock.

iv) Stereo Amplifier

v) Superhetrodyne receiver.

vi) Invertor with given specifications.

vii) Stabilized power supply

viii) Digitally adjustable timer.

ix) Temprature Controller.

x) Model for Automatic traffic light.

xi) Capacitance meter with digital display.

xii) Boolean function emulator.

xiii) Microprocessor based circuits/controller.

xiv) Electronic Roulette wheel.

xv) Digital Stop Watch.

References : i) Electronic project by EFY series. (one to fourteen)

ii) Digital Electronics practice by using ICs by M.S. Anand and R.P. Jain.

B.A. III

प्रयोजनमूलक हिन्दी (Functional Hindi)

प्रश्न–पत्र 6 अंक 70

समय 3 घण्टे

फाइलिंग पद्धति और अद्यमिता

(क) फाइलीकरण : अर्थ और परिभाषा ।
फाइलीकरण : महत्व ।
आदर्श फाइलिंग के तत्व ।
फाइलों का वर्गीकरण ।
फाइलीकरण की पद्धतियां ।
फाइलों के प्रकार ।

(ख) उद्यमी की आवश्यकता।
उद्यमी का अर्थ ।
उद्यमी के कार्य ।
उद्यमी के गुण ।
उद्यमी का महत्व ।

प्रैक्टीकल :– अंक 30

विद्यार्थी वित्त मंत्रालय/बैंकिंग डिविजन

1. राष्ट्रीयकृत बैंको/निगमों/कंपनियों की कुछ बैठकों में उपस्थित होंगे ।
2. प्रेस में जाकर उसके क्रिया कलाप को देखना ।

B.A. III

प्रयोजनमूलक हिन्दी (Functional Hindi)

पेपर 5 अंक 70

समय 3 घण्टे

(क) 1. भारत में रेडियो और टी० वी० नेटवर्क का सामान्य परिचयात्मक ज्ञान
2. रेडियो तथा टी० वी० के विविध कार्यक्रम ।
3. रेडियों आलेख तथा समाचार वाचन के समय सावधानियां ।
4. संपादकीय विभाग का गठन, संपादक के गुण, समाचार से ग्रहण समाचार–लेखन, संवाददाता की विशेषताएं तथा समाचार पत्र की सम्पूर्ण प्रक्रिया [रेडियो और समाचार पत्र – साम्य–वैषम्य

(ख) 1. टंकण का सामान्य परिचय, महत्व और बढ़ती हुई मांग ।
2. स्टैनोग्राफी का परिचय, महत्व और बढ़ती हुई मांग ।
3. कंप्यूटर–विकास का सामान्य परिचय, कंप्यूटर की कार्यप्रणाली, कंप्यूटर–विकास के कुंजीपटल, फलापी, कोडीकरण, डाटा–प्रवेश, मूलभूत प्रोग्रामिंग का ज्ञान ।
4. कंप्यूटर–संचालन ।
5. दूर–संचार, कंप्यूटर तथा विधि शब्दावली ।

प्रैक्टीकल :– अंक 30

1. किसी वर्णित घटना का समाचार तैयार करना तथा कम से कम 15 समाचार बनाकर कापी तैयार करना ।
2. दस अशुद्ध प्रूफों का शोधन कर कापी में लगाना ।
3. टंकण, आशुलिपि तथा कंप्यूटर का कालेज में प्रशिक्षण ।
4. रेडिया–टी० वी० के लिए समाचार वाचन का प्रशिक्षण ।1

Functional English (Communicative English)

(Vocational Course)

There will be two papers each of 50 marks and 3 hours duration

Paper - A **Broadcasting Radio and T.V.**

Objectives: To train the students in News-Reading, Announcing, Making Commentary and Compering on Radio and T.V.

Teaching Periods	**(Per Week)**	**= 6 Period (4 hours)**
Theory	4	Periods
Practical	2	Periods

(for a batch of10 students)

Time	:	3 Hours
Mode of Examination	:	50 Max. Marks
Theory	:	40 Marks
Viva	:	10 Marks

Course Contents:

Unit-I **(30 Marks)**

1. What is News?

(Concept of News, Qualities of News; Organisation & Function of News Room; News Writing; Structure of News, Types of Leads; Use of Language, Stylebook, Sources of News)

2. News Reporting

(Types of Reporting; Mechanics and Style of Reporting; Specific Reporting; Interviews and Press Conferences).

3. Editorial Writing and Make-up (News Editing; Copy-Reading; Headlining, Display and Page Make-up; Picture Editing; Innovation, VDT.)

4. Television News

(Making of News Bulletin)

5. Radio/TV News Writing - Some Guidelines

6. Correcting Mistakes in Broadcast.
7. Difference between Radio & TV News

Note: Students will be required to attempt 5 questions with internal choice from Unit I (5 x 6 = 30 Marks)

Unit -II Essay **10 Marks**

Note : *Students will be required to write an Essay in about 300 words on a topic of current affair/general knowledge.*

Field Work:

1. Visit to Radio and T.V. Stations and exposure to different mechanism of the Radio and T.V. broadcasting.
2. Practical training in facing the camera - a) Speech, b) Facial Expressions, c) Lip & eye movement, d) Stress, Intonation & Pauses etc.
3. Participation in local functions, like tournaments, cultural programmes etc.

Books Recommended:

1. Modern Journalism and Mass Communication by Dr. Baldev Raj Gupta (Vishwa Vidyalaya Prakashan, Varanasi).
   (Chapters II, III, V & XIV for items 1, 2, 3, & 4 of Unit I)
2. Broadcast Journalism - Basic Principles by S.C. Bhatt (Har-Anand Publications), New Delhi
   (Chapter III, XVI & XIX for items 5, 6 & 7 of Unit I)

Suggested Readings:

1. Radio and T.V. Journalism by K.M. Shrivastava (Sterling Publishers Pvt. Limited, New Delhi).
2. Theory and Practice of Journalism by B.N. Ahuja (Surjeet Publications, Delhi).
3. News Reporting and Editing by K.M. Shrivastava (Sterling Publishers Pvt. Ltd., New Delhi).

Paper-B Business Communication & Writing Skills

Teaching Periods (Per Week)	:	6 Periods (4 hours)
Theory	:	6 Periods
Mode of Examination	:	50 Max. Marks
Theory	:	50 Marks

Objectives: To equip the learners with language proficiency in business/work situations in written mode.

Course Contents:

1. Business, Commercial and Official Communications = 15 marks

(e.g. letters of enquiry, reference arrangements, announcing forthcoming events, products, letters inviting tenders and quotations, complaints and answers to Complaints, apologies & thanks letters relating to placing of orders, writing circulars, memos).

Note : *There will be 2 questions with internal choice for item No. 1 carrying 8 and 7 marks respectively*

2. Interpreting Figures (Writing Stories, interpreting the statistics in diagrams, report writing, writing notices, agendas and minutes) = 8 marks
3. Precis of a passage of about 200 words. : 10 marks
4. Comprehension of a passage : 7 marks
5. Translation from Hindi to English : 10 marks

Note : *Students will be required to translate a passage of about 100 words from Hindi to English. The objective will be to test the students' skill of translating conversation in actual situations.*

Note : *For items 2, 3, 4 & 5 the students will be required to attempt one question with internal choice.*

Suggested Books

1. Thrill, J.V. and C.L. Bouce : Excellence in Business Communication, New York, Mc Graw Hill, 1986.

2. Jasmin S and S Bright : Business Letter Writing Universal New Delhi, 1984.

3. Hanner, M.S. and G.C. Wilson : Communication in Business and Professional Settings, New York : Mc Graw Hill, 1995.

4. Land, Geoffrey : Business Reading, Longman, London, 1987.

5. Stanton, FL & P Wood : Longman Commercial Communication, Longman, London, 1989.