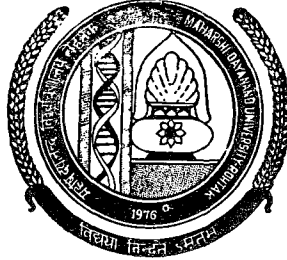


# Maharshi Dayanand University Rohtak



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

Session—2002-2003

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**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 1st 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 having 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 1st year examination of any statutory University, recognised by this University as equivalent to 1st 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 aggregate of the Senior Secondary Certificate Examination or of any equivalent examination and the minimum percentage of marks in the 1st 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

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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 English 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 1st 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 1st 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/compartments 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 including the compulsory subjects in Part-I, II & III Examination taken together shall be placed in the First Division.

- ii) those who obtain less than 60% but not less than 50% marks in all the subjects including the Compulsory subjects in Part-I, II and III examinations taken together, shall be placed in the Second Division.
- iii) those who obtain below 50% marks in all the subjects including the Compulsory subjects in Part-I, II and III examination taken together, shall be placed in the Third Division.

A student who has passed B.A./B.Sc./B.Com./B.Sc. (Home Science) Part-I and or Part-II examination under new scheme from other University, the marks obtained in B.A./B.Sc./B.Com./B.Sc. (Home Science) Part-I and/or Part-II shall be counted towards division of successful candidates at Part-III examination by increasing or decreasing the marks obtained in accordance with the maximum marks prescribed for Part-I and Part-II by the M.D. University, Rohtak.

17. A candidate while appearing in the supplementary examination or the next Annual Examination shall be required to pay examination fee as for the whole examination and shall not be eligible for a scholarship, a prize or a medal.
18. Six weeks after the termination of the examination or as soon therefor as is possible the Registrar/Controller of Examinations shall publish a list of successful candidates. Each successful candidate of B.A./B.Sc./B.Com./B.Sc. (Home Science) Part-III examination shall be awarded a degree mentioning the division.
19. A candidate :-
  - i) who has passed B.A./B.Sc. Examination of this University;
  - ii) who resides within the territorial jurisdiction of this University and has passed an examination declared equivalent to the B.A./B.Sc. examination of this University may appear in a subsequent B.A./B.Sc. examination in additional subjects prescribed for the examination except the subject in which he/she has already passed the examination.

- iii) A candidate appearing under this clause shall sit for Part-III in immediate supplementary examination and for Part-I and Part-II in annual examination. For Part-I and Part-II one examination form and fee as prescribed shall be charged.

In Case, he/she fails to pass any of the part(s) in next annual examination, he/she shall appear in all the parts denovo.

Provided that if the candidate is appearing in the subject(s) involving practical, he/she shall study in a college admitted to the privileges of this University for Part-I, II & III classes and submit a certificate from the Principal for having completed the prescribed course of lectures, one month before the commencement of examination.

However, a candidate who has passed B.Sc. examination may appear in subsequent exam. In additional subject of Hindi (Elective) of B.A. (Pass Course) and a candidate who has passed B.Com. examination may appear in an additional subject of Hindi (Elective) and Mathematics in subsequent examinations of B.A. (Pass Course).

B.Com. (Vocational) students may appear and pass in all papers of B.Com. I, II & III as additional paper(s) while doing B.Com. (Vocational) and after completion of B.Com (Vocational) in the manner given above.

The minimum marks required to pass in each subject shall be 35% in theory and practical separately. The candidate may be allowed to appear in additional qualifying subject(s) simultaneously with B.A./B.Sc./B.Com. (Hons) Part-II & III examinations. However, the marks obtained in additional subject(s) shall not be counted towards division of the candidates.

20. i) A person who has qualified for the award of B.A./B.Sc./B.Com./B.Sc. (Home Science) (Pass and Hons.) degree from M.D. University, Rohtak may be allowed to reappear as an ex-student in subject(s) in which he/she appeared earlier, with a view to improve his/her previous

performance. He/She may re-appear in one or more paper(s) of Part-III in the immediate supplementary examination of his/her passing the 3rd year examination and thereafter in the next annual examination for Part-I & Part-II examination. Likewise a candidate passing his/her Part-III in the supplementary examination shall appear for improvement of Part-I and/or Part-II in April/May and Part-III in September of the following calendar year. However, if a candidate does not want to improve his/her performance in Part-I and/or Part-II and wants to appear in Part-III only and vice-versa, he/she may be permitted subject to the condition that he/she will have to furnish an undertaking alongwith the examination form that he/she is not interested to improve his/her performance in Part-I or Part-II of Part-III as the case may be. The candidate will have to deposit fee and form for each examination separately.

- ii) The higher score in the paper(s)/subjects in which he/she reappears for improvement will be taken into account towards the final result and the marks already obtained by the candidate in the paper/subject(s) in which he/she has not opted to improve his/her result shall be carried forward.

In case the candidate does not improve his/her result/score his/her result shall be declared as Previous Result Stands.

21.1 In order to provide opportunity for women candidates who have already passed B.A. examination of this University with Home Science as a subject to join the M.Sc. (Home Science) Course an examination of B.Sc. standard in the following subjects shall ordinarily be held once a year in the month of April on a date fixed by the Vice-Chancellor:-

- a) Nutrition and Foods.
- b) Textiles and Clothing.
- c) Art and Everyday Life.
- d) Home-Management.

- e) Biology.
  - f) Psychology and Human Relationship
  - g) Household Chemistry
  - h) Sociology
  - i) Principles of Economics
2. Every candidate for this examination shall be required to produce the following certificates signed by the Head of a College recognised for B.Sc. Home Science course :-
    - a) of having attended not less than 75% of the lectures delivered to the class in theory and practical of each subject during the academic year preceding the exam.
    - b) of having completed the sessional work in each subject prescribed in Clause-21(1).
  3. The last date for receipt of admission forms and fees shall be the same as for the B.Sc. Home-Science examination. The amount of admission fee to be paid by a candidate and additional fee shall be as prescribed from time to time per practical subject. Every candidate shall be examined according to the syllabus prescribed for these subjects by the Academic Council.
  4. The Minimum number of marks required to pass the examination shall be 40% in each theory and practical examination separately.
  5. Candidates who obtained pass marks in all the subjects shall be admitted to the Degree of B.Sc. Home Science and shall be eligible to join the M.Sc. Home Science Course.
22. Notwithstanding the integrated nature of the B.A./B.Sc./B.Com./B.Sc./ (Home Science) Course which is spread over more than one academic year, the Ordinance in force at the time a student joins course shall hold good only for the examination (s) held during or at the end of the academic year and nothing in these Ordinances shall be deemed to debar the University from amending the Ordinances subsequently and the amended Ordinances, if any, shall apply to all students whether old or new.

**SCHEME OF EXAMINATION**  
**B.A. Part-I, II, III**

**Compulsory Subjects**

1. English Two papers of 50 marks each in Part-I, II & III.
2. Hindi/Punjabi/Sanskrit/Urdu

*Note :*

1. Every Candidate must offer Hindi either as a Compulsory subject or as an Elective subject.
2. Language offered as compulsory subject shall not be offered as an Elective subject.
3. 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 for Hindi/Punjabi/Sanskrit/Urdu.

**Elective Subjects**

Any two of the following subjects, in each part, subject to restrictions as given in the Ordinance :-

1. Hindi or Punjabi or Urdu  
or Sanskrit or French.

2. Ancient Indian  
History, Culture  
and Archaeology

3. Economics

- \*4. Education

5. History

- \*6. Linguistics

7. Pol. Science

8. Philosophy

9. Public Administration

10. Sociology

11. Mathematics

12. Art

OR

One paper of 100 marks each  
except for French where there will  
be one paper of 75 marks and one  
Practical.  
(Dictation and Oral of 25 marks).

Two papers of 50 marks each.

One paper of 30 marks and three  
Practicals of 20 marks each and 10  
marks for sessional work.

History of Art One paper of 100 marks.

OR

- CoClay Modelling One paper of 30 marks and two practicals of 30 marks each and 10 marks for sessional work.
- B.Sc. Part-I
- English
13. Applied Art One paper of 25 marks & three practicals of 20 marks each & 15 marks for sessional work.
- Hindi/Punjabi/Sanskrit/Urd
- Note: A candidate coming from any of the above areas should  
if he/she did not pass in any of the above subjects, he/she should  
Examination waiting to be re-examined in any of the  
compulsory Hindi/Punjabi/Sanskrit/Urd.
14. Music (Vocal) One paper of 40 marks and one practical of 60 marks.
15. Music (Instrumental) One paper of 40 marks and one practical of 60 marks.
- Additional English which shall carry the same marks as  
for Hindi/Punjabi/Sanskrit/Urd.
- OR
- Music (Tabla) One paper of 40 marks and one practical of 60 marks.
16. Indian Classical Dance One paper of 40 marks and practical of 60 marks.
17. Geography Two papers of 70 marks each and one practical of 30 marks in Part-I, Two Theory papers of 60 and 20 marks and one practical of 20 marks in Part-II and One paper of 60 marks & one practical of 40 marks in Part-III.
18. Psychology Two papers of 70 marks each and one practical of 30 marks.
19. Defence Studies Two papers of 70 marks each and one practical of 30 marks.
20. Home Science One paper of 60 marks and one practical of 40 marks.
21. Statistics Two papers of 35 marks each and one practical of 30 marks.
22. Computer Applications Two papers of 35 marks each (Vocational Course) and one practical of 30 marks.
23. Communicative English Two papers of 50 marks each. (Vocational Course)
24. Health and Physical One paper of 60 marks and one practical of 40 marks. Educations
25. Functional Hindi Two papers of 100 marks each. (Vocational Course)

Note : 1. The instructions are not being imparted in any college.  
2. The following combination of the elective subjects shall not be allowed:

- a) i) History and Ancient Indian History, Culture & Archaeology.
- ii) Education and Mathematics.
- iii) Clay Modelling and Psychology.
- iv) Linguistics and Indian Classical Dance.
- v) Defence Studies and Music (Instrumental (Tabla).
- b) A candidate shall :-
  - i) Offer Defence Studies if he is regular student.
  - ii) Computer Applications only if he offers it alongwith Mathematics/Statistics.

A candidate shall offer the elective subjects mentioned above, subject to the following :-

- c) A candidate may offer Psychology, Home Science and / or Geography, if he/she produces a certificate from the Head of Institution recognised to teach this/these subjects or an Institution approved for this purpose by the Board of Studies concerned, to the effect that he/she has completed the course prescribed for practical work in these subjects.

**Exception :** A candidate who has obtained :-

- i) Two Year Home-Science Diploma or One Year Teachers Training Diploma from the Institute of Home Economics New Delhi.
- OR
- ii) Home-Science Diploma (2 Year Course) from Lady Irwin Collège New Delhi.
- May be taken as having competed the prescribed course in Home-Science.

Note : The Syllabus of Applied Art is the same as that of Commercial Art; Painting & Designing under the scheme of Restructured Course.

- |               |   |
|---------------|---|
| 1. Mathematic | Two papers of 50 marks each.  |
| 2. Art        | One paper of 30 marks (Theory) & Practical of 20 marks (a short 1 hour 30 min. sessional work). |
| OR            |   |



**SCHEME OF EXAMINATION**

**B.Sc. Part-I, II, III**

**Compulsory Subjects**

**B.Sc. Part-I**

**English**

One Paper of 50 marks

**B.Sc. Part-II**

**Hindi/Punjabi/Sanskrit/Urdu** One Paper of 50 marks

*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.*

**Elective Subjects**

Any three of the following subjects in each part, subject to restriction given in the Ordinance :-

1. Physics Two papers of 55 marks each and one practical of 40 marks.
2. Chemistry Three papers of 35 marks each and one practical of 45 marks.
3. Botany Two papers of 55 marks each and one practical of 40 marks.
4. Zoology Two papers of 55 marks each and one practical of 40 marks.
5. Mathematics Two papers of 75 marks.
6. Statistics Two papers of 50 marks each and one practical of 50 marks.
7. Geology Two papers of 45 marks each and one practical of 60 marks.
8. Home Science One Paper of 100 marks and one practical paper of 50 marks.
9. Geography One paper of 100 marks and one practical of 50 marks, in Part-I, two papers of 90&30 marks and one practical of 30 marks in Part-II, and in Part-III two papers of 60 and 30 marks and one practical of 60 marks.
10. Anthropology Two papers of 50 marks each and one practical of 50 marks.

11. Bio-Chemistry  
 12. Human Anatomy  
 13. Physiology  
 14. Micro Biology
- The Scheme of Papers will be notified later if required.
- 20 marks

A candidate for B.Sc. Part-I examination shall not offer any subject (except Geology, Geography, Home Science and Statistics or a subject which is not included in the Scheme of Examination for the +2 stage of the Sr. Secondary Certificate Examination) unless he offered the corresponding subject in the lower examination.

Provided that :-

- A candidate who did not take up Physiology in the XII class of Sr. Secondary Certificate Examination may if he took up Biology, offer Physiology for B.Sc. Examination.
- A candidate who took up Agriculture as one of his Elective group subjects for XII class of Sr. Secondary Certificate Examination may offer Zoology or Botany or both for the B.Sc., Examination.
- A candidate who took up Biology or Physiology as one of his Elective Group subjects for XII class of Sr. Secondary Examination may offer Zoology / Botany / Physiology for B.Sc. Examination.

The Following combination of subjects at B.Sc. Part-I, II & III be allowed:-

- Computer Science/Computer Application with any two of the following subjects :-

- |                |                |              |
|----------------|----------------|--------------|
| i) Mathematics | ii) Statistics | iii) Physics |
| iv) Chemistry  | v) Botany      | vi) Zoology  |

Subject to the condition that Botany and Zoology should be offered together. Those who opt above combination must had studied Mathematics at 10+2 level.

- Electronics alongwith Physics and any one of the following subjects :-

- Computer Science/Computer Application
  - Mathematics
  - Chemistry
  - Statistics
- Students should be asked to write dialogues relating to the situations.

Subject to the condition that the students opting for above combination must have studies Mathematics at 10+2 level.

Students offering Industrial Chemistry as an elective subject in B.Sc. Pass Course should be required to offer Chemistry and Mathematics as other two subjects, besides offering English (Compulsory) in B.Sc. Part-I and Hindi/Punjabi/Sanskrit/Urdu (Compulsory) in B.Sc. Part-II.

Students can offer Computer Science as an optional subject alongwith Industrial Chemistry subjects to the availability of the facilities in the concerned institutes.

**SCHEME OF EXAMINATION FOR B.A. PARTS-I, II, III  
(General) of Restructuring Courses  
(Under the U.G.C. Scheme)  
for Students in Colleges**

Candidates offering a restructured course, shall be required to take up combination of traditional and compulsory subjects in each of the Part-I, II and III as mention below against each course; subject to the restriction given in the Ordinance :-

Sr. No.	Name of the Restructured Course	Combination of Traditional Subjects (any two of the following)	Compulsory Subjects
1	2	3	4
1.	Office Management	English or Hindi, Commerce, Economics, Political Sc., History, Sociology, Geography, Public Administration.	a) If a candidate Offers English as an Elective subject, he will take up Hindi as compulsory in Part-I, II of 100 marks each. If he takes Hindi as elective, he will take English, as compulsory in Part-I, and II of 100 marks each.

- |                   |  |   |
|-------------------|--|---|
| 11. Bio-Chemistry |  | b) If a candidate does not take English/Hindi as Elective then he will have one paper of English of 100 marks in Part-I and one paper of Hindi of 100 marks in Part-II. |
| 12. Human Anatomy | The Scheme of Papers will be of the order if required. |   |
| 13. Physiology    |  |   |
| 14. Micro Biology |  |   |

A candidate for B.Sc. Part-I examination will have one subject (except Geology, Geography, Home Science, Statistics or a subject which is not included in the examination for the 12 stage of the Sr. Secondary Examination) unless he offered the corresponding subject of lower examination

Provided that :-

2. A candidate who did not take up Physiology in the XII class or Sr. Secondary Certificate Examination may take up Biology, **Archaeology, English or Hindi or Museum and Sanskrit, History, do Tourism, Pol. (Sc), Sociology, Geography, Economics** of his Elective for Sr. Secondary Certificate Examination.

3. **Commercial Art, Designing & Painting** English or Hindi or Sanskrit or Punjabi/ Urdu, History or Economics, Commerce, Pol. Sc., Sociology, Music or Dance, Psychology.

4. **Rural Industrialisation** English or Hindi or Economics, Commerce, Public Administration, (ii) Physics

- (i) Mathematics, (iii) Physics  
 (iv) Chemistry, (v) Pol., Sc., (vi) Zoology

5. **Local Self Government** English or Hindi, do  
 Pol. Sc., Economics, History, Sociology, Geography, Public Administration.

2. **Electronics** alongwith Physics and any one of the following subjects :-

- (i) Computer Science/Computer Application  
 (ii) Mathematics  
 (iii) Chemistry  
 (iv) Statistics

6. **Marketing** English or Hindi, -do-  
 Economics, Commerce, Public

	Adm., Pol. Sc., Sociology, History, Geography.	
7. Labour Welfare	English or Hindi, Economics, Pol. Sc., Sociology, Pub. Adm., Commerce, History, Psychology.	-do-
8. Fruit Preservation Applied Nutrition Bakery, Tailoring and Hoisry	Home Science and any one of the following : English/ Hindi, History, Commerce, Economics, Pol. Sc., Chemistry and Music (Instrumental and Vocal)	-do-
9. Insurance and Acturial Science.	Commerce, Mathematics/ Economics	English of 100 marks in Part-I and Hindi of 100 marks in Part-II.

- Note :*
1. In addition to the above combination the candidate shall be required to offer a compulsory subject of Hindi/English as per Scheme of Examination.
  2. The Syllabus of English elective if any for the students of Restructured course will be the same as for English compulsory for all corresponding class of B.A.
  3. A candidate coming from a Non-Hindi speaking area shall, if he/she did not offer Hindi in the Examination qualifying for admission, offer in lieu of compulsory Hindi, the subject of Additional English which shall carry the same marks as for Hindi.

**SCHEME OF EXAMINATION FOR B.Sc. PARTS-I, II, III  
OF RESTRUCTURING COURSE  
(UNDER THE U.G.C.  
SCHEME)  
For Students in Colleges**

A candidate shall be required to offer English compulsory in B.Sc. Part-I, Hindi compulsory in B.Sc. Part-II and any one of the following subjects alongwith two subjects mentioned in the Scheme of Examinations or traditional subjects (subjects to restrictions given in the Ordinance) in each Part-I, II and III.

1. Electronics
2. Computer Science
3. Micro-Biology
4. Plant and Crop Genetics
5. Fish and Fisheries
6. Pest control
7. Horticulture and Vegetable Cultivation
8. Pharmacy
9. Industrial Chemistry
10. Analytical Methods
11. Agricultural Chemicals and Fertilizers
12. Soils and Soils Conservation
13. Animal Husbandary and Poultry
14. Textile Chemistry
15. Farm Management

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

**ENGLISH (Compulsory)**

Paper-A

Max. Marks : 50

Time : 3 Hours.

**SCHEME OF EXAMINATION**

- Test Books Prescribed : A. Vision in Verse, ed. S.P.S. Dahiya (Delhi : OUP, 1998).
- B. Five One Act Plays. ed. Dr. Satish Gupta (Karnal : Natraj Publications, 1998).
- C. Wisdom : A Collection of Essays ed. Dr. Prem Vasudeva and Dr. Sushma Arya.

**Outlines of the Question paper**

- Question-I** It will have three parts, based on (A) above. Part (i) will be explanation with reference to context with internal choice, carrying four marks. Part (ii) will be a long-answer question of app. 200 words with internal choice carrying five marks. Part (iii) will have 3 sub-parts, each containing a short-answer question (2-3 sentences) with internal choice, each carrying 2 marks. Hence, part (iii) will carry 6 marks.
- Question-II** It will have three parts, based on (B) above. All the three parts will be on the lines of question I.
- Question-III** It will have three parts, based on (C) above. All the three parts will be on the lines of question I.
- Question-IV** It will be based on the usage of words/phrases/idioms from the prescribed texts. Students will be required to make 5 sentences from the given 10 expressions carrying one mark each.

**Questionwise distribution of marks :**

Question-I	15
Question-II	15
Question-III	15
Question-IV	<u>05</u>
	<u>50</u>

**Paper-B**

Max. Marks : 50

SCHEME OF EXAMINATION FOR B.Sc. (H) Time : 3 Hours.

**SCHEME OF EXAMINATION**

Test Books Prescribed UNDER AHP 10  
 SCHEME  
 B. in C  
 A: Seven Short Stories ed. Sushil Kansal  
 A: Textbook of English Grammar and Composition ed. R.S. Malik

**Outlines of the Question paper**

**Question-I** It will be based on text A above and will have three parts.

Part (i) will be comprehension with internal choice carrying 4 marks.

Part (ii) will be long-answer question of above 200 words with internal choice. 5 marks.

Part (iii) will have 3 sub-parts each having short-answer question (2-3 sentences) with internal choice, each carrying 2 marks. Total : 6 marks

**Question-II** It will have three parts of 5 marks each based on grammar in text B.

**Question-III** Unseen comprehension passage with internal choice carrying 6 marks.

**Question-IV** Letter writing with internal choice. 6 marks.

**Question-V** Translation of a given passage of about 150 words from Hindi to English 8 marks.

*Note : (Foreign students whose mother tongue is not any of the Modern Indian Languages will be required to write a paragraph of about 150 words in lieu of translation).*

**Questionwise distribution of marks**

**Question-I** 15

**Question-II** 15

**Question-III** 06

**Question-IV** 06

**Question-V** 08

50



Scouts Program **ADDITIONAL ENGLISH**

**One Paper** Max. Marks 100

Time : 3 Hours.

**A. Part-I Text** 60 Marks

The candidates will be required to study the following test :

Following Essays from English Essayists Ed. 20 Marks

Susanta K. Sinha (O.U.P. 1978).

1. A.C. Benson The Art of the Essayist
2. Francis Bacon Of Studies
3. Joseph Addison Sir Roger at Church
4. Richard Steel The Spectator Club
5. Charles Lamb The Two Races of Man
6. William Hazlitt On Familiar Style
7. R.L. Stevenson Walking Tours
8. E.V. Lucas A Funeral
9. Hillaire Belloc In Praise of Ignorance

II Fragrance (A Poetry Anthology) ed. K. 20 Marks

Sreenivasan (O.U.P) excluding the following

poems.

- i) Ode to a Skylark by R.B. Shelley
- ii) Ode on a Grecian Urn by John Keats
- iii) A Prayer for my Daughter by W.B. Yeats

III Lord of the Flies by Williams Golding 20 Marks

The following types of questions will be asked :

- Q.1 Explanation with reference to the context 5x2=10 Marks  
from I and II above.
- Q.2 One general essay type question with internal choice on I above. 15 Marks
- Q.3 One question with internal choice on theme argument, summary, development of thought, incident, etc. on II above. 15 Marks
- Q.4 One general essay type question with internal choice requiring a first hand study of the prescribed Novel at III above. 20 Marks

**B. Part-B General 40 Marks**

1. Essay (about 400 words on any one of the four/five given topics which may be of reflective, descriptive and / or literary type. 20 Marks
2. Precis : Reducing a given passage of about 275 words to about one third of its length (in the candidate's own words) and giving it a suitable heading. 20 Marks

**PUNJABI (COMPULSORY)**

**Outlines of Test**

**One Paper**

Max. Marks : 100

Time : 3 Hours

1. A Selection of Punjabi Poetry from (1700-1850) 40 Marks
2. A Book of Short Stories by Single Author. 20 Marks
3. Essay 20 Marks
4. Applied Grammar 20 Marks

(Pair of words and one words substitution).

**Syllabus and Courses of Reading**

1. Kav Rang (Ed. Diwan Singh) Amritsar, Guru Nanak Dev University, 1988.

*Note : Only the following seven Poets to be studied :-*

Bulleh Shah, Hasham (Sufi Poet), Varis Shah, Kadar Yaar, Shah Muhammad Naajabat, Peer Muhammad.

2. Dvadshi, Kulwant Singh Virk, Delhi, Arsee Publishers.

Note : The Syllabi is common for B.Sc.-II Punjabi Compulsory.

### PUNJABI (Elective).

One Paper

Max. Marks : 100

Time : 3 Hours

1. A Selection of Punjabi Poetry from 1700-1850. 20 Marks
2. History of Punjabi Literature 1700-1850. 20 Marks
3. Collections of Shrot Stories Single Author 20 Marks
4. Chhand : Dohra, Sortha, Korra, Sirkhandi, Baint, Sawayia, Kabit, Chaupai, Deodh. 10 Marks
5. Alankar : Upma, Rupak, Anthakathni, Drishtant : Anupras; Virodh, Vakrokti, Pradhokti Lesh, Lokokti. 10 Marks
6. Applied Grammar : (Pair of words and one word substitution) 10 Marks
7. Literary Terminology from English to Punjabi 200 words. 10 Marks

### Syllabus and Courses of Reading

1. Kav-Tarang, Kurukshetra University Publication.
2. Punjabi Sahit Da Itihas, Dr. R.S. Jaggi, Patiala, Punjabi University.
3. Katha Yatra-Kurukshetra University Publication.
4. Naveen Punjabi Pingal, Dr. Kartar Singh Suri, Ludhiana, Lahore Book Shop.
5. Literary Terminology : From English to Punjabi :-

1. Abstract

ਸੁਖਮ

2. Absurd

ਅਸੰਗਤ

3. Accent

ਸੁਰਦਬਾ, ਲਹਿਜਾ

- |                      |                    |
|----------------------|--------------------|
| 4. Actor             | ਅਦਾਕਾਰ             |
| 5. Adoption          | ਅਪਨਾਉਣਾ            |
| 6. Adaptation        | ਅਨੁਕੂਲਤਾ, ਰੁਪਾ ਤਰਨ |
| 7. Aestheticism      | ਸੁੱਹਜ              |
| 8. Aestheticism      | ਸੁਹਜਵਾਦ            |
| 9. Analysis          | ਵਿਸ਼ਲੇਸ਼ਨ          |
| 10. Annotation       | ਟੀਕਾ               |
| 11. Anthologist      | ਸੰਗ੍ਰਹਿਕਰਤਾ        |
| 12. Anthoioy         | ਸੰਗ੍ਰਹਿ            |
| 13. Aptitude         | ਰੁਚੀ               |
| 14. Architect        | ਸ਼ਿਲਪਕਾਰ           |
| 15. Artistically     | ਕਲਾ ਪੱਖ ਤੋਂ        |
| 16. Atheism          | ਨਾਸਤਿਕਤਾ           |
| 17. Assonance        | ਦੁੱਦ ਸਮਾਨਤਾ        |
| 18. Auditorium       | ਸਰੋਤਾ ਭਵਨ          |
| 19. Autobiography    | ਸਵਜੀਵਨੀ            |
| 20. Ballad           | ਗਾਥਾ               |
| 21. Bibliography     | ਪੁਸਤਕ-ਸੂਚੀ         |
| 22. Biography        | ਜੀਵਨੀ              |
| 23. Blank verse      | ਮੁਕਤ-ਕਾਵਿ          |
| 24. Brevity          | ਸੰਖੇਪਤਾ            |
| 25. Brochure         | ਪੁਸਤਿਕਾ            |
| 26. Catharsis        | ਭਾਵ ਵਿਵੇਚਨ         |
| 27. Characterisation | ਪਾਤਰਚਿਤਰਨ          |
| 28. Chorus           | ਸੰਗੀਤ ਮੰਡਲੀ        |

Note: Only the following, at an Poets to be studied.

29. Chronology	ਕਾਲ ਕ੍ਰਮ
30. Clarification	ਸਪਸ਼ਟੀਕਰਨ
31. Climax	ਸਿਖਰ
32. Comedy	ਸੁਖਾਂਤ
33. Commentary	ਭਾਸ਼
34. Communism	ਸਾਮਵਾਦ
35. Conception	ਸੰਕਲਪ
36. Consonant	ਵਿਅੰਜਨ
37. Contemporary	ਸਮਕਾਲੀ
38. Content	ਵਸਤੂ
39. Criterion	ਕਮਸੂਚੀ
40. Critic	ਆਲੋਚਕ
41. Critical	ਆਲੋਚਨਾਤਮਕ
42. Cnicism	ਸਨਕੀ ਹੋਣਾ
48. Conflict	ਦਵੰਦ
44. Definition	ਪਰਿਭਾਸ਼ਾ
45. Dialect	ਉਪ ਭਾਸ਼ਾ
46. Dialogue	ਵਾਰਤਾਲਾਪ
47. Director	ਨਿਰਦੇਸ਼ਕ
48. Drama	ਨਾਟਕ
49. Dramatist	ਨਾਟਕਕਾਰ
50. Duet Song	ਦੁਗਾਨਾ
51. Ego	ਸਉਮੈਂ
52. Elegy	ਮੌਤ ਗੀਤ
53. Element	ਤੱਤ

54. Eloquence	ਸੁਭਾਵਨ
55. Emotional	ਜਜਬਾਤੀ
56. Epic	ਮਹਾਕਾਵਿ
57. Essay	ਨਿਬੰਧ
58. Etymology	ਨਿਰੁਕਤੀ
59. Example	ਮਿਸਾਲ
60. Existentialism	ਹੋਂਦਵਾਦ
61. Expression	ਪਗਟਾ
62. Expressionism	ਆਵਿਅੰਜਨ
63. Facility	ਸਹੂਲਤ
64. Fantasy	ਕਲਪਨਾ
65. Fatalism	ਭਰੋਸਾਵਾਦ
66. Farce	ਸ਼ਾਂਗ
67. Feudalism	ਭੂਮਵਾਦ
68. Fiction	ਗਲਪ
69. Figure of Speech	ਅਲੰਕਾਰ
70. Folk Lore	ਲੋਕਯਾਨ
71. Folk Song	ਲੋਕਗੀਤ
72. Free Verse	ਮੁਕਤ ਕਾਵਿ
73. Form	ਰੂਪ
74. Genius	ਪ੍ਰਤਿਭਾਸ਼ੀਲ
75. Genealogy	ਵੰਸ਼ਾਵਲੀ
76. Glossary	ਸ਼ਬਦ ਸੂਚੀ
77. Hereditary	ਪਿਤਾ ਪੁਰਖੀ
78. Histrionics	ਸਵਾਂਗਕਲਾ

79. Humanism	ਮਾਨਵ ਵਾਦ
80. Idea	ਵਿਚਾਰ
81. Idealism	ਆਦਰਸਵਾਦ
82. Ideology	ਵਿਚਾਰਧਾਰਾ
83. Illusion	ਭਰਮ
84. Imagery	ਬਿੰਬਾਵਲੀ
85. Imagination	ਕਲਪਨਾ
86. Imitation	ਨਕਲ
87. Impressionism	ਪ੍ਰਭਾਵਵਾਦ
88. Impulse	ਮਨੋਤਰੰਗ
89. Individual	ਵਿਅਕਤੀ
90. Individualism	ਵਿਅਕਤੀਵਾਦ
91. Inferiority Complex	ਹੀਣਤਾ ਭਾਵ
92. Instinct	ਪ੍ਰਵਿਰਤੀ
93. Journalism	ਪੱਤਰਕਾਰੀ
94. Legend	ਦੰਤ ਕਥਾ
95. Liberalism	ਉਦਾਰਵਾਦ
96. Linguistic Continuity	ਭਾਸ਼ਾ ਦੀ ਅਖੰਡਤਾ
97. Linguistics	ਭਾਸ਼ਾ ਵਿਗਿਆਨ
98. Literal	ਸ਼ਾਬਦਿਕ
99. Literature	ਸਾਹਿਤ
100. Lyrical Poerty	ਸੋਰਦੀ ਕਾਵੀ
101. Morphology	ਰੂਪ ਵਿਗਿਆਨ
102. Maxim	ਕਹਾਵਤ
103. Melodious	ਮਧੁਰ

104. Metaphor	ਰੂਪਕ
105. Metaphysical	ਪ੍ਰਾਭੋਤਿਕ
106. Meter	ਛੰਦ
107. Modernity	ਆਧੁਨਿਕਤਾ
108. Model	ਆਧੁਨਿਕਤਾਵਾਦ
109. Monologue	ਇਕਵਰਨੀ
110. Mystical	ਰਹਸਮਈ
111. Mysticism	ਰਹਸਵਾਦ
112. Mythology	ਮਿਥਿਹਾਸ
113. Nationalism	ਰਾਸ਼ਟਰਵਾਦ
114. Naturalism	ਪ੍ਰਾਕਿਤੀਵਾਦ
115. Note	ਟਿਪਨੀ
116. Novelist	ਨਾਟਕਕਾਰ
117. Novelette	ਛੋਟਾ ਨਾਵਲ
118. Obsolete	ਅਪ੍ਰਗਲਿੰਤ
119. Obscence	ਅਸਲੀਲ
120. Opera	ਸੰਗੀਤ ਨਾਟਕ
121. Optimist	ਆਸ਼ਵਾਦੀ
122. Originality	ਮੌਲਿਕਤਾ
123. Orthodox	ਕੱਟੜ ਪੰਥੀ
124. Paradox	ਵਿਰੋਧਾਭਾਸ
125. Paragraph	ਪੈਰਾ
126. Parody	ਨਕਲ, ਵਿਅੰਗਕਾਵਿ
127. Pathetic Fallacy	ਭਾਵ ਭਰਮ
128. Pathos	ਕਰੁਨਾ ਰਸ



129. Personality	ਵਿਅਕਤਿਤਵ
130. Personification	ਸੰਮੂਰਤੀਕਰਨ
131. Pessimist	ਨਿਰਾਸਵਾਦੀ
132. Philologist	ਭਾਸ਼ਾ ਸ਼ਾਸਤਰੀ
133. Phoneme	ਧੁਨੀ ਵਿਰਾਮ
134. Phonetic Law	ਧੁਨੀ ਨਿਯਮ
135. Phonology	ਧੁਨੀ ਵਿਗਿਆਨ
136. Playwright	ਨਾਟਕਕਾਰ
137. Poetical insight	ਕਾਵਿਕ ਸੂਝ
138. Poetical Effect	ਕਾਵਿਕ ਪ੍ਰਭਾਵ
139. Polyglot	ਬਹੁਭਾਸ਼ੀ
140. Suffix	ਪਿਛੇਤਰ
141. Prefix	ਅਗੇਤਰ
142. Progressive	ਪ੍ਰਗਤੀਸ਼ੀਲ
143. Prose	ਵਾਰਤਕ
144. Producer	ਨਿਰਮਾਤਾ
145. Prosody	ਪਿੰਗਲ
146. Production	ਯੋਜਕਾਰੀ ਪੈਦਾਵਾਰ
147. Psycho-analysis	ਮਨੋਵਿਜਲੇਸ਼ਨ
148. Realism	ਯਥਾਰਥਵਾਦ
149. Rhetorics	ਅਲੰਕਾਰ ਸ਼ਾਸਤਰ
150. Rhyme	ਬਾਲਗੀਤ
151. Rhythm	ਲੈਅ
152. Romanticism	ਰੋਮਾਂਸਵਾਦ
153. Satire	ਵਿਅੰਗ

154. Secreticism	ਸੰਕਾਵਾਦ
155. Script	ਲਿਪੀ
156. Secularism	ਧਰਮ ਨਿਰਪੇਖਤਾ
157. Semantics	ਅਰਥ ਵਿਗਿਆਨ
158. Sansibility	ਸੰਵੇਦਨਾ
159. Sansitivity	ਸੰਵੇਦਨਸ਼ੀਲਤਾ
160. Simile	ਉਪਮਾ
161. Size	ਆਕਾਰ
162. Socialism	ਸਮਾਜਵਾਦ
163. Soliloquy	ਮਨੋਕਥਨੀ
164. Spiritualism	ਅਧਿਆਤਮਵਾਦ
165. Stage	ਰੰਗ-ਮੰਚ
166. Steam of Consciousness	ਚੇਤਨਾ ਪ੍ਰਵਾਹ
167. Structure	ਸੰਰਚਨਾ, ਬਨਤਰ
168. Style	ਸ਼ੈਲੀ
169. Sublime	ਉੱਚਾਤ
170. Syllable	ਅੱਖਰ
171. Symbolism	ਪ੍ਰਤੀਕਵਾਦ
172. Synopsis	ਰੂਪ-ਰੇਖਾ
173. Syntax	ਵਾਕ ਰਚਨਾ ਵਾਕ ਵਿਚਾਰ, ਵਾਕ ਵਿਗਿਆਨ
174. Tactile Image	ਸਪਰਸ਼ ਬਿੰਬ
175. Synthesis	ਸੰਸਲੇਸ਼ਨ
176. Technique	ਵਿਧੀ
177. Terminology	ਪਰਿਭਾਸ਼ਕ-ਸੁਬਦਾਵਲੀ
178. Tradition	ਧਰੰਪਰਾ
179. Traditionalism	ਪਰੰਪਰਾਵਾਦ

180. Translation	ਅਨੁਵਾਦ
181. Treatise	ਨਿਬੰਧ
182. Unities	ਏਕਤਾਵਾਂ
183. Unity of action	ਕਾਰਜ ਦੀ ਏਕਤਾ
184. Unity of Impression	ਪ੍ਰਭਾਵ ਦੀ ਏਕਤਾ
185. Unity of space	ਸਥਾਨ ਦੀ ਏਕਤਾ
186. Unity of time	ਸਮੇਂ ਦੀ ਏਕਤਾ
87. Utilitarianism	ਓਪਯੋਗਤਾਵਾਦ
188. Varse	ਪਦ
189. Versain	ਸਰਬਾਂਗੀ
190. Villaion	ਖਲਨਾਇਕ
191. Vision	ਅੰਤਰ-ਦ੍ਰਿਸ਼ਟੀ
192. Visual Image	ਦ੍ਰਿਸ਼ਟੀ ਪਰਕ ਬਿੰਬ
193 Vocabulary	ਸ਼ਬਦ ਕੋਸ਼
194. Vowel	ਸ੍ਵਰ
95. Vulgaity	ਅਸਲੀਲਤਾ
196. Work	ਕਾਰਜ, ਕੰਮ

**URDU (Compulsory)****One Paper**

Max. Marks : 100

Time : 3 Hours

- (a) Text Explanation and paraphrase 50 Marks  
 (b) Elementary Knowledge of Ilam-e-bayn and kinds of Prose & Poetry. 25 Marks  
 (c) Character Analysis Critical Appreciation and summary of literary portions. 25 Marks

**Text :**

1. Khayaban-i-Adab (Prose) Published by Educational Book House Aligarh. Only the following prescribed Mohd. Husain Azad-Nazeer Ahmad-Hali Shibli-Sharser Imatiaz Ali Taj Rashid-ul-Kheri-Sharar.
2. Urdu ke Terah Afsane by Athar Parvaiz. Only the short stories Kafan (Prem Chand) Mahalakshmi Kapul (Krishan Chander) Anandi (Gulam Abbas) Apne Dukh Mujhe Dedo (Bedi) Toba Tek Singh (Minto) Chauthi Ka Jora (Isamt Chugtai).

**URDU (Elective)****One Paper**

Max. Marks : 100

Time : 3 Hours

**Syllabus and Courses of Reading**

Paper-II Text, Explanation and Elementary History of Urdu Literature Max. Marks : 60

**Text Books Prescribed**

Khayaban-i-Adab Published by Educational Book House, Aligarh.  
 Only the following prescribed :

Mohd. Hussain Azad-Nazeer Ahmad

Hali-Sarshar-Imtiaz Ali Taj

Rashid-ul-Khari-Sharar

**History of Urdu Literature**

30 Marks

Scope : Fort-William College-Sir Syed Tarraqi

Rasand Tehreek Dilli aur Lucknow Ke Dabistan-i-Shairi

Define :

Ghazal-Marsia-Masnawi-Qasida-Novel Afsana

10 Marks

**Books Recommended**

1. Tareekh-i-Adab-i-Urdu : By Syed Ejaz Hussain.
2. Tareekh-i-Adab-i-Urdu : By Azim ul Haq Junedi.

**FRENCH**

Max. Marks : 100

Time : 3 Hours

<b>Theory</b>	75 Marks
Viva-Voce	25 Marks
1. Translation From :- Complementary Texts of Three prescribed books+prescribed poems.	20 Marks
2. Translation from English into French	10 Marks
3. Letter writing / Essay in French about 250 words	15 Marks
4. Questions on advanced Grammar; Sentence Analysis, Logical Analysis Transformation : Rewriting of Paragraphs as suggested	20 Marks
5. Comprehension of unseen Passage (Question to be answered in French)	10 Marks

75 Marks

Viva Voce :-

Dictation : From complementary Texts of the Prescribed Text Book	10 Marks
Conversation on the topics of daily life.	15 Marks

25 Marks**Prescribed Texts**

1. Complementary Texts of Manager, IInd including poems suggested:
2. Le francais accelcare (Manager).

*Note : Internal Choice may be given in each question.***HISTORY****Outlines of Test**

	Max. Marks	Time
Option-I History of India (From A.D. 1526 to 1947).	100	3 hrs.

Option-II History of Indian Freedom Movement (1857-1947). 100 3 hrs.

### Syllabus and Courses of Reading

Option-I History of India (From A.D. 1526-1947)

Max. Marks : 100

Time : 3 hrs.

- Note :*
1. *At least 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 notes).*
  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 ten marks, Section-II will have multiple choice questions of 5 marks, Section-III will have matching type questions of 5 marks.*
  4. *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.*

The foundation of the Mughal Rule; Sher Shah Suri and his administration; Akbar and his role as a National Ruler; Aurangzeb and his responsibility towards the downfall of the Mughal Empire; Religion and State with particular reference to Akbar and Aurangzeb : the Deccan and N.W. Frontier Policy of Mughals, Mughal Administration; Concept of Kingship, Justice, Revenue Mansabadari and Jagirdari, Social and Cultural life under the Mughals; Education, Literature, Art and Architecture; religious Movements; Shivaji and his Administration; the break-up of the Mughal Empire; Coming of the European Powers; British Occupation of Bengal; Warren Hastings, Wellesley Hastings, Dalhousie; Causes of the failure of Indian Powers; The uprising of 1857 and its aftermath : Social and Educational Changes during

the Company's Rule; Economic conditions to 1858; Social Reform Movements : Brahma Samaj, Arya Smaj, Theosophical Society, Rama Krishna Mission and the Aligarh Movement; Causes of the origin and growth of Nationalism, the first phase of the National Movement, 1886-1905; the rise of the militant Nationalism, the 1st World War, the second phase of the freedom Movement, 1905-1919; the Revolutionaries; Trade Unions and Peasants Movements; the Revolutionaries; the Rise and growth of Communism; Netaji and INA : the final phase of freedom Movement, 1920-1947 : Partition.

### Map

1. Political conditions of India in 1526.
2. The Mughal Empire at the death of Akbar (1695).
3. Indian Powers and Kingdoms around 1765.
4. India in 1818.
5. India in 1856.
6. Centres of Uprising in 1857-58.

### Books Recommended

- |                                       |  |
|---------------------------------------|--|
| 1. A.L. Srivastava                    | Mughal Empire (Agra 1972).   |
| 2. S.R. Sharma                        | Crescent in India (Bombay 1954).                                   |
| 3. -do-                               | Mughal Empire (Agra, 1972).  |
| 4. Iswari Prasad                      | History of Medieval India (Allahabad 1970).                        |
| 5. P.E. Roberts                       | History of British India (Oxford 1967).                            |
| 6. Majumdar, Datta & Roy<br>Chaudhary | Advanced History of India, Part-II<br>and Part-III (London, 1960). |
| 7. P.L. Sharma                        | History of Modern India (Agra,<br>1973).                           |
| 8. Hariprasad, Thapliyal,<br>Tripathi | Bharat Ki Itihasik Manchitrawali,<br>(Delhi, 1971).                |
| 9. R.P. Tripathi                      | Rise and Fall of the Mughal Empire.                                |
| 10. J.N. Sarkar                       | Mughal Administration.   |
| 11. S. Sarkar                         | Modern India 1885-1947 (Delhi,<br>1984).                           |

**Option-II History of India Freedom-Movement (1857-1947)**

Max. Marks : 100

Time : 3 Hours.

- Note :*
1. *At least 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 notes).*
  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 ten marks, Section-II will have multiple choice questions of 5 marks, Section-III will have matching type questions of 5 marks.*
  4. *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.*

The impact of the British rule the Uprising of 1857; the rise and growth of the feeling of Nationalism; the foundation of the India National Congress and its programme; the Home Rule Movement the Revolutionaries Emergence of Gandhi ji; the Khilafat Movement; the Non-Cooperation Movements, Congress and the left, Trade Union and Peasant Movement, the Civil Disobedience Movement, the British response to the National Movement the Revolutionaries the Quit India Movement : The Constitutional developments (Acts of 1909, 1919 and 1935); the rise and growth of Nationalism State People's Movement; Netaji and INA, Muslim League and its demand for partition; The last phase of Freedom Struggle (1945-47) and partition.

**Map**

1. Important places connected with the Uprising of 1857.
2. Areas where the Home Rule Movement was popular.



3. Important places connected with the Anti-Rowlatt. Act.
4. Agitation and the Non-Cooperation Movement 1919-23.
5. Important places connected with the Civil Disobedience Movement.
6. Places where very important plenary session of the Indian National Congress were held 1885-1947 (Like the Bombay, Surat, Lucknow, Amritsar, Nagpur, Lahore etc.)
7. Important places connected with Revolutionary Movement (like Kakori, Lahore, Allahabad, Calcutta).

### Books Recommended

- Majumdar, R.C. : History and Culture of the Indian people. Vol. XI Struggle for freedom (Vidya Bhawan, Bombay, 1964).
- Tara Chand : History of Freedom Movement in India. (Vol. II, III & IV Govt. Publication Division Delhi, 1971).
- V.P.S. Raghuvanshi : Bharatiya Swadheenta Tatha Rashtriya Vikas (Rattan Prakashan Mandir Agra, 1760).
- Ranjit Singh : Bhartiya Swatantrata Andolan Evam Samvaidhanik Vikas, (Jaipur).
- Gurumukh Nihal Singh : Bharat ka Mukti Sangram (Macmillan, Delhi, 1980).
- Sumit Sarkar : Modern India, (1885-1947) Mac-Millan, Delhi 1984.

### POLITICAL SCIENCE

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

Option (i) Political Theory Concepts Max. Marks : 100

Time : 3 Hrs.

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

### Syllabus and Courses of Reading

1. Nature and Significance of Political Theory.
2. Power, Authority and Legitimacy.

3. Elite and Theories of Elite.
4. Bureaucracy
5. Political Culture and Political Socialisation
6. Political Participation and Political Development.
7. Modernisation and Political Development.
8. Alienation and Theories of Alienation.
9. Nation Building and National Integration.
10. Social Conflict and Revolution.
11. Consumer Protection with special reference to India.

### Books Recommended

- |  |  |
|--|--|
| 1. Amal Ray and Mohit<br>Bhattacharya      | Political Theory : Institutions and<br>Ideas.      |
| 2. A.R. Mukhopadhyaya                      | Political Sociology : An Introductory<br>Analysis. |
| 3. T.B. Bottomore                          | Elites and Society                                 |
| 4. R. Blauner                              | Alienation and Freedom.                            |
| 5. J. La Palombara                         | Bureaucracy and Political<br>Development.          |
| 6. Michael Rush and Philip<br>Aithoff      | An Introduction to Political<br>Sociology.         |
| 7. Lucian W. Pye and Sidney<br>Verba, Eds. | Political Culture and Political<br>Development.    |
| 8. L.S. Rathore, ed.                       | Political Sociology.                               |
| 9. R. Flathman, ed.                        | Concepts in Social and Political<br>Development.   |
| 10. S.P. Verma.                            | Modern Political Theory.                           |
| 11. Anthony M.Orun                         | Introduction to Political Sociology.               |
| 12. Rajni Kothari                          | State and Nation-Building.                         |
| 13. Ralph Miliband                         | Marxism and Politics.                              |
| 14. Giddens and Held, eds.                 | Class, Power and Conflict.                         |
| 15. Lee Ann Osdorn                         | The Problem of Participation.                      |

**Option (ii) Political Theory**

Max. Marks : 100

Time : 3 Hrs.

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

**Syllabus and Courses of Reading**

1. Nature and Significance of Political Theory.
2. Power, Politics and Society.
3. (a) What is Politics ?  
(b) Different dimensions of Power.  
(c) Theories of Power in Society.
4. The State
  - a) The concept of the Modern State, Sovereignty, Citizenship and Rights.
5. The concepts of Freedom, Liberty, Equality and Property.
6. Justice and the Common Good.
  - (a) Theories of Distributive Justice.
  - (b) Notions of the Common Good.
7. Democracy and Political Participation; Dominant theories of Democracy.
8. Development and Environment- The contemporary debates.

**Books Recommended**

1. David Held Political Theory and the Modern State.
2. George McEannan, The Idea of the Modern State.  
David Held and Stuart  
Hall, eds.
3. T.W. Hinsley Sovereignty
4. J.M. Barbalet Citizenship
5. Sygmunt Baumann Freedom
6. Jeremy Waldron, ed. Theories of Rights
7. Bryan s. Turner Equality
8. Ellen Prank, Paul Liberty and Equality.  
Miller and J. Paul (eds.)
9. Graeme Duncan ed. Democratic Theory and Practice
10. V.I. Lenin State and Revolution.
11. Thomas Pantham Political Theories and Social  
Reconstruction.

**ECONOMICS****PAPER-II ECONOMIC ANALYSIS-II****Max. Marks : 100****Time : 3 Hrs.**

Notes : There shall be eight questions (each) and the candidate shall be required to attempt five questions in all. Questions no. 1 & 2 will be compulsory. The first question will be spread over the first three units and it will consist of 10 objective type questions of two marks each. The second question will be from unit-IV, and will consist of 6 parts of five marks each and the candidate will be required to answer any four parts. As regards the remaining six questions, there will be two questions from each of the first three units. The candidates will be required to attempt one question from each unit.

**(MACRO ECONOMICS)****Unit-I**

Classical theory of employment (with wage-price flexibility, validity of quantity theory of money and Say's law of market as the basic arguments) : Keynesian theory of employment (with money illusion, wage rigidity and Effective Demand as main arguments), Keynesian Consumption Function; Theories of Investment : Classical, Keynesian (Marginal Efficiency of Capital) and Accelerator, Investment Multiplier.

**Unit-II**

Nature and functions of money, Quantity theory of money (Fisher, Cambridge, Keynes versions), Functions of Central Bank and Commercial Banks, Credit Creation and Credit Control.

**Unit-III**

Trends in National Income and Per Capita Income in India. Sectoral composition of National Income; Components and growth of Money Supply in India, Banking in India

(Banking, Structure, Banking Reforms, Role of Reserve Bank of India)

(Elementary Mathematics for Economic Analysis)

### Unit-IV

Partial and Total derivatives of a function of two variables. Maxima and minima of a function of one/two variables. Derivative tests for maximum/minimum, Increasing and decreasing functions, Concavity and Convexity. Elementary Integral Calculus: Integrations as the reverse process of differentiation, Basic rules of Integration, Definite Integral as an area under a Curve.

ECONOMIC APPLICATIONS : Maximization of Revenue, Maximization of cost, Profit maximization, Slope of an indifference curve/iso-quant, Finding a total function from a given marginal function, consumer/producer surplus.

## PUBLIC ADMINISTRATION

### Outlines of test

Max. Marks : 100

Time : 3 Hours

### One Paper

### Syllabus and Courses of Reading

#### Indian Administration

Evolution of Indian Administration, Features of Indian Administration its role in the context of democratic system and socio-economic development. Major problems and Remedies of Human Environment, Features and Implementation of Environmental Protection Act.

Indian Federalism : Administrative and Financial relations between the Centre and States.

Role of the President, Prime Minister and Cabinet in Indian Administration. Cabinet Secretariate, Organisation and Functions of Union Ministries of Finance and Home.

Preparation of the Indian Budget, its enactment, Parliamentary control over public finance in India. Role of Comptroller and Auditor-General over financial administration, Composition and Functions of Public Accounts Committee and Estimates Committee at the Centre.

Role of the Governor, Chief Minister and State Cabinet in State Administration. Organisation and Functions of State Secretariat, Role of the Chief Secretary in the State Administration.

Planning : Role and Composition of Planning Commission and National Development Council.

District Administration ; its features, role and position of the Deputy Commissioner. The Superintendent of Police in district administration. Local Administration : Rural and Urban.

Accountability of Indian Administration to the Parliament and Judiciary, Administration and Citizen. Lokpal and Lok-Ayukt. Consumer Protection Act-Features and Implementation. Central Vigilance Commission-Composition & Functions.

*Note / 1. There shall be one objective type (multiple choice) question in the paper.*

*2. Ten questions in all will be set, out of which only five are to be attempted by the examinees. Objective type (Multiple Choice) question shall be compulsory.*

### **Books Recommended**

1. Bhartiya Prashashan by Dr. Sarla Malik, Haryana Sahitya Academy, 1997, Chandigarh.
2. Dr. R.K. Arora & Dr. Rajni Goyal : Indian Public Administration Institutions and Issues, Wishwa Prakashan, New Delhi.
3. Indian Administration by Ashok Chanda.
4. Indian Administration by S.R. Mahashwari (Hindi & English)
5. Public Administration in India by P.Saran.
6. Public Administration in India by C.P. Bhambhari.
7. Indian Administration (Hindi) by K.K. Puri.
8. Indian Administration (Hindi) by D.R. Sachdeva and others.
9. Bharat Main Lok Prashasan by P.D. Sharma.
10. Central Administration by A. Avasthi.
11. Contemporary Issues of Indian Administration by R.B. Jain.

**PHILOSOPHY****Outlines of Test**

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

**Syllabus and Courses of Reading**

<b>Option-I : Indian Philosophy</b>	<b>Max. Marks : 100</b>
	<b>Time : 3 Hours</b>

- Note :*
1. Ten questions in all are to be set.
  2. Out of 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 questions will be of equal marks.

Unit-I	Common Characteristics of Indian Philosophy. Charges against Indian Philosophy.
Unit-II	Charvaka : Theory of Knowledge. Hedonism.
Unit-III	Buddhism : Four Noble Truths. Theory of Dependent Organisation.
Unit-IV	Jainism : Syadvada. Theory of Soul.
Unit-V	The Nyaya Theory of Knowledge : Perception and Inference. Asatkaryavada, Vaisesika : Categories : A General Introduction.
Unit-VI	Sankhya : Satkaryavada. Doctrines of Prakriti, Purusa and Evolution, Astanga Yoga of Patanjali.
Unit-VII	Mimamsa : Nature of Knowledge views of Prabhakara Kumarila Bhatta. Svatahpramanyavada.
Unit-VIII	Vedanta of Sankara and Ramanuja : Brahman and Maya.

**Books Recommended**

1. D.M. Datta & S.C. Chatterjee Introduction to Indian Philosophy. (Hindi and English Version).
2. M. Hiriyanna Outlines of Indian Philosophy (English and Hindi Versions)

- |                |   |
|----------------|---|
| 3. C.D Sharma  | A Critical Survey of Indian Philosophy (English and Hindi Versions) |
| 4. R.N. Sharma | Bhartiya Darshan Ka Itihas  |
| 5. B.N. Singh  | Bhartiya Darshan  |

**Option-II : Western Philosophy**

Max. Marks : 100

Time : 3 Hours

- Note :*
1. Ten questions in all are to be set.
  2. Out of 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 questions will be equal marks.

- |           |   |
|-----------|---|
| Unit-I    | Plato : Theory of Knowledge and Theory of Ideas.  |
| Unit-II   | Aristotle : Four Causes. Matter and Form.   |
| Unit-III  | Descartes : Method and substance.   |
| Unit-IV   | Spinoza : Substance, Attributes and Modes<br>Liebnitz :<br>Monadology.  |
| Unit-V    | Locke : Refutation of Innate Ideas. Origin of Knowledge.  |
| Unit-VI   | Berkely : Subjective Idealism. Hume : Refutation of causation.  |
| Unit-VII  | Kant : Nature of Knowledge : Reconciliation of Rationalism and Empiricism. Theory of Sense-perception. Theory of understanding. |
| Unit-VIII | Hegel : Dialectical Method and Absolute idealism, Marx<br>Dialectical Materialism.  |

**Books Recommended**

- |                  |   |
|------------------|---|
| 1. Russell, B.   | Critical History of Western Philosophy.                   |
| 2. Thilly, Frank | A History of Western Philosophy.                          |
| 3. R.N. Sharma   | Paschatya Darshan Ka Itihas (Hindi and English Versions). |
| 4. B. N. Singh   | Paschatya Darshan.  |



**DEFENCE STUDIES****Outlines of Test**

Paper-I(Theory)		Max. Marks	Time
Option-A	World Military History (Modern)	70	3 Hours.
Option-B	Study of War	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 practical paper 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.*

**Option-A World Military History (Modern)**

Max. Marks : 70

Time : 3 Hrs.

1. Industrial Revolution and its Impact on Military Power.
2. **American Civil War (1862-65).**
  - (a) Introduction
  - (b) Causes.
  - (c) Main Events (in brief)
  - (d) Effects on Warfare.
3. **Russo-Japanese War (1904-1905)**
  - (a) Introduction
  - (b) Causes.
  - (c) Events (in brief).
  - (d) Political Consequences.
4. **World War Ist and its Origin**
  - (a) Causes of the World War-I.

- (b) Trench Warfare and Armour with special reference to the battle of Somme.
- (c) Naval Warfare; (i) Element of Sea power, (ii) Naval strategy and tactics during World War-I.
- (d) Air Warfare
  - i) Birth and concept of Air Power and its development.
  - ii) Role of Air Craft during World War-I.

#### 5. Second World War

- (a) Causes and Origin of World War-II.
- (b) Armoured Warfare; concepts of J.F.C. Fuller, Guderian and Liddell Art.
- (c) Air Warfare; Concepts of Douhet, Mitchell.
- (d) Sea Power; Contribution of A. T. Mahan on Naval Warfare.

#### Nuclear Warfare

- (i) Beginning of Nuclear Era.
- (ii) Main destructive effects of nuclear energy, flash, heat thermal radiation, blast and nuclear radiation.
- (iii) Theories of Nuclear Warfare, Deterrence and massive retaliation.

#### Books Recommended

1. Quincy Wright : A Study of War.
2. J.F.C. Fuller ; Armament and History.
3. J.F.C. Fuller : The Conduct of War.
4. E.M. Earle : Makers of Modern Strategy.
5. J.F.C. Fuller: The American Civil War, 1861-65.
6. Montgomery : History of Warfare.
7. Indu Prakash : Science of War.
8. D.K. Palit : War in Deterent Age.
9. D.K. Palit : Essentials of Military Knowledge.
10. K.S. Tripathi : Evolution of Nuclear Strategy.

**Option-B Study of War**

M.M.: 70

Time : 3 Hrs.

#### Part-A

##### 1. Nature of War

- a) Definition of War, its scope, advantages and disadvantages.

- b) Evolution of War: Feudal, Dynastic, Peoples, Total and Nuclear Wars.
- c) Cold War; Psychological, Economic and Diplomatic Aspects.
- d) Guerilla War.
- e) Features of Modern War
- f) Future of War.

## 2. Principles of War

- a) Selection and Maintenance of Aim.
- b) Offensive action.
- c) Concentration
- d) Economy of Force.
- e) Co-operation
- f) Security.
- g) Surprise
- h) Mobility
- i) Maintenance of Moral and
- j) Administration.

## 3. Strategy Tactics

Verious definition, distinction between Strategy and Grand Strategy Evolution of Tactics during 19th and 20th Century. Evolution of Strategy during 19th and 20th Century. Strategy of Indirect-Approach-Strategy of Annihilation and Strategy of Exhaustion.

### Part-B

- 1) Indo-Pak War 1965 and 1971 A.D. with reference to the following:
  - i) Causes of War.
  - ii) Study of War in Outline.
  - iii) Political and Military lessons learnt.
- 2) Origin and Causes of World War-I and II.

### Suggested Books

- 1. Essentials of Military Knowledge : Maj. Gen. Palit.
- 2. Nature of Modern War : Cyril Falls.
- 3. Samrik Sidhant : M.P. Verma.

4. The Art of Land Warfare : B.N. Maliwal.
5. India Wins the War : S.N. Rampal.
6. An Introduction of the Art of War; S.T. Das.
7. The Study of Military History; Shepperd.
8. The Study of Indirected Approach; Hiffle Hart.
9. Yuddh Mimansa by Prof. M.C. Maheshwari.

**Paper-II (Practical)****Map-Reading**

Max. Marks : 30

Time : 3 Hours

Practical Test

20 Marks

Practical Record

5 Marks

Viva Voce

5 Marks

1. SCALE : Construction of Time Scale and Diagonal Scale
2. Bearing and Inter-Conversion of Bearing with I.C.E.
3. Finding Positions on the gridded Map by Intersection Method and Resection Method.
4. Relief Features and their representation on the map.
5. Types of slope and their representation on the map by CONTOUR Lines.
6. Gradient and slope in Degrees.
7. To determine Inter-visibility between two point; gradient method, sum proportion method and Section Drawing method.
8. To draw a field sketch from a given Route Report.
9. Enlargement and Reduction of Maps.
10. To prepare a Route Report from a given narrative data.

*Note : Above mentioned exercise should be carried out on topo-sheets.*

**SOCIOLOGY****Paper : Research Methodology**

M.M. : 100

Time : 3 Hours.

- I Basic Concept in Social Research; Concept, hypothesis, fact Theory.
- I Significance of Social Research : Social Survey, Social Research steps in Social Research, Formulation of Research Problem; Research Design.

- III Methods and Techniques of data collection; Interview; Schedule Observation; Questionnaire; Survey and Case Study.
- IV Sampling and its types; Probability and non-probability types and sources of data, Primary and Secondary. Tabulation, Classification and analysis of data.
- V Statistical methods in Social Research : Measures of Central Tendency : Mean, Mode Median, Measures of Dispersion; Mean Deviation, Standard Deviation.

*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

- Jahoda Selfiz, Cook, et. al. : Research Methods in Social Relations, Halt, Rinehart and Winston, New York, 1959.
- Modge, John : Tools of Social Sciences, Longmans, London, 1953.
- Meser C.A. & C.K. Kalton : Survey, Methods in Social Investigation : Hetnemann Educational Books, London, 1971.
- Goode, W.J. & Hatt, P.K. : Methods in Social Research, Mc Graw Hill, New York, 1952.
- Muller, J.F. Karl F. Schuesaler : Statistical Reasoning in Society and Herbet T. Castener : Houghton, Bosten, 1977.
- Champion, D.J. : Basic Statistics for Social Research Chandler Publishing Co. Seranton.
- Lazrfold Paul & Morris : The Language of Social Research, Resenberg (ed.) Free Press, New York, 1955.

### GEOGRAPHY

Paper I. Any one of the following two options.

	Max. Marks	Time
Paper I Option (i) Human Geography	B.A. 70	3 Hours
Option (ii) Economic Geography	B.Sc. 100	
Paper II Practical Geography	B.A. 70	3 Hours
	B.Sc. 100	

**Syllabus & Courses of Reading****Paper I Option (i) Human Geography**

<b>Max. Marks</b>	<b>Time</b>
B.A. 70	3 Hours
B.Sc. 100	

**Section I**

1. Nature and scope of human geography; Schools of Human Geography : environmental determinism, possibilism and neo-determinism.
2. Evolution of mankind and culture; the evolution of races and classification, ethnic groups.
3. Concept of culture, major cultural realms of the world.
4. Language and Religions : distribution and diffusion, classification.

**Section II**

1. Population : World distribution, density and growth.
2. The Demographic cycle; Migration - determinants of migration, types of migratory movements.
3. Malthusian theory on population and resources.
4. Population polices with special references to India.

**Section III**

1. Origin and classification of settlements.
2. Rural settlements - morphology and land use.
3. Types and patterns of rural settlements.
4. Spatial organisation of settlements : Christaller's central place theory.

**Section IV**

1. Origin of cities : The pre-industrial, colonial and modern towns.
2. Site, Situation and Setting of towns. /
3. Functional classification of towns.

4. Models of intra-urban structure - the concentric zone, sectoral and multiple nuclei theories.

**NOTE :**

1. There shall be one compulsory question on "map filling" covering the entire syllabus of 10/16 marks. Candidates shall be supplied with an outline map of the World.
2. In addition to the compulsory question, there shall be eight questions in all; two questions from each section. Candidates are required to answer four questions selecting atleast one question from each section. All questions carry equal marks.

**Books Recommended**

1. Bansal, Suresh Chander (1998), Urban Geography, Meenakshi Prakashan, Meerut.
2. Bansal, Suresh Chander (1998), Rural Settlement Geography Meenakshi Prakashan, Meerut.
3. Blij, Harm J. De and Peter O. Muller (1986), Human Geography - Culture, Society and Space, John Wiley and Sons, New York.
4. Broek, Jan O.M. and John W. Webb (1978), A Geography of Mankind, Mc Graw-Hill Book Company, New York.
5. Chandna, R.C. (1998), A Geography of Population, Kalyani Publishers, Ludhiana.
6. Getis, Arthur et. al (1981), Human Geography-Culture and Environment Macmillan Publishing Company, New York.
7. Husain Majid (1994), Human Geography, Rawat Publications, Jaipur.
8. Kaushik, S.D. (1998), Human Geography, Rastogi

Publishers, Meerut (Hindi edition also).

9. Mamoria, C.B. (1989), Elements of Human Geography, Sahitya Bhawan, Agra.
10. Negi, B.S. Rural Geography, Kedarnath Publishers, Meerut.
11. Verma, L.N. (1993), Settlement Geography, Rajasthan Hindi Granth Academy, Jaipur.

### Paper I Option (ii) Economic Geography

Max. Marks	Time
B.A. 70	3 Hours
B.Sc. 100	

#### Section I

Nature and Scope of Economic Geography; The contemporary perspective in Economic Geography; Major Sectors of economic activity-primary, secondary and tertiary - a detailed discussion of their nature and basic principles.

#### Section II

Historical evolution and the modern world economic systems; Models of location of economic activities; Von Thunen's model of agricultural landuse - a critical appraisal, Weber's theory of industrial location; Transportation - Transportation as a factor in the choice and location of economic activities - Ullman's model of spatial interaction.

#### Section III

Agriculture : Factors affecting agricultural development - physical, institutional and technological; the pattern, characteristics and types of world agriculture - Nomadic herding, intensive subsistence, plantation, commercial and diary farming; population - Food balance : a world pattern.

Manufacturing Industries : Factors affecting industrial location; trends in localisation and distribution of industries - iron and steel, automobiles, petroleum refineries, aluminum and cotton textiles, Major industrial regions of the world.



### Section IV

Transport, Communication and International trade : Land, Water and Air transport; Major ocean and air routes of the world. Factors affecting international trade; The pattern of world trade, W.T.O. and the developing economies.

#### NOTE :

1. There shall be one compulsory question on "map filling" covering the entire syllabus of 10/16 marks. Candidates shall be supplied with an outline map of the World.
2. In addition to the compulsory question, there shall be eight questions in all; two questions from each section. Candidates are required to answer four questions selecting atleast one question from each section. All questions carry equal marks.

#### Books Recommended

1. Barke Michael (1986), Transport and Trade, Oliver & Boyd, Edindurg.
2. Hartshorn, Truman A. and John W. Alexander (1988), Economic Geography, Prentice Hall of India, Pvt. Ltd., New Delhi.
3. Khanna, K.D. and Gupta, V.K. (1996), Economic and Commercial Geography, Sultan Chand & Sons, Delhi.
4. Kaushik, S.D. (1999), Resource Geography, Rastogi Publication, Meerut.
5. Leong Goh Cheng and Gillian C. Morgan (1982), Human and Economic Geography, Oxford University Press, Oxford.
6. Negi, B.S. (Latest edn.), Resource Geography Rastogi Publication, Meerut.

7. Robinson, H. and C.G. Banford (1978), Geography of Transport, Macdonalds and Evans, New York.
8. Singh, Jagdish and K.N. Singh (1995) Elements of Economic Geography Gyandirya Prakashan, Gorakhpur.
9. Wheeler, James O. and Peter O. Muller (1986) Economic Geography, John Wiley and Sons, New York.
10. Srivastava, V.K. (1996), Human and Economic Geography, Vashundhra Prakashan, Gorakhpur.

## Paper II Practical Geography

Max. Marks	Time
B.A. 70	3 Hours
B.Sc. 100	

### Section I Map Projections

Meaning, Classification, Construction, Properties, Uses and Choice of the following map projections.

- i) Cylindrical : Simple, Equal area and Mercator's.
  - ii) Conical : One standard parallel, Two standard parallel, Bonne's and Polyconic.
  - iii) Zenithal : Gnomonic, Stereographic, Orthographic, Equidistant and Equal Area (Polar cases only).
  - iv) Conventional : Sinusoidal and Mollweide's.
  - v) International Projection
- (Sketches of maps on suitable projections).

(15 exercises)

### Section II Topographical Maps

Introduction to Indian Topographical Maps, Conventional Signs, Elements of toposheet interpretation, Interpretation of

toposheets of scale 1 : 50, 000 for different geographical areas. (Preparation of 2 exercises each on Physical features (Profile and slope) and cultural features (Settlement and transport).

(4 exercises)

### Section III Weather Maps

Weather Symbols; Measurement of weather elements - Temperature, Atmospheric Pressure, Wind direction, Humidity, Rainfall; shapes of isobars on a weather map; Interpretation of Indian Daily weather report-January, May, August, October (any two); Weather forecasting.

(6 exercises)

### Distribution of Marks

### B.A. /B.Sc.

Exercises	:	18/30
Practical record and Viva Voce	:	6 + 6 = 12/10 + 10 = 20

### NOTE :

The question paper shall contain six questions in all; two from each section. Candidates shall attempt three questions in all selecting one question from each section.

### Books Recommended

1. Ahmad, Kazi Saied-Ud-Din (1969). Map Projections, Methuen and Co. Ltd., London.
2. Hiralal (1997). Practical Geography, Vasundhara Prakashan, Gorakhpur.
3. Inderpal and Hemshankar (1987). Maps and Projections, Rajasthan Hindi Granth Academy, Jaipur.

4. Kellaway, George P. (1970). Map Projections, Methuen and Co. Ltd., New Delhi.
5. Singh, Gopal (1996). Map Work and Practical Geography, Vikas Publishing House Pvt. Ltd., New Delhi.
6. Singh, R.L. and Rana P.B. Singh (1991). Elements of Practical Geography, Kalyani Publishers, Ludhiana.

## ELECTRONICS

### Outlines of Test

	Max. Marks	Time
Paper-I (Theory)	50	3 Hours
Paper-II (Theory)	50	3 Hours
Paper-III (Practicals)	50	3+3 Hours

(In Two days)

#### Note for both the Theory Papers :

1. 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.
2. 20% numerical problems are to be set.
3. Instructions should be imparted using SI system of units. Familiarity with CGS system of the units should also be ensured.

#### Note for Practical Papers :

1. 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).
2. Distribution of Marks :
 

Experiments (two)	12+12	=	24 marks
Lab. record			8 marks
Viva-Voce	5+5	=	10 marks
Project			8 marks
3. Laboratory notebook will be assessed by both the external examiners on the basis of Laboratory record experiment and viva, oral examination concerning the experiments in the syllabus are indicated above.
4. Use of simple (non-programmable) calculator is permissible.

**Syllabus and Courses of Reading****Paper-I (Theory)****Max. Marks : 50****Time : 3 Hours****Unit-I I.C. Fabrication Technology**

Classification of IC's (monolithic and Thin Film) Monolithic Fabrication techniques, crystal growth, diffusion, epitaxy, Photolithography, metalization isolation, crossovers (detailed discussions), Monolithic devices BJT (npn. pnp), JFET MOSFET, Diodes, Resistors, Capacitors (simple idea only).

**Unit-II Operational Amplifier**

Differential amplifier, Differential gain, Common mode gain, CMRR, Ideal operational amplifier, Feed back in Op-Amp in inverting and non-inverting configuration, Buffer, summer, input bias current, Input offset voltage, Error introduced by offset voltage, Integrating and Differentiating circuits using OP-AMP, difference, Multiplication, Division, Threshold discrimination.

**Unit-III Power supply and active Filters**

Principle of voltage regulation, shunt regulators, Zener diode, Shunt regulator, BJT shunt regulator, Series Voltage regulator, Feed back regulator, Power Supply regulation, using OP-AMP, Load regulation, Stability, Zener diode regulator, short circuit protection, current regulation, using op.amp., IC regulators (IC 723 and three terminal regulators), Active filters using op.amp (Lowpass and highpass, Band pass and Band reject).

**Unit-IV Feedback and Oscillators**

Feedback- positive and negative feedback, Effect of negative feedback on gain, Non-linear distortion, Input resistance, Frequency response, Voltage series and shunt feedback, Current series feedback, Principle of oscillations, condition for sustained oscillation, RF Oscillators : Hartley, Colpit, Crystal, Oscillator (Principle of working and frequency oscillation), AF Oscillators : Wein Bridge, Phase shift Oscillators.

**Unit-V Multivibrators, Switching Devices and Circuits :**

Multivibrator (Astable, Bistable, Monostable, Schmitt

Trigger, Unijunction transistor, (UJT), Silicon Controller, Rectifier (SCR), Triac, Diac Silicon Controller Switch (SCS), Controller rectification, pluse control of SCR Phase Control of SCR, SCR Controller circuits, UJT Controller Circuits, UJT Sawtooth wave generator, Triangular waveform generator.

**Paper-II (Theory)**

Max. Marks : 50

Time : 3 Hours.

**Unit-I Logic Families**

Saturated and non-saturated logics, Resistor, Transistor Logic (RTL), Diode-transistor logic (DTL), Transistor Transistor logic (TTL), Emitter coupled logic, (ECL), Integrated Injunction logic (ITL), Complimentary Metal Oxide Semi-conductor (CMOS), Logic, current sinking and sourcing, Logic circuit Parameters - Propagation delay, number of levels, Fan in, Fan out, Loading, Noise margin. Combinational circuit design procedure, analog to digital converter, realization of Boolean expression with NAND/ NOR gate, Design of a Railway track switching, system.

**Unit-II** Half adder, Full adder, A parallel binary adder 8-4-2-1 adder or excess 3 adder, Half subtractor, full subtractor, 2's compliment adder/subtractor, multiplexer and their use in combinational logic design, Demultiplexer, Decoder and their use in combinational design, Parity generator / Checker, Code convertor.

**Sequential circuits**

Basics of sequential circuits, Asynchronous & synchronomous sequential circuits, flip-flops, R-S, J-K, Masterslave JK, T & D type flip-flops, Counters binary counter, Ripple counter and synchronous counter, Up and down counters.

**Unit-III Basic Digital System**

Memories, memory organisation and its parameters, Read only Memories (ROM), Randum Access Memory (RAM), Application of ROM, Static rendom-access memories (SRAM), Dynamic RAM, Digital to Analog conversion (D/A) Binary weight, ladder type, Serial, BCD

D/A conversion, Analog to digital conversion A/D. Single slope & dual slope and their parameters.

**Unit-IV** Transducers classification, Strain guage, displacement, Temperature measurement- Resistance Thermometer, Thermocouple and Thermister, Photomultiplier tubes, photo-volatic cells, Photoemissive cells, Light Emitting Diode (LED), construction and working.

**Unit-V** Electronic Multimeter, Basic circuit, Characteristics of Electronic instruments, accuracy, precision, sensitivity, Resolution and different types of errors. Cathode ray oscilloscope, Block diagram, Cathode ray tube (CRT) Electrostatic deflection, Post-deflection, acceleration, Horizontal and verticle deflection system, Digital storage oscilloscope, Block diagram and explain in briefly.

**References :**

1. Electronics for Scientists & Engineers by Vishwanathan Metha and Rajaraman (Prentice Hall India).
2. Electronic instrumentation and measurement techniques by W.D. Copper and A.D. Halfrick.
3. Electronic Fundamentals and Applicaitons IVth Edition by John D. Ryder.
4. Integrated Electronics by Millman & Halkias.
5. Electronic Devices & Circuit by Mottor shed.

**Paper-III (Practical)**

M.M. : 50

Time 3+3 Hours

(On Two days)

*Note : Five experiments from Section A and Section B each and one from Section C are to be performed by each student.*

**Section A**

1. To study & design Hartley oscillator & measure its frequency.
2. To study & design colpits oscillator & measure its frequency for two values of inductance and with ferrite core.
3. To study and design of phase shift oscillator and measure its frequency.
4. To study the condition for sustained oscillation for Wein bridge oscillator.

5. Operational amplifier
  - (i) Unity gain buffer
  - (ii) Inverting amplifier
  - (iii) non-inverting amplifier.
6. Operational Amplifier
  - (i) Summing amplifier
  - (ii) difference amplifier
7. Measurement of offset voltage and bias currents & CMRR of an operational amplifier.
8. Integrating & differentiating circuits using Op-amp.
9. To study the 555 IC timer and its application as monostable and astable multivibrator.
10. To study the working of Schmitt trigger using operational amplifier.

### Section B

To study the operation and verify Truth Table of the following :-

1. To study and design DTL NAND gate, using discrete components and verify its truth table.
2. To study and design TTL NAND gate using discrete components and verify its truth table.
3. To study half Adder/full adder, and verify its truth table.
4. To study and verify the truth table of JK, D & T type flip-flops.
5. BCD Decade counter, verify its truth table.
6. Study Ripple Binary counter and verify its truth table.
7. Solid State Rectifier, study of characteristic under forward and reverse bias conditions.
8. To study the operation of transistorized monostable multivibrator circuit and measure its delay time.
9. To study the operation of transistorized Astable multivibrator circuits and measure its frequency.

**Section-C Project topics are :**

1. Electronic Multimeter using IC.
2. Solid State Power controller using thyristor.
3. Function generator using IC.
4. Time base generator
5. Regulated Power supply using ICs.
6. Event Counter.
7. Transistor testor (NPN, PNP)
8. Electronic Timer with Alarm.



9. Design of an under / over voltage cut off circuit.
10. Transformer less o/p amplifier stage.

**References :**

1. Experiments in electronics by W.H. Events. (Prentice Hall India).
2. Method of experimental Physics Vol. 2 Electronic Method (Acad. Press)
3. Experiment in electronics by Ravi Taj Dudeja

**HEALTH AND PHYSICAL EDUCATION****Syllabus and Courses of Reading**

*Note : The syllabus is divided into two parts. Ten questions will set, atleast five from each part, covering all the parts of the syllabus and five questions will have to be attempted by the examinees selecting not more than three from each part.*

**Theory**

Max. Marks : 60

Time : 3 Hours

**Part-I**

1. Concept of Health, Factors influencing health. Biological Factors, Environmental Factor, Socio-Cultural factors, Health and Physical Fitness.
2. Health Hazards of the modern age :-
  - a) Air Pollution,            b) Water Pollution, c) Soil Pollution,
  - d) Food Pollution,        e) Measures to check Pollution
3. Food and Nutrition :
  - a) Balance Diet.
  - b) Function of the following : Fat Carbohydrates, Proteins Mineral, Vitamins and Water.
4. Communicable and Non-communicable diseases : Cholera Measles, Diptheria, Tuberculosis, Influenza. Dysentery, Typhoid and Malaria.
- 5.1 First Aid : General Principles of first-aid common first-aid measures for :
  - a) Snake biting:            b) Choking            c) Drowning
  - d) Fainting                e) Fracture;        f) Burns
  - g) Poison and unconsciousness.

## 5.2 Contribution of WHO, and UNICEF and CARE.

6. Skelton system, Bones and their types, joints and their types  
Functions of Bones.
7. Muscles-Types of Muscles and their structural classification  
Physical properties of Muscles.

**Part-II**

8. Physical Education-Meaning of Physical Education, place of Physical Education in General Education. Aims and objectives of Physical Education. Contribution of Physical Education to the goals of General Education.
9. Biological aspect of Physical Education :
  - a) Growth and Development.
  - b) Heridity and Environment.
  - c) Differences in males and females.
  - d) Body.type.
10. Physical Fitness : Meaning and its components, speed; strength, Endurance Flexibility and ability, Factors affecting Physical fitness Sources of fitness.
11. Warming up and Cooling Down.
  - a) Types of warming up
  - b) Guiding principles of warming up.
  - c) Importance of warming up and cooling down.
12. Yoga : Meaning of Yoga and its importance in Physical Education. Asana, its types and physiological affects.
13. Recreation : Meaning,Importance and objectives of recreation.
14. Camping : Meaning, types of camping and educational values of camping.
15. Promotion of Games and Sports :
  - a) All India Council of Sports;
  - b) Indian Olympic Association;
  - c) Sports Authority of India;
  - d) N.S., N.I.S. National Games.

**Practical**

Max. Marks : 40

Time : 3 Hours

**Part-A :** The examinee is required to take two Events : One out of the following two groups :-

1. Track Events
2. Field Events

10+10

**Part-B :** The examinee is required to take one game out of the following games :-

1. Hockey;
2. Football;
3. Cricket;
4. Basket Ball;
5. Volley-ball
6. Hand-ball and
7. Wrestling.

*Note : The assessment will be based on the basis of their performance (individual skill test and games situation).*

### Reference Books

1. Asanas : Swami Kevalayanada.
2. Pranayama : Swami Kevalayanada,  
Kevalyadhama(Lonavala. 410403)
3. Charles, A. Bucher : Foundations of Physical Education  
(The C.V. Mosby Company 1973  
St. Luois).
4. Stainbaus, A.H. : Towards an Understanding of  
Health and Physical Education,  
W.M.C. Brown Co. 1963.
5. Parrot, J. : Anatomy and Physiology for  
Physical Education Teachers,  
London, Edward or Arnold.
6. Kilander, H.F. : School Health Education Macmillan  
Co.
7. Bogart, L.J. : Nutrition and Physical Fitness,  
Sauners.
8. Verma, K.K. : Health and Physical Education  
Prakash Publication, Jalandhar.
9. Kamlesh, M.L. & Sangral, M.S. : Principles and History of Physical  
Education. (Prakash Brothers,  
1978).
10. W.H. Aykroid : The Nutritive Value of Indian Foods  
and Planning and Satisfactory diet.  
New Delhi Indian Council of  
Medical Research 1963.
11. Butler, G.D. : Introduction to Community

Recreation New Delhi Indian  
Council of Medical New York, Mc  
Graw Hill Book Co.

12. M.M. Gora

: Anatomy and Physiology of Yogic  
Practices, Kanchan Prakashan,  
Lonavala-410403.

## PSYCHOLOGY

### Outlines of Test

	Max. Marks	Time
Paper-I Experimental Psychology & Statistics	70	3 Hrs.
Paper-II Practical	30	3 Hrs.

### Syllabus and Courses of Reading

#### Paper-I Experimental Psychology and Statistics

- Notes :
1. In total ten questions including one objective type would be set in such a way that there are three questions each from units I & III and two questions each from Unit II & 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** : Nature and subject matter, Experimental method, Distinction between population and sample.

**Designs** : (a) Before-After  
(b) Two groups - (i) randomized  
- (ii) matched

**Sensation** : Nature, theories of colour vision and hearing.

**Psychophysics** : Nature problems, methods : Average error, Limits and Constant Stimuli.

#### Unit-II

**Perception** : Nature figure-ground relationship, Depth preception Geometrical illusions : Types and Theories.

Learning : Nature, paradigms, classical conditioning, instrumental conditioning : Types : Appetitive and aversive conditioning, Transfer of Learning.

### Unit-III

Memory : Nature, stages, encoding, storage and retrieval STM & LTM Forgetting : Theories.

Motivation : Nature, instincts, needs, drives and incentives, measurement.

Emotions : Nature Physiological correlates, Theories : Canon-Bards, Thalemic and activation.

### Unit-IV

Statistics : Meaning, Frequency Distribution, Graphical presentation of data : Histogram and Polygon, Measures of Central Tendency, Variability, Correlation : Rank Difference Method and Product Moment Method (for ungrouped data).

### Books Recommended

1. Atkinson, R.L. Introduction to Psychology New York :  
Atkinson, R.C. Harcourt Brace Jovanovi.  
Smith, E.E., Hilgard  
E.R. (1987)
2. Amir Singh, and Prayogatamak Manovigyan. Bhiwani,  
Umed Singh (1984) Vaidik Prakashan.
3. Morgan, C.T. et. al. Introduction to Psychology, New Delhi,  
(1979). T.M.H.

**Paper-II Practical**

**Max. Marks : 30**

**Time : 3 Hours.**

### Experimental Psychology and Statistics

*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. Determination of R.L. by Method of Limits.
2. Determination of D.L. by the Method of constant stimuli.
3. Study of illusion by Method of Average Error.
4. Experiment of STM.

5. Experiment of LTM.
6. Two hand coordination.
7. Problem solving.
8. Knowledge of results.
9. Phi-Phenomenon.
10. Retroactive Inhibition
11. Depth perception.
12. Transfer of training.

### Books Recommended

1. Postman, L. and Egan, J.P. *Experimental Psychology, Ludhiana Kalyani.* (1949)
2. Parameswarn A.G. and Ravichandra, K. (1933) *Experimental Psychology, Sèema.*

### MUSIC (VOCAL)

#### Outlines of Test

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

Note : a) *The question paper will be divided into three sections. Section-A will have two compulsory questions i.e. first question in the forms of 16 objective type questions (1/2 marks each) covering the entire syllabus and the second question related to Notation writing. There will be five questions in all in the Sections 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 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 the compositions in the prescribed Ragas as follow :
  - 1) Chhayanut                      2) Sudh Kalyan    3) Jai Jai Wanti
  - 4) Malkauns                      5) Bhairav        6) Ramkali

Talas : Adahautal, Deepchandi, Tilwada, Tivra

**SECTION-B**

- a) Detailed study of the following shailies :-
- |                |              |             |
|----------------|--------------|-------------|
| i) Dhrupad     | ii) Dhamar   | iii) Khayal |
| iv) Thumri     | v) Tappa     | vi) Tarana  |
| vii) Chaturang | viii) Trivat | ix) Geet    |
| x) Bhajan      |              |             |
- b) Short Notes on the following :-  
Avirbhav-Tirobhav, Nayak-Nayaki, Jaties of Raga,  
Grama, Murchhana, Tanpura and  
Sahayak Nad.
- c) Placement of Swaras on Shrutis by Bharat-Matang, Lochan,  
Pundrik Vitthal, Ramamatya.

**SECTION-C**

- a) Detailed description of the Ragas and Talas prescribed.
- b) Contribution towards Music by the following :-
1. Ustad Bade Gulam Ali Khan
  2. Pt. Malikarjun Mansoor
  3. Bhimsen Joshi
- c) Mugalkalin Sangeet, Haveli Sangeet

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

- a) One Drut Khayal with Alaps, Bol Tanas, Bolalopin each of the following Ragas :
- |              |                |                  |
|--------------|----------------|------------------|
| 1) Chhayanut | 2) Sudh Kalyan | 3) Jai Jai Wanti |
| 4) Malkauns  | 5) Bhairav     | 6) Ramkali       |
- Out of the six drut Khayals one may be set to any tala other than teen tala.
- b) Two slow Khayal with extempore Alaps and Tanas in any of the prescribed Ragas.
- c) One Dhrupad with Dugun, Tigun and Chaugun and one Dhamar with Dugun in prescribed Ragas.
- d) One Tarana in any of the prescribed Ragas.
- e) Ability to demonstrate Ada, Chautal, Deepchandi, Tilwara Tivra with reciting bols by hands in Thaha and Dugun Layakaries and ability to play Chautal and Ektal on Tabla.

Note : i) *Harmonium will not be allowed as accompaniment in Vocal Music.*

ii) *The Candidate will be required to sing Vilambit and Drut Khayal in Ragas of the Examiner's choice.*

### MUSIC (INSTRUMENTAL)

#### Outlines of Test

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

#### Syllabus and Courses of Reading

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

#### SECTION-A

- Sixteen objective type questions covering the entire syllabus.
- Notation of the Talas and the compositions in the prescribed Ragas as follows :
  - Jai Jai Wanti
  - Malkauns
  - Deshkar
  - Desh
  - Multani
  - Gaud Sarang

Talas : Ada Chautal, Deepchandi, Teevra, Chautal

#### SECTION-B

- Short notes on the following :-  
Alpatva-Bahutva, Acirbhav-Tirobhav, Parmel paraveshak Ragasm Sandi Prakash Ragas, Maseet Khani, Razakhani, Ameerkhani, Gram, Murchana, Gats.
- Methods of tuning of Instruments and description of the instrument.
- Swayambhu Nad
- Saranchatustayi of Bharat and Sharangdev

#### SECTION-C

- Detailed description of the Ragas and Talas prescribed.
- Contribution towards Music by the following :-
  - Abdul Halim Zafar Khan
  - Annapurna Devi
  - Panna Lal Ghosh
  - Inayat Khan



- c) Detailed description of the following instruments :-  
 1) Sarod    2) Violin    3) Guitar  
 4) Santoor    5) Veena    6) Tabla
- d) Different style of Sitar Vadan.

**Paper-II      Practical**

Max. Marks : 60

Time : 20 to 30 minutes

- a) One drut gat with alap-jor Toras and Jhala in the following Ragas  
 1) Jai Jai Wanti    2) Malkauns    3) Deshkar  
 4) Desh    5) Multani    6) Gaud Sarang
- b) Two slow gats with Extempore Alaps and Toras in any of the prescribed Ragas.
- c) One Dhun in Bhairvi or Peelu Raga.
- d) One gat in Ektala in medium tempore, with Toras and Jhalas in any of the prescribed Ragas.
- e) Ability to demonstrate Ada-Chautal, Deepchandi, Tivra Chautal with reciting bols by hand, Thah and Dugun laykaries and ability to play Ektala and Jhaptal on Tabla.

**MUSIC (TABLA)****Outlines of Test**

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

**Paper-I (Theory)**

Max. Marks : 40

Time : 3 Hours.

**Syllabus and Courses of Reading**

- a) Definitions with full explanations of Uthan, Pharma Shee Paran, Nagma, Peskar, Chakardar.
- b) Ten Varanaas of Tala.
- c) Full Knowledge of Dakshani Tala System.
- d) Writing Method of Dugun, Tigun and Chaugn, Layakries, Toras, Parans and Tihaias.

- e) Life sketches of Sh. Shanta Prashad and Sh, Anokhelal.  
f). Ability to write Northern Talas in Karnatak Tala Padhti.

**Paper-II (Practical)**

Max. Marks : 60

Time : 20 Minutes

- a) Talas prescribed : Rupak, Tivra Jhap, Sul, Deepchandi, Jhumra with proper Barhat on hand and Tabla. At least ten Laggies each in Kehrava and Dadra.  
b) Practice to playing the above mentioned Talas, with Vocal and Instrumental items.  
c) Knowledge of Shudh and Vikrit Swaras.  
d) Tunning of Tabla.  
e) Practice of Khol Playing.

**Books Recommended**

1. Tal Parichaya Part-I & II : Grish Chander Srivastava, 88 South Malaka Ganj Allahabad.
2. Sangeet Nibandh Mala : J.N. Pathak, 27 Mahajan Tola Allahabad.
3. Sulbh Sangeet Shastra, Part-II : R.N. Telegaonkar, 30/148,, Rajamandi, Agra,
4. Shastra Rag Prichaya : Parkash Narain, Munshi Ram Part-II - III Parkash Bagh, Muthi Ganj, Allahabad.
5. Rag Parichaya Part-II & III : H.C. Srivastava, 88 South Malaka Ganj Allahabad.
6. Tabla Shastra : M.G. Godbole Pathak Publications 27, Mahajani Tola, Allahabad.
7. Tal Deepka : M.G. Godbole 27, Mahajani Tola, Allahabad.

**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. Origin of Tal and its application in Dance.
2. History of Indian Stage.
3. Comparative study of the different Gharanas in Kathak.
4. Study of growing popularity of Indian Dances in the West.
5. Detailed knowledge of use Navras and its application in Dance.
6. Knowledge of Costumes, background music used in different Classical Dances.
7. Detailed knowledge of use of Hast Mudras in Dance.
8. Life sketches of exponents of different Gharanas in Kathak and their contribution to their own Gharanas.
9. Notation of all the Bols prescribed in practical course.
10. Detailed knowledge of Folk Dances of North India, their original background Music and Costumes.

*Note : 1. There will be eight questions set out of the syllabus as given above.*

*2. One question on notation will be compulsory.*

**Paper-B (Practical)****Max. Marks : 60****Time 30 minutes**

1. Systematic performance in Teen Tal.
  - a) Advanced Tatkars with Paltas, Ladis and Tihais in different Layakari.
  - b) That
  - c) Two varieties of Amads.
  - d) Guru Vandana, Ganesh Vanadana.
  - e) Paran 4). Chakkardar Paran (2), 1 Tishra Jati Paran, 2 Kaviti, Parmalu.
  - f) Gat Nikas
  - g) Gat Bhav on any one of the following :  
Kalia Daman, Panghat, Goverdhan Lila, Makhan Chori.
2. Ability to dance skillfully in Jhaptal, Ektal.
  - a) That
  - b) Ahmada-I

- c) Karan
  - d) I-Chakkardar Paran
  - e) Kavita
3. Dhamaar (14 matra)  
Thtkar in Tha, Dugun  
Simple Tora 4 Amad-I
  4. Ability to demonstrate Toras of different Gharanas of Khatak.
  5. Ability to Dance any Folk form of dancing of the candidates choice.
  6. Ability to play Nagma and Thheka on Tabla of the Tals prescribed in the Syllabus.
  7. Ability to do Padhant of Bols in the prescribed Tals.

*Note : Distribution of Marks in Practical will be as under :*

a) Choice of the Student	15 marks
b) Choice of the Examiner	20 marks
c) Thheka on Tabla	5 marks
d) Playing Nagma	5 marks
e) Padhant	10 marks
f) Viva	5 marks

**ANCIENT INDIAN HISTORY, CULTURE  
AND ARCHAEOLOGY  
Outlines of Test**

Max. Marks : 100

**One Paper**

Time : 3 Hours

*Note : 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.*

*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 multi choice questions of 5 marks. Section-III will have matching type questions 5 marks.*

## Syllabus and Courses of Reading

### Paper - Socio Economic History of India

(From earliest times to c-1200 AD)

Indus Valley Civilization : Social Life; The Vedic Society : The Varnas, Origin and Development of Caste System; The Society at the time of the Budha, Foreign influence on Indian Society; Social Life during the Gupta period; Social Change in early Medieval Period (700-1200 A.D.); First Urbanisation (Indus Valley Civilization); Economic conditions during the Vedic Period, Gangas Valley Urbanizations Economic Conditions during the Mauryas and the Guptas; Trade and Commerce in Ancient India; Foreign contacts; Origin and growth of Feudalism; Economic conditions of the Deccan and the South; a general survey.

#### Books Recommended :

१. त्रिपाठी, डॉ. रामनरेश— प्राचीन भारत का आर्थिक विकास इलाहाबाद १९८१।
२. उपाध्याय, रामजी—प्राचीन भारत की सामाजिक संस्कृति, इलाहाबाद १९६३।
३. मोतीचन्द सार्थवाह, पटना, १९५३.
४. Sharma, R.S. Material Culture and Social Formation Ancient India Delhi 1983.  
Perspective in Social and Economic History of early India, Delhi, 1983  
Sudras in Ancient India Delhi, 1958.  
क्षूद्रों का प्राचीन इतिहास दिल्ली १९७६.  
भारतीय सामन्तवाद, दिल्ली १९७३।
५. झा, डी. एन. : मौर्योत्तर तथा गुप्तकालीन राजस्व व्यवस्था दिल्ली, १९७७.
६. पाण्डेय राजबलि—हिन्दू संस्कार, वाराणसी, १९५७.
७. Jairabhoy, R.A. Foreign Influence in Ancient India, New Delhi, 1963.
८. Das, S.K. The Economic History of Ancient India, Calcutta, 1947.
९. Maity, S.K. Economic Life of Northern India in the Gupta Period (A.D. 300-500), Calcutta, 1958.

10. Thakur, V.K. Urbanisation in Ancient India. New Delhi, 1981.
11. Gopal Zalanji The Economic Life of North India (A.D. 700-1200) Varanasi, 1965.
12. Praphu, P.H. Hindu Social Organisation, Bombay 1958.
13. Sharma, B.N. Social Life in North India (600-1000 A.D.), Delhi 1966.
14. Kher, N.K. Agrarian and Fiscal Economy in Maurya and Post-Mauryan Age Delhi, 1973.
१५. जयशंकर मिश्र : प्राचीन भारत का सामाजिक इतिहास, पटना १९७४.
१६. रायविजय बहादुर : उत्तर वैदिक समाज एवं संस्कृति, वाराणसी १९६६.
१७. मदन मोहन सिंह : बुद्ध कालीन समाज व धर्म।

### ART

#### Outlines of Test

	Max. Marks	Time
Paper-I(Theory) History & Appreciation of Art	30	3 Hours.
(a) History of Art	18}	30
(b) Appreciation of Art	12}	
Paper-II (Practical) Landscape on the Spot	20}	6 Hrs.
Paper-III (Practical) Poster	20} 70	6 Hrs.
Paper-IV (Practical) Composition	20}	6 Hrs.
Sessional work	10	

#### Syllabus and Courses of Reading

- Paper-I History and Appreciation of Art** M.M. : 30  
Time : 3 Hours.
- a) Histroy of Art** 18 Marks
- i) Early Indian Paintings : Ajanta, Paintings, Paintings of Bagh, Badami, Sattan-vasal and Tanjore. The Rajasthani School of Paintings, The Mughal School, The Pahari School.

ii) Modern phase : Bengal School of Art, Company School.

**b) Appreciation of Art** 12 Marks

Defination of Mural, Miniature Fresco Composition, Perspective foreshortening, Shadangs/six Limbs of Art, Indian Concept of Primary colour (Varana) and the symbolic meaning of each of the colours.

**Paper-II (Practical) Landscape on the Spot**

Max. Marks : 20

Time : 6 Hours

Landscape to be painted on the spot, adding two or more figure from Memory.

Medium : Oil/Water colour

Size : Half-sheet

*Note : More emphasis is to be given to composition both regarding drawing and colour, proportion, perspective and light and shade.*

**Paper-III (Practical) Poster**

Max. Marks : 20

Time : 6 Hours.

Poster should be in bold lay out using flat colours using not more than five colours.

*Note : The Thinking of Mahtma Gandhi, Vinodha Bhave & Prohibition Policy be included in Poster Making.*

Medium : Poster colour

Size : Half-sheet

**Paper-IV (Practical) Composition**

Max. Marks : 20

Time : 6 Hours

Compostion, using still-life objects not more than four in number. Drapery may be used in the background.

Medium : Oil or Water colour

Size : Half-sheet

*Note : The total effects of the painting should appear, less a representation of the objects placed before the candidates and besides this a well organised area of colours and forms. To achieve the effect simplification and distortion is allowed.*

**Sesstional Work** 10 Marks

1. Sketches 60

- |                |   |
|----------------|---|
| 2. Landscape   | 4 |
| 3. Poster      | 4 |
| 4. Composition | 4 |

*Note : The students must submit specimens of his/her work during the course duly attested by the teacher concerned. The pieces of work include drawing, painting related to the 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 in two Sections A & B Section A will carry six questions out of which the candidates shall be required to attempt any three. Section-B will contain four questions out of which the candidates will be required to attempt any two questions.
  2. Questions are to be set so as to test the broad survey of the topics and not minute details.

## CLAY MODELLING

### Outlines of Test

	Max. Marks	Time
Paper-I(Theory) History and Appreciation of Art	30	3 hrs.
(a) History of Art	18	} 30
(b) Appreciation of Art	12	
Paper-II (Practical) Head Study	30	3 hrs.
Paper-III (Practical) Imaginative Composition	30	6 hrs.
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

18 marks

- i) Early Indian Paintings : Ajanta, Paintings, Paintings of Bagh, Badami, Sattan-vasal and Tanjore, The Rajasthani School of Paintings, the Mughal School, the Pahari School.
- ii) Modern Phase : Bengal School of Art, Company School.



**b) Appreciation of Art** 12 marks

Defination of Mural, Miniature Fresco Composition, Perspective foreshortening, Shadangs/six Limbs of Art, Indian Concept of Primary Colour (Varana) and the symbolic meaning of each of the colours.

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

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

Clay Modelling as medium of imaginative presentation of human form showing movement and group formation.

*Note : The Thinking of Mahatma Gandhi, Vinobha Bhave & Prohibition Policy be included.*

**Sessional Work** 10 Marks

Three each specific model related with practical paper IInd & IIIrd.

*Note : The students must submit specimens of his/her work done during the course duly attested by the teacher concerned. The piece of work include drawing, Paintings related to the 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 Section-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**

One paper of three hours duration carrying 100 marks.

History of Indian Sculpture and Painting.

(From the Post-Classical Period to A.D. 1800)

Part-A Post-Classical Indian Sculpture of different styles and

Dynasties Chalukya, Pallav, Chole and Hoysalo; Pala and Sena Ganga an Gajpati.

Part-B Medieval Painting : The Sultante Period : the Mughal School; the Rajasthani Schools; the Pahari School; the Deccani School.

*Note : Each theory paper shall be divided into two Section-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.*

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

## MATHEMATICS

### Outlines of Test

	Max. Marks		
	B.A.	B.Sc.	Time
Paper-I Calculus and Analytical Geometry	50	75	3 Hrs.
Paper-II Mechanics and Numerical Analysis	50	75	3 Hrs.
<b>Paper-I</b> <b>Calcullus and Analytical Geometry</b>			

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

### Unit-I

Derivative of functions defined parametrically. Derivative of Logarithmic, exponential, trigonometric, inverse trigonometric and hyperbolic functions. Derivatives of higher orders, Successive differentiation, Leibnitz's Theorem, Tangents and Normals.

### Unit-II

Taylor's Theorem and Maclaurin's theorem, Expansion of exponential, Trigonometric, binomial functions. Indeterminate forms, function of more than one variables and its continuity.

### Unit-III

Partial derivatives of first and second order. The notion of total Indifferential, extreme values, Lagrange's Method of Multipliers. Euler's theorem on homogeneous functions,

differentiation of composite and implicit functions, Statements of implicit function theorem and inverse function theorem.

**Unit-IV**

Asymptotes, curvature, singular points, tracing of curves.

**Unit-V**

Reduction formulae, Length of curves area of surfaces of revolution, Double and triple integration and its simple applications to determination of volumes and surfaces.

**Unit-VI**

Equation and simple properties of spheres cones and cylinder equations in standard forms and simple properties of Ellipsoids, Paraboloids and Hyperboloids.

*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 from each unit.*

**Paper-II Mechanics and Numerical Analysis**

Max. Marks : B.Sc. : 75

B.A. : 50

Time : 3 Hours

**Unit-I**

Velocity, Acceleration. Newton's Laws of Motion Rectilinear motion including motion under Gravity and simple harmonic motion.

**Unit-II**

Composition and resolution of velocities, accelerations and forces in plane. Simple cases of motion in a plane with acceleration parallel to a fixed direction. Projectiles. Relative Motion. Angular Velocity. Motion in Horizontal and Vertical circles simple Pendulum.

**Unit-III**

Work, energy, power and impulse. Motion of a system of particles. Principles of conservation of linear momentum and energy Impact.

**Unit-IV**

- Location of roots, solution of algebraic and transcendental

equations. Iterative Method, bisection method, Regula Falsi Method Newton-Raphson method.

### Unit-V

Interpolation, Newton's forward and backward formulae. Central differences, Gauss, Strirling. Everett and Bessel formulae.

### Unit-VI

Divided difference, Newtons divided difference and Lagrange's formulae. Solution of system of simultaneous equations in three unknowns Gauss elimination method, triangularization and Crout's method.

*Note : 1. The examiner is required to set 12 questions in all, two from each Unit. The candidate will be required to attempt six questions selecting one from each unit.*

*2. Students are allowed to use their own calculators.*

## STATISTICS

### Paper-I Statistical Methods

Max. Marks : B.A. : 35

B.Sc. : 50

Time : 3 Hours

### Continuous Distributions

**Unit-I** Normal distribution as limiting case of Binomial and poisson distribution, Properties, area under normal curve with its applications.

**Unit-II** Exponential, Uniform, cauchy Beta and Gamma distributions with their properties.

### Correlation and Regression

**Unit-III** Linear correlation, Karl Pearson's and Spearman's Correlation, coefficients, Fitting of Straight Line, Parabola, Logarithmic and Exponential curves by the method of least squares.

**Unit-IV** Linear regression, Lines of regression, Regression coefficient, Properties of regression Coefficient, Angle Between two lines of regression.

**Unit-V** Multiple and partial correlation (for three variables only) Yule's Notation, Plane of regression, properties of residuals, variance if the residual, coefficients of Multiple and partial correlation with their properties.

*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 question from each unit.*

**Paper-II Elementary Inference**

Max. Marks B.A. : 35

B.Sc. : 50

Time : 3 Hours

**Estimation /**

**Unit-I** Concept of population, Sample parameter and Statistic. Sampling distribution, Standard Error Point and Interval Estimation, criteria for a good estimator, unbiasedness efficiency consistency and sufficiency (def. only)

**Unit-II** The methods of moments, least squares. maximum likelihood. minimum variance, Estimates and statements of their properties. Concept of confidence Interval.

**Testing of Hypothesis**

**Unit-III** Null and Alternative hypotheses, Simple hypothesis, Two type of errors, level of significance, concept of power of a test. N.P. Lemma, Test for a simple hypothesis against a simple alternative in case of Binomial Poisson and Normal Distributions.

**Unit-IV** Large Sample tests of mean, Variance, proportion and Correlation coefficient.

**Unit-V** Simple properties of Chi-square, Students' t and Snedecor's F distributions with their applications in tests of significance.

*Note : The examiner is requested to set 10 questions in all two questions from each unit. The candidates 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) Experiments (B.A. : 24 marks, B.Sc. : 40 marks)

- ii) Record of practical work and oral test (B.A. : 6 marks, B.Sc. : 10 marks)

The following topics are prescribed for the practical work :

Fitting of Normal distribution : Estimating mean and standard deviation from a Normal Population : Karl Pearson's coefficient of correlation, Rank correlation coefficient, correlation coefficient for bivariate frequency distribution; Fitting of Straight line, Second degree parabola and Exponential curve by least square method, Fitting of Linear regression in case of three variables : Computation of partial and multiple correlation for three variables : Confidence Intervals : Test of significance : Large Sample test for mean and variance, Chi-Square test, test for hypothesis :  $P = P_0$ ,  $P_1 = P_2$ , t test for hypothesis;  $\mu = \mu_0$  and  $\mu_1 = \mu_2$ , F- test for equality of two variances.

- \* The students are allowed to use calculators in the Examination.

## HOME SCIENCE

### Paper-I

### Clothing & Textiles

Max. Marks Time

B.A. : 30 2 Hours

B.Sc. : 45

- Note :*
1. The examiner will set six questions in all two questions from each Unit.
  2. The candidates shall attempt three questions in all selecting one from each Unit.
  3. All questions carry equal marks.

#### Unit-I

Definition and Classification Fibres.

Manufacture and properties of different Fibres : Cotton, Silk, Wool and Nylon.

#### Unit-II

Finishing processes in Fabrics.

- a) Meaning and objectives and applications of Finishes.
- b) Different type of Finishes-Calendering, Bleaching, Sizing, Mercerizing, Pre-shrinking, Crease resistant, Dyeing and Printing.

**Unit-III**

Supplies / Necessary for laundry :

- a) Soaps & Detergents, Starches, blues & bleaches.
- b) Other reagents : Acids, Alkalies, Solvents & Absorbants.

Different Methods of Laundry.

Stain removal Classification of stains, Methods of removing different types of stains.

**Paper-II****PHYSIOLOGY**

Max. Marks Time :

B.A. : 30 2 Hours

B.Sc. : 45

*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**

Cell Structure of an Animal Cell, Cell division in brief. (Mitosis & Meiosis).

**Skeletal System** : Functions of skeletal system, Names of the bones and joints.

**Digestive System** : Digestion & absorption of food-Parts of Elementary Canal (only the structure), Mouth, Pharynx, oesophagus, Stomach, Small Intestine & large Intestine.

**Unit-II**

**Circulatory System** :

- a) Blood composition and functions of blood.
- b) coagulation of blood.
- c) Heart : Structure and working of heart.
- d) Blood pressure

**Excretory System** :

Structure and functions of Kidney, Skin and Lungs.

**Unit-III**

**Reproductive System** :

- a) Sex glands (Male & Female)

- b) Menstruation, Fertilization, Pregnancy & Lactation.  
Endocrine Glands : Functions of different glands. The Pituitary, The Thyroid, Parathyroid, The Adrenal Glands, Islets of Langerhans in pancreas.

**Nervous System :**

- a) Parts and functions of Brain.
- b) Spinal Cord-function and reflex action.

**(Practical) CLOTHING & TEXTILES**

Max. Marks Time :

B.A. :40 3 Hours.

B.Sc. :60

1. Study of different parts of sewing machine, its care, defects and remedies.
2. Preparations of Samples :
  - a) Basic Stitches - Tacking, running stitches, back stitches hemming, button hole stitch.
  - b) Seams-Plain Seam, French Seam, Run and Fell Seam.
  - c) Processes- Gathers into bond, dart, pleats (knife and box), placket opening (continuous warp & two piece placket opening), pin tucks. (minimum 12 - 15 samples).
3. Taking body measurement.
4. Drafting of the following :
  - a) Child's bodice-block and / its adaptation to a gathered frock.
  - b) Drafting of Collars (Baby Collar, Peter Pan collar)
  - c) Adult's bodice-block and its adaptation to their choice garment.
5. Drafting and stitching of the following garments :
  - a) Gathered frock with sleeves (3 to 8 years old).
  - b) Salwar and Kamiz.
  - c) Blouse and Paticcoat.
6. Embroidery - One article of fancy embroidery using atleast four stitches.

OR

Five Fancy embroidered handkerchief with different stitches.



7. Knitting :
  - a) Following of Knitting instructions.
  - b) Preparation of two samples of different designs (minimum size 6" x 6").
8. Stain removal : Curry, Tea or Coffee, Blood, Lipstick, Nail Polish, Paint, Greese, Blue ink, Rust and Ball pen.
9. Tie and Dye.

## INDUSTRIAL CHEMISTRY

### (Vocational Course)

#### Scheme of Examination

The students of B.Sc. II shall be required to appear in two theory papers and one practical examination at the end of the session. In addition to this, the students will submit "Project Report" of 30 marks.

The distribution of marks shall be as under :-

Paper-I	Max. Marks	Time Allowed
Unit-1 Material Science	40	3 Hrs.
Unit-2 Unit Processes Inorganic Chemicals Manufacture-I		
Unit-3 Unit Processes in organic Chemicals Manufacture-II		
Paper-II		
Unit-1 Pollution	40	3 Hrs.
Unit-2 Effluent Treatment and Waste management		
Unit-3 Process Instrumentation		
<b>Paper-III Practicals</b>	40	3 Hrs.
<b>Paper-IV Project Report</b>	30	

(In the "Project Work" of 30 marks, the students will be required to undergo "on the job Training" in an industry for a period of four weeks and submit a report of the same to the University).

**1. Job Training :**

- i) Batches of students (say 4 to 5 students) are to be sent to different Chemistry Industries in order to learn about the work being done there. Moreover, they had to do some work on a Project with the help of the staff in the industry under the guidance of a teacher of the concerned college.
- ii) They have to submit the work in the form of a Project report duly typed to the College concerned which have to be evaluated by an External Examiner. The candidate has also to undergo a viva-voce Examination. Marks are to be given depending upon the performance.
- iii) Marks of Project report submitted in B.Sc.-I (evaluated 70 after the theory examination of B.Sc.I ) are to be included in the DMC of B.Sc. II and similarly the marks of Project Report of B.Sc. -II (evaluated at the end of theory Exam. of B.Sc. -II ) are to be included in B.Sc.-III DMC. No Project report would be there in B.Sc.-III.

**2. Entrepreneurship**

- i) The student shall be advised to prepare small project for setting up of a small scale industry.
- ii) The entrepreneurship development courses should be included in the syllabi for the proper applications.

**SECOND YEAR B.Sc (Industrial Chemistry)****Paper-I**

<b>Unit-I</b>	<b>Material Science</b>	<b>Max. Marks : 40</b>
		<b>Time : 3 Hrs.</b>
IC 201	Mechanical properties of materials and change with respect to temperature.	2L
	<b>Materials of Constructions used in Industry</b>	
	<b>Metals and Alloys :</b> Important metals and alloys; iron, copper, aluminium, lead, nickel, titanium and their alloys - Mechanical and chemical properties and their applications:	6L
	<b>Cement :</b> Types of Cement, Composition, Manufacturing process, setting of cement,	4L
	<b>Ceramics-</b> Introduction, Types, Manufacturing processes, Applications. Refractories	4L

**Polimeric Materials** : Industrial polymer and composite material-

6L

Their constitution, chemical and physical properties, Industrial applications.

**Glass** - Type, composition, manufacture, physical and chemical properties, application.

4L

**Corrosion** -Various types of corrosion relevant to chemical industry - Mechanism, Preventive methods.

**Books :**

1. Science of Ceramics Chemicals Processing, Hench, L.L.
2. Chemistry and Physics of Clays other Ceramics.
3. Science of Ceramics, Stewart, G.H.
4. Chemistry of Cement
5. Properties of Glass, Morey, G.W.
6. Chemistry of Glasses, Paul, A.
7. Corrosion : Causes and prevention, Spellur, F.N.
8. Corrosion and Corrosion Engineering Fontana M.G. and Green N.D., Mc. Graw-Hill Book Co.
9. Experiments in Materials Technology, a Laboratory Text for Engineering, Manufacturing Metallurgy and Materials Testing Govt. of India; East West Publications.
10. Selecting Materials for Process Equipment Mc. Maughton K.J., Mc, Graw-Hill Book Co.,

**Unit-2 Unit Processes in Organic Chemicals**

**Manufacturer-I**

IC 203 Nitration : Introduction-Nitrating agents.

12L

Kinetics and mechanism of nitration processes such as nitration of :

- i) Paraffinic hydrocarbons
- ii) Benzene to nitrobenzene and m-dinitrobenzene
- iii) Chlorobenzene to o and p nitrochlorobenzenes
- iv) Acetanilide to p nitroacetanilide
- v) Toluene

Continuous vs batch nitration

IC 204 Halogenation : Introduction- kinetics of

9L

Halogenation reactions, Reagents for

halogenation, Halogenation of aromatics,  
-side chain and nuclear

halogenations, commercial manufactures-  
chlorobenzenes, chloral, monochloroacetic and  
chloromethanes, dichlorofluoromethanes,

- IC 205 Sulphonation; Introduction - sulphonating agents, 9L  
chemical and physical factors in  
sulphonation, kinetics and mechanism of  
sulphonation reaction, commercial  
sulphonation of benzene, naphthalene,  
alkyl benzene, Batch vs continuous  
sulphonation.

### Books

1. Unit Process in Organic Synthesis P.M.  
Grogging, Mc Graw-Hill Book Co, New  
York.

### Unit-3 Unit Processes in Organic Chemicals Manufacture-II

- IC 206 Oxidation; Introduction-Types of oxidation 7L  
reactions , Oxidizing agents, kinetics  
and mechanism of oxidation of organic  
compounds Liquid phase oxidation Vapor  
phase oxidation, Commercial  
manufacture of benzoic acid maleic  
anhydride, phthalic anhydride, acrolein,  
acetaldehyde acetic acid.
- IC 207 Hydrogenation : Introduction-kinetics and 7L  
thermodynamics of hydrogenation  
reactions, Catalysis for hydrogenation  
reactions, Hydrogenation of vegetable  
oil, Manufacture of methanol from carbon  
monoxide and hydrogen, hydrogenation of  
acids and esters to alcohols, catalytic  
reforming.
- IC 208 Alkylation : Introduction : Types of alkylation, 7L  
Alkylating agents, Thermodynamics and  
mechanism of alkylation reactions,  
Manufacture of alkyl benzenes (for

detergent manufacture), ethyl benzene phenyl alcohol, N-alkyl anilines (mono and di-methyl and ethyl anilines). Esterification : Introduction : Hydrodynamics and kinetics of esterification reactions, Esterification by organic acids, by addition of unsaturated compounds, esterification by organic acids, by addition of unsaturated compounds, esterification of carbonyl acid derivatives, commercial manufacture of ethyl acetate, dioctyl phthalate, vinyl acetate, cellulose acetate.

IC 209 Amination; (A) By reduction; Introduction, methods of reduction-metal and acid, catalytic, sulfide, electrolytic, metal and alkali sulfites, metal hydrides, sodium metal, concentrated caustic oxidation, reduction, commercial manufacture of aniline, m-nitroaniline, p-amino phenol.

(B) By aminolysis : Introduction, aminating agents, factors affecting.

Hydrolysis : Introduction; hydrolysing agents, kinetics, thermodynamics and mechanism of hydrolysis.

2L

### Books

1. Unit Processes in Organic synthesis, P.H. Groggins, Mc Graw Hill Book Co. New York.

### Paper-II

Max. Marks : 40

Time : 3 Hours

### Unit-I Pollution

IC 210 Air Oxygen, nitrogen cycle, water, Biosphere, Flora and Fauna, Energy Soil 8L

IC 211 Pollutants and their statutory limits. Pollution evaluation methods. 7L

IC 212 Air pollution - various pollutants. 15L

Noise pollution  
 Sewage analysis  
 Pesticide pollution  
 Radiation pollution, Green house effect, Future.  
 Water pollution-Organic.inorganic pollution

**Books** 30

1. Pollution control in chemical and allied industries, Mahajan S.P.
2. Pollution control in industries. A series of books by Jones H.R.
3. System's Approach to Air Pollution Control, R.J. Bibbero and I.G. Young.
4. Air Pollution-Vol. I-IV Editor, A.C. Stern, Academic Press, New York.
5. Gas Purification Process for Air Pollution Control, G. Nonhebel Newnes Butterworths, London.
6. Air Pollution Technology, Painter D.E., Reston Publishing Co.

**Unit-2 Effluent Treatment and Waste Management.**

IC 213 Principles and equipments for aerobic, anaerobic treatment, adsorption, filtration, sedimentation, Bag filters, electrostatic precipitator mist eliminator, wet scrubbers.	10L
Absorbers	8L
Solid Waste Management	4L
Industry Safety	4L

**Books**

1. Effluent Treatment in Process Industries of Chem. Engg.
2. Effluent Treatment and Waste disposal-inst. of Chem. Engg.
3. Effluent Treatment and disposal inst. of Chem. Engg.
4. System's approach to Air Pollution control, R.J. Bibbero and I.G. Young.
5. Air Pollution-Vol. I-IV, Editor, A.C. Stern.

Academic Press, New York.

6. Gas Purification Process for Air Pollution Control,  
G. Nonhebel Newnes-Butterworths, London.
7. Air Pollution Technology, Painter D.E. & Reston  
Publishing Co.

### Unit-3 Process Instrumentation

Concept of measurement and accuracy	2L
Principle, construction and working of following measuring instruments	10L
Temperature-glass thermometers, bimetallic thermometer pressure spring thermometer, vapour filled thermometers resistance thermometers. radiation pyrometers.	7 L
Pressure-Manometers, parometers, burdon pressure guage; bellow type, diaphragm type pressure guages, macleod guages, pirani gauges, etc.	
Liquid level : Direct-indirect liquid level measurement, flot type liquid level gauge, ultrasonic level gauges; Bubbler system.	8 L
Density Measurement and Viscosity Measurement	4 L

### Books

1. Industrial Instrumentation  
D.P. Eckman, John-Wileys & Sons.
2. Applied Instrumentation in procedes industries.  
Vol. I. II & III W.G. Andrews, Gulf Publication.
3. Instrumentation and Control for the process  
Industries.  
S.Borer, Elsevier Applied Science Publishers.
4. Chemical Engineers' and book. J.H. Perry and D  
Greenb, Mc Graw-Hill, Publishing Co., New York.

### Practicals

Max. Marks : 40

Time : 6 Hrs.

1. One to two examples of each of the process. Nitration,  
Sulphanation Friedel crafts reaction, esterification, Hydrolysis,  
Oxidation, Halogenation, Chlorousulphonation; Reduction,  
Polymerization reactions, of diazonium salts.

2. Use of Transducers for measuring flow control.
3. Determination of flash point and ignition points of liquids.
4. Water analysis-solid content, Hardness, COD and other tests as per industrial specifications.
5. Flow measuring devices-floats.
6. Monographs of representative raw materials such as sulphuric acid, toluene, sodium carbonate, sodium hydroxide, carbon tetrachloride Benzoic acid. (5-6 compounds).
7. Limit tests for heavy metals Pb. As., Hg. Fe and ash content.
8. Instrumental Methods of Analysis - Use of colourimeter, pH, meter, potentiometer, conductometer, refractometer, polarimeter.
9. Material testing : Testing of alloys Identification of plastics/ rubber Estimation of yield point, young's modulus, flaredness; Optical, thermal mechanical and electrical properties.  
Process Instrumentation - transducers of different types.

### हिन्दी अनिवार्य

पूर्णांक : १००

समय : ३ घन्टे

#### १. मध्यकालीन काव्य

४० अंक

प्रदत्त चार काव्यांशों में से दो की सप्रसंग व्याख्या करनी होगी। पूछे गये दो कवियों में से एक का साहित्यिक परिचय लिखना होगा। पाठ्य पुस्तक की "अनुशीलनी" में से पूछे गये चार समीक्षात्मक प्रश्नों में से दो का उत्तर देना होगा। व्याख्या के लिए सोलह (८+८), कवि-परिचय के लिए आठ समीक्षात्मक प्रश्नों के लिए सोलह (८+८) अंक नियत हैं।

#### २. उपन्यास

२० अंक

प्रदत्त दो गद्यांशों में से एक की सप्रसंग व्याख्या करनी होगी। निर्धारित प्रश्नावली। १. कथासार और कथा गठन, २. नामकरण की सार्थकता, ३. तात्विक समीक्षा ४. प्रमुख पात्रों का चरित्र-चित्रण, ५. भाषा-शैली, ६. उद्देश्य में से पूछे गए दो समीक्षात्मक प्रश्नों में से एक का उत्तर देना होगा। व्याख्या के लिए आठ और समीक्षात्मक प्रश्न के बारह अंक नियत हैं।



3. हिन्दी साहित्य का इतिहास (मध्यकाल) 20 अंक  
निर्धारित दस प्रश्नों में से चार प्रश्न पूछे जायेंगे, जिनमें से दो का उत्तर देना होगा। इसके लिए बीस (१०+१०) अंक नियत हैं।

9. भक्तिकाल की परिस्थितियाँ।

2. संत काव्य : संक्षिप्त परम्परा और प्रवृत्तियाँ।

3. सूफीकाव्य : संक्षिप्त परम्परा और प्रवृत्तियाँ।

4. रामकाव्य : संक्षिप्त परम्परा और प्रवृत्तियाँ।

5. कृष्णकाव्य : संक्षिप्त परम्परा और प्रवृत्तियाँ।

6. भक्तिकाल : स्वर्ण-युग।

7. रीतिकाल की परिस्थितियाँ।

8. रीतिकाल का नामकरण।

9. रीतिबद्ध काव्य : संक्षिप्त परम्परा और प्रवृत्तियाँ।

10. रीतिमुक्त काव्य : संक्षिप्त परम्परा और प्रवृत्तियाँ।

4. पत्र लेखन 95 अंक

सामान्य तथा कार्यालयीय पत्रों (सरकारी, अर्द्धसरकारी, परिपत्र, अनुस्मारक) से प्रदत्त चार पत्रों में से दो पत्र लिखने होंगे, जिनके लिए पन्द्रह (१५) अंक नियत हैं।

5. पारिभाषिक शब्दावली 5 अंक

पाठ्यक्रम में निर्धारित इन दो सौ शब्दों :

Academic Council, Academic Qualification, Accountant General, Acknowledgement, Additional Grant, Additional Secretary, Adhoc, Adjournment, Adjustment, Admissible, Admission, Advance, Adverse Report, Advisory Committee, Advocate General, Affidavit, Affiliated Colleges, Agenda, Agreement, Allocation, Alternative, Amendment, Annexure, Annuity, Anticipated, Appendix, Approval, Arbitrator, Attestation, Auditor, Autonomous:

Balance Sheet, Bonafide, Breakage, Bureaucracy.

Candidate, Caretaker, Casting Vote, Casual Leave, Catalogue, Caution Money, Censure motion, Certified Copy, Chancellor, Circular, Claimant, Clarification, Classification, Clerical error, Communique, Compensation, Confidential, Contingencies,

Controller, Conveyance Allowance, Corporation, Corrigendum, Countersignature, Custodian.

Dearness Allowance, Decontrol, Decorum, Defamation, Demotion, Deputation, Designation, Disciplinary Action, Discrepancy, Disparity, Document, Draft, Duplicate copy.

Earned Leave, Earnest Money, Efficiency Bar, Eligibility, Employee, Employer, Endorsement, Exchequer, Executive Council, Face value, Fare Fictitious, File Fiseal, Fitness Certificates, Flying Squad, Flyleaf.

Gazetted, Governing body, Gratia, Gratuity, Gross Amount, Halting allowance, Hire, Honorarium, Honorary.

Ibid, Identity Card, Illegal, Immediate, Immediate Officer, Impersonation, Imprest Money, Incentive, Incognito, Indemnity bond, Index Number, Indispensable, Initial Pay, Initials, Insolvency, Instructor, Integrity, Interim relief, Invalid, Inventory, Invigilator, Invoice.

Joining date, Judiciary, Junior, Jurisdiction, Justification, Keyboard.

Legitimate, Liaison, Local body,

Majority, Malafide, Malpractice, Mandate, Manifesto, Mayor, Memorandum, Migration, Minutes, Misconduct, Monopoly.

Negligence, Negotiation, Non-official, Notification.

Obligatory, Offence, Officiating, Optional, Overtime Allowance.

Panel, Patron, Penal Code, Penalty, Privilege, Procedure, Promotion, Pro Vice-Chancellor, Provident Fund, Punctuality.

Quotation.

Recognised, Record Keeper, Recurring, Re-examination, Refresher Course, Registrar, Registration, Reimbursement, Reminder, Remuneration, Renewal, Resolution, Retirement, Revaluation.

Scale of Pay, Scrutinizer, Secretariat, Seminar, Senior, Sine die, Standing Order, Status quo, Stipend, Subordinate, Substitute, Supervisor, Supplementary, Suspension.

Target, Tariff, Testimonial, Time-table, Trust.

Unanimous, Under consideration, Up-to-date.

Valid, Verification, Vice-Chancellor.

Write off. में से पांच के हिन्दी-पर्याय देने होंगे, जो पांच अंकों के होंगे।

इस अंश में कोई विकल्प नहीं होगा।

## पाठ्य ग्रन्थ

(अध्याय 'शबरी प्रसंग' में नहीं है)

१. सरस्वती : कुरुक्षेत्र विश्वविद्यालय कुरुक्षेत्र प्रकाशन, १९६६.
२. आकाश की छत : रामदरश मिश्र, वाणी प्रकाशन, दिल्ली।

## सहायक ग्रन्थ

१. हिन्दी साहित्य का विवेचनात्मक इतिहास : तिलकराज शर्मा, आर्य बुक डिपो, दिल्ली।
२. हिन्दी साहित्य का इतिहास : लालचन्द गुप्त "मंगल यूनिवर्सिटी बुक सेण्टर, कुरुक्षेत्र।
३. हिन्दी साहित्य का संक्षिप्त इतिहास : बाबू गुलाबराय, लक्ष्मीनारायण अग्रवाल, आगरा।
४. हिन्दी साहित्य का संक्षिप्त इतिहास : नन्ददुलारे वाजपेयी, वाणी प्रकाशन, दिल्ली।
५. हिन्दी साहित्य का संक्षिप्त इतिहास : विश्वनाथ त्रिपाठी, राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण, दिल्ली।

## बी.ए. (द्वितीय वर्ष), हिन्दी (ऐच्छिक)

सत्र १९६६-२००० से प्रभावी

पूर्णांक : १००

समय : तीन घन्टे

## १. प्राचीन खण्डकाव्य

अंक : ३०

प्रदत्त चार काव्यांशों में से दो की सप्रसंग व्याख्या करनी होगी। पूछे गये दो समीक्षात्मक प्रश्नों में से एक का उत्तर देना होगा। व्याख्या के लिए सोलह (८+८) तथा समीक्षात्मक प्रश्न के लिए चौदह अंक नियत हैं।

## 2. नाटक

अंक : ३०

प्रदत्त चार गद्यांशों में से दो की सप्रसंग व्याख्या करनी होगी। पूछे गये दो समीक्षात्मक प्रश्नों में से एक का उत्तर देना होगा। व्याख्या के लिए सोलह (८+८) तथा समीक्षात्मक प्रश्न के लिए चौदह अंक नियत हैं।

## 3. काव्यशास्त्र

अंक : १०

निर्धारित दस प्रश्नों (काव्य की परिभाषा और स्वरूप; काव्य के तत्व; काव्य के भेद;) महाकाव्य, खण्डकाव्य, गीतिकाव्य (और उनका परिचय; काव्य-गुण; काव्य दोष; काव्य प्रयोजन; काव्य-हेतु; तीनों शब्द-शक्तियों का) भेदों का नहीं (सोदाहरण परिचय) में से पूछे गये दो प्रश्नों में से एक का उत्तर देना होगा। इसके लिए दस अंक नियत हैं।

## 4. हिन्दी साहित्य का इतिहास (आदि काल, भक्ति काल, रीतिकाल)

अंक : ३०

निर्धारित पन्द्रह प्रश्नों में से चार प्रश्न पूछे जायेंगे, जिनमें से दो का उत्तर देना होगा। इनके लिए तीस (१५+१५) अंक नियत हैं -

1. हिन्दी साहित्य इतिहास का काल विभाजन।
2. आदिकाल का नामकरण।
3. आदिकाल की परिस्थितियाँ।
4. आदिकालीन काव्य की सामान्य प्रवृत्तियाँ।
5. पृथ्वीराज रासो की प्रामाणिकता।
6. भक्तिकाल की परिस्थितियाँ।
7. संतकाव्य : परम्परा और प्रवृत्तियाँ।
8. सूफीकाव्य : परम्परा और प्रवृत्तियाँ।
9. रामकाव्य : परम्परा और प्रवृत्तियाँ।
10. कृष्णकाव्य : परम्परा और प्रवृत्तियाँ।
11. भक्ति काल : स्वर्ण-युग।
12. रीतिकाल की परिस्थितियाँ।
13. रीतिकाल का नामाकरण।
14. रीतिबद्ध काव्य : परम्परा और प्रवृत्तियाँ।
15. रीतिमुक्त काव्य : परम्परा और प्रवृत्तियाँ।

## पाठ्य ग्रन्थ-

१. सुदामा चरित : नरोत्तम दास सूर्यभारती प्रकाशन, दिल्ली।
२. ध्रुवस्वामिनी : जयशंकर प्रसाद, प्रसाद प्रकाशन, इलाहाबाद।

## सहायक ग्रन्थ-

१. काव्य शास्त्र : पुष्पा बंसल कुरुक्षेत्र विश्वविद्यालय, कुरुक्षेत्र।
२. काव्यांग-परिचय : अशोक शील शर्मा, आर्य बुक डिपो, दिल्ली।
३. हिन्दी साहित्य का इतिहास : लालचन्द गुप्त "मंगल" यूनिवर्सिटी बुक सेण्टर, कुरुक्षेत्र।
४. हिन्दी साहित्य का संक्षिप्त इतिहास : बाबू गुलाबराय, लक्ष्मीनारायण अग्रवाल, आगरा।
५. हिन्दी साहित्य का विवेचनात्मक इतिहास : तिलकराज शर्मा, आर्य बुक डिपो, दिल्ली।

## संस्कृत (अनिवार्य)

पूर्णांक : १००

समय : ३ घण्टे

१. क) भासः चारुदत्त ५० अंक  
 १) सप्रसंग व्याख्या-तीन खण्ड  $८ \times ३ = २४$   
 २) अनुवाद/सरलार्थ-दो खण्ड  $५ \times २ = १०$
२. चारुदत्त नाटक की कथावस्तु, पात्र तथा भाषा शैली से सम्बन्धित प्रश्न १० अंक
३. सूत्रधार, नान्दी, स्थापना, जनान्तिकम्, आत्मगतआकाशभाषित तथा भरतवाक्यम् का सामान्य परिचय। (परिभाषा दो)  $३ \times २ = ६$  अंक
- ख) व्याकरण :-

१) कृदन्त, शतृ, शानच्, तव्यत्, अनीयर, यत्, तुमुन् कत्वा, क्त, क्तवत्, ग्वल, (आठ प्रयोग)  $८ \times २ = १६$  अंक

२) णिच् तथा सन् प्रत्यायान्त प्रयोग

क) निम्न धातुओं में णिच् प्रत्यय के लट् लकार प्रथम पुरुष एकवचन के रूप :-

भू, पठ्, गम्, पा, लिख्, श्रू, भृ, दा, स्था, हस्, (५ प्रयोग)

५ × १ = ५ अंक

ख) निम्न धातुओं में सन् प्रत्यय के लट् लकार प्रथम पुरुष में रूप :-

भू, पठ्, गम्, पा, लिख्, श्रू, स्था, हस्, (५ प्रयोग)

५ अंक

३) समास-अव्ययी भाव, तत्पुरुष। (द्विगु तथा कर्मधारय सहित) द्वन्द्व तथा बहुब्रीहि-सामान्य परिचय एवं नाम सहित प्रयोग-

७ × २ = १४ अंक

४) दस सरल हिन्दी वाक्यों का संस्कृत में अनुवाद। १० अंक

### संस्कृत (ऐच्छिक)

कुल अंक : १००

समय : ३ घण्टे

#### पाठ्यक्रम की रूपरेखा

१. पद्य	१५ अंक
२. गद्य	१५ अंक
३. नाटक	२० अंक
४. व्याकरण	३० अंक
५. काव्य शास्त्र	१० अंक
६. अनुवाद	१० अंक

#### पद्य:

कुमारसम्भव-पंचमसर्ग

१५ अंक

#### गद्य:

शिवराजविजय तथा दशकुमारचरितम् में से चुने हुए पाठ। १५ अंक

नाटकः

पंचात्रम् भासकृत

१५ अंक

व्याकरण :

धातुरूप निम्नलिखित लकारों में :-

लिट्, लुट्, आशीलिङ् लुङ् लृट्

धातुएं यज्, नी, नम्, पा (पाने) वद्, पठ्, ग्रह, क्री, लिख्, खाद-

१० अंक

कारक प्रकरण-लघुकोमुदी में से-

२० अंक

अलंकार अनुप्रासः (छेक), यमक, श्लेष, उपमा, पूर्णोमा, उत्प्रेक्षा,

रूपक (साङ्ग), अतिशयोक्ति, भ्रांतिमान् अर्चान्तरनयास, दृष्टान्त १० अंक

अनुवाद-

१० अंक

पाठ्य पुस्तक :

संस्कृत संग्रह-कुरुक्षेत्र विश्वविद्यालय, कुरुक्षेत्र प्रकाशन।

संस्कृत अनिवार्य

(For B.Sc. Part-II)

प्रश्न-पत्र : एक

कुल अंक : ५०

समय : ३ घण्टे

क) संस्कृत चयनिका कुरुक्षेत्र विश्वविद्यालय प्रकाशन।

ख) व्याकरण

१) शब्दरूप-बालक, राजन्, विद्वस्, शशिन्, सर्व, नदी, युष्मद्, अस्मद्, तद्, इदम्, अद्स। अंक ६

२) धातुरूप-लट्, लोट्, हस्, लृट् लकार में भू, वद्, गम्, पठ्, स्था, लभ्, दा, कृ, श्रू, चुर। अंक ६

३) सन्धि-स्वर-सन्धि, सकार तवर्ग को सकार चवर्ग, सकार तवर्ग को सकार स्वर्ग। अंक ४

४) कारक तथा विभक्तियों पर आधारित हिन्दी से संस्कृत में सरल वाक्यों का अनुवाद। अंक ४

## बी.एस. सी. (द्वितीय), हिन्दी (अनिवार्य)

पूर्णांक : ५०

समय : ३ घण्टे

## १. काव्य

२० अंक

सप्रसंग व्याख्यान दिए गए अंशों में से दो की व्याख्या करनी होगी। पूछे गए दो कवियों में से एक कवि का साहित्यिक परिचय लिखना होगा। व्याख्या के लिए बारह तथा कवि परिचय के लिए आठ अंक नियत हैं।

## २. निबन्ध लेखन

१० अंक

पाठ्यक्रम में निर्धारित निम्नलिखित पन्द्रह विषयों में से पूछे गए पांच विषयों में से किसी एक पर निबन्ध लिखना होगा। इसके लिए दस अंक नियत हैं।

१. मानवाधिकार
२. महिलाधिकार
३. नैतिक शिक्षा
४. गांधी-दर्शन
५. मद्य-निषेध
६. पर्यावरण-संरक्षण और अमृतादेवी
७. विज्ञान का महत्व
८. विज्ञान वरदान या अभिशाप
९. विज्ञान और औद्योगिकीकरण
१०. विज्ञान और पर्यावरण प्रदूषण
११. वैज्ञानिक प्रगति में भारत का योगदान
१२. विश्वविख्यात वैज्ञानिक और उनके आविष्कार
१३. समाचार-पत्र
१४. आकाशवाणी
१५. दूरदर्शन।

## ३. पत्र लेखन

१० अंक

सरकारी पत्र, अर्द्धसरकारी पत्र और तार में से पूछे गए दो पत्रों में से एक पत्र लिखना होगा। इसके लिए दस अंक नियत हैं।

## ४. वैज्ञानिक शब्दावली

पाठ्यक्रम में निर्धारित निम्नलिखित सौ अंग्रेजी शब्दों में से पूछे गए किन्हीं दस शब्दों के हिन्दी-तकनीकी अर्थ लिखने होंगे। इनके लिए दस अंक नियत हैं।



1. Aeronautics	वैमानिक
2. Afforestation	वनरोपण
3. Alloy	मिश्रधातु
4. Amplifiers	प्रवर्धक
5. Analysis	विश्लेषण
6. Atmospheres	वायुमंडल
7. Bicomex Lens	उभयोतल लैस
8. Calculating Machine	परिकलन यंत्र
9. Calibration	अंशन
10. Calination	निस्तापन
11. Capillary	कोशिका
12. Catalyst	उत्प्रेरक
13. Caustic Alkali	दाहक क्षार
14. Central Axis	केन्द्रीय अक्ष
15. Cerebrum	प्रमस्तिष्क
16. Chromosomes	गुणसूत्र
17. Cluster	गुच्छ
18. Coefficient	गुणांक
19. Compound	मिश्र
20. Condensation	संघनन
21. Convection	संवहन
22. Convex	अवतल
23. Comet	धूमकेत
24. Decomposition	विच्छेदन
25. Deflection	विक्षेप
26. Dehydration	निर्जलीकरण
27. Deffusion	विसरण
28. Distillation	आसवन

29. Ecology	परिस्थिति विज्ञान
30. Elasticity	प्रत्यास्थता
31. Electro Osmosis	विद्युत परासरण
32. Equilibrium	सन्तुलन
33. Equivalent	तुल्यांक
34. Endothermic	ऊष्माशोषी
35. Extraction	निष्कर्षण
36. Fermentation	किण्वन
37. Fertilization	निषेचन
38. Freezing	जमना
39. Fission	खंडन
40. Formula	सूत्र
41. Fossil	जीवाश्म
42. Friction	घर्षण
43. Galvanometer	धारामापी
44. Germicide	जीवाणुनाशी
45. Gland	ग्रंथि
46. Graft	कलम रोपना
47. Heater	तापक
48. Homologous	समजात
49. Hybrid	संकर
50. Hydration	जलयोजना
51. Ignition	ज्वलन
52. Indicator	सूचक
53. Inertia	जड़त्व
54. Infection	संक्रमण
55. Insulation	रोधक
56. Intensity	तीव्रता

57. Intestine	आन्त्र
58. Latent Heat	गुप्त ऊष्मा
59. Magnetism	चुम्बकत्व
60. Melting Point	गलनांक
61. Membrane	झिल्ली
62. Metamorphosis	कायांतरण
63. Microscope	सूक्ष्मदर्शी
64. Momentum	संवेग
65. Multiplier	गुणक
66. Nucleus	नाभिक
67. Nutrition	पोषण
68. Observation	प्रेक्षण
69. Obtuse Angle	अधिक कोण
70. Orbital	कक्षाकार
71. Osmosis	परासरण
72. Ovary	अंडाशय
73. Parasite	परजीवी
74. Pendulum	लोलक
75. Pesticides	नाशकारक रसायन
76. Pharmaceutical	औषध रसायनक्ष
77. Photo-catalyst	प्रकाशिक उत्प्रेरक
78. Physiology	शरीर-क्रिया विज्ञान
79. Phenomenon	घटना
80. Plasma	जीव-द्रव्य
81. Pollution	प्रदूषण
82. Precipitate	अवक्षेप
83. Projectile	प्रक्षेप्य
84. Projection	प्रक्षेपण
85. Qualitation	गुणात्मक

86. Quantile	विभाजक
87. Radiation	विकिरण
88. Reflection	परावर्तन
89. Refractive Index	अपवर्तनांक
90. Refrigeration	प्रशीतन
91. Remainder Theorem	शेषफल प्रेमय
92. Resonance	अनुवाद
93. Relic	अवशेष
94. Antibiotics	प्रतिजैविकी
95. Spectrum	वर्णक्रम
96. Thermoscope	ऊर्ध्वपातन
97. Sublimation	तापदर्शी
98. Velocity	वेग
99. Vibration	कंपन
100. Virus	विषाणु

### PUNJABI (COMPULSORY)

(For B.Sc. Part-II)

Paper-I

Max. Marks : 50

Time : 3 Hrs.

#### Outlines of Test

1. A Selection of Punjabi Poetry from 1700 to 1850. 20 Marks
2. A Book of Short Stories by Single Author 10 Marks
3. Essay 10 Marks
4. Applied Grammar 10 Marks

(Pair of words and one word substitution)

#### Syllabus and Courses of Reading

1. Kav-Rang (Ed. Diwan Singh), Amritsar, Guru Nanak Dev University, 1988.

Note : 1. Only the following seven poets to be studied :-

Bullesh Shah Hasham (Sufi Poet), Varis Shah, Qadar Yaar, Shah Muhammad Naajabat, Peer Muhammad.

2. Dvadashi, Kulwant Singh Virk, Delhi, Arsee Publishers.

### URDU (COMPULSORY)

(For B.Sc. II)

**Paper-I** Text, Essay, Translation/Letter writing, Idioms.

Max. Marks : Time

50 3 Hrs.

- a) Text 25 marks  
 b) Essay 10 marks  
 c) Translation from English into Urdu 10 marks

OR

Letter Writing

- d) Idioms 5 marks

### Detailed Courses of Reading

1. Khyban-i-Adab (Poetry), Published by Educational Book House, Aligarh (only the following prescribed):  
 Ghazalyat : Hasrat-Fani-Tiger-Asghar-Shah-Firaq.  
 Jadsed Shairi : Chakbast-Josh-Faiz, Akhtar Sheerani.
2. Khayabani-i- Adab (Prose) Published by Educational Book House, Aligarh.

Only the following Selections :

Mear Amman Ghalib-Sir Syed Farhat Ullah  
 Baig-Prem Chand-Rasid Ahmad Siddiqui.

### PHYSICS

Max. Marks : Time

Paper-I (Theory) Waves and Oscillation 55 3 Hrs.

Paper-II (Theory) Electronics and Nuclear Physics 55 3 Hrs.

Paper-III (Practical) 40 3+3 Hrs.

(Only two days)

Distribution of Marks for Practical Paper will be as under :

Experiments 12+12 = 24 marks

Lab. Record 6 marks

Viva-voce 5+5 = 10 marks

*Special Notes :*

1. Instructions should be imparted using SI system of units but CSS system of Units should also be mentioned.
2. Use of simple (non-programmable) calculator is permissible.
3. Each question should contain two or more parts.
4. 20 percent numerical problems are to be set.

**Paper-I (Theory) Waves and Oscillations Max. Marks : 55**

Time : 3 Hrs.

**Unit-I Fourier Series and Fourier Transforms : Fourier Analysis of complex waves and its application for the solution of triangular and rectangular waves, half and full wave rectifier outputs, fourier transforms of :**

$$(i) f(x) = e^{-x^2/2}$$

$$(ii) f(x) = \begin{cases} 1 & |x| < a \\ 0 & |x| > a \end{cases}$$

**Unit-II Matrix methods in Paraxial optics : effects of Translation and refraction, Derivation of thin lens and thick lens formulae, unit plane, nodal planes, system of thin lenses. Abbréations : Chromatic, Soherical, coma, astigmatism and distortion and their removal.**

**Unit-III Interference by Division of wavefront : Fresnel biprism and its applications to determination of wavelength of sodium light and thickness of a micasheet, Lloyd mirror, phase change on reflection.**

**Interference by Division of Amplitude; Colour of thin films, wadge shaped film, Newton's rings. Interferrometers Micheison's interferrometer and its application to (i) Standardisation of a meter (ii) determination of N.**

**Unit-IV Fresnel diffraction : Fresnel's half period zones, Zone plate diffraction at a straight edge, rectangular slit and circular aparature. Fraunhofer diffraction : Single slit diffraction, Two slit diffraction N-Slit diffraction, plane transmission grating spectrum, Dispersive power of grating, limit of resolution, Rayleigh's criterion, Resolving power of telescope and a grating.**

**Unit-V Polarisation and Double Refraction : Polarization by reflection, Polarization by scattering, Malus Law,**

Phenomenon of double refraction (Normal and oblique incidence). Analysis of polarized light, Nicol prism, Quarter wave plate and half wave plate. Production and detection of (i) Plane polarized light (ii) Circularly polarized light and (iii) Elliptically polarized light. Optical activity, Fresnel's theory of rotation, specific rotation, polarimeters (half shade and Biquartz,)

### References :

- Unit-I
1. Mathematical Physics by F.S. Rajput and Yog Prakash, Pragati Prakashan.
  2. Theory and Problems of Laplace Transforms by Murrari R. Spiegel, McGraw Hill Book Company.
- Unit-I to V
1. Optics by Ajay Ghatak, Tata Mc Graw Hill 1977.
  2. Introduction of Optics by Frank L. Pedrotti and Lone S. Pedrotti, Prentice Hall, 1987.

### Paper-II (Theory) Electronics and Nuclear Physics

M.M. : 55

Time : 3 Hours.

- Unit-I Elementary areas of Semiconductors : Zener diode characteristics, Zener diode as voltage regulator, Mechanism of LED, Half and full wave rectifier-efficiency and ripple factor, filter circuits (L,C.) Low Pass and high pass RC filter analysis, amplitude and phase response, PNP and NPN transistor amplifier characteristics in common base, common emitter and common collector configuration (excluding parameter analysis) Principle, construction (Block diagram) and working of C.R.O.
- Unit-II Classification of Amplifier, concept of feed back and advantages of negative feed back, circuit-diagram and working principle of RC coupled amplifier, concept of band width (No derivation), feed back in oscillator, tuned transistor oscillator and Hartley oscillator (Basic principle only), amplitude and Frequency modulation characteristics and applications.
- Unit-III Structure of Nuclei Structure of Nuclei, properties of Nuclei and their determination, charge by Morley's law, size by particles scattering mass by Wein Bridge mass Spectrometer, magnetic moment by atomic beam

resonance experiment, electric quadrupole moment by coulomb excitation. Form of nuclear potential (shapes and relation between nuclear potential depth and nuclear range).

**Unit-IV Interaction and detection of Nuclear Radiations :** Interactions of charged particles with matter, energy loss (no derivation) and range concept Interaction of gamma rays with matter (qualitative description of photoelectric, Compton scattering and pair production), absorption coefficient of gamma rays and its applications. Detection of nuclear radiations using gas filled counters : Ionization proportional and GM counters.

**Unit-V Radioactive & Accelerators :** Laws of radioactive decay, half life and meanlife, successive decay, radioactive Equilibrium conditions age of Earth using radioactive dating, basic principle of nuclear accelerators, Random accelerator, Linear accelerator Ryclotron.

#### References :

**Unit-I & II** 1. Electronics Fundamentals and Application by J.D. Rydor.

2. Electronics for Scientists and Engineers by T.R. Vishwanathan, G.K. Mehta and V. Rajaraman.

**Unit-III & V** 1. Nuclear Physics, W.E. Buraham.

2. Nuclear Physics-D.C. Tayal, Umesh Prakashan (Khurja U.P.).

#### Paper-III (Practical)

Max. Marks : 40

Experiments : 12+12=24 marks

Lab-Record : 6 marks

Viva-Voce : 10 marks

#### Special Notes :-

1. Do any eight experiments from each section.
2. The students are required to calculate the errors involved in a particular experiment (like propagation of error, permissible errors, standard deviation etc..)

#### Section -A

1. To measure the (a) Area of window (b) height of an inaccessible object.



2. Refractive index and dispersive power of a prism material by Spectrometer.
3. To draw a graph between wave length and minimum deviation for prism for various lines from a Mercury discharge source.
4. Determination of wave length of a Na light and the number of lines per centimeter using a diffraction grating.
5. Wave length by Newton's Rings.
6. Resolving Power of a Telescope.
7. Resolving power of a plan transmission grating.
8. Measurement of (a) specific Rotation (b) concentration of sugar solution using polarimeter.
9. Ordinary and extraordinary refractive indices for calcite or quartz.
10. To find the equivalent focal length of a lens system by nodal assembly.

### Section-B

11. To draw common base and common emitter characteristics of a transistor and calculate transistor parameters.
12. To draw forward and reverse bias characteristics of a semiconductor diode.
13. To study the ripple factor in a d.c. power supply.
14. Zener diode voltage regulating characteristics.
15. Verification of inverse square law by photo cell.
16. To draw frequency response curve of transistorized R.C. coupled amplifier.
17. To find out the frequency of a tuning fork by Melde's experiments.
18. Study of series and Parallel resonance circuits.
19. Electronic voltmeter; measurement of peak, average & R.M.S. value of a signal.
20. Study of voltage doubler and tripler circuits.
21. To print out all natural (even/odd) numbers between given limits using computer.
22. To find maximum, minimum and range of a given set of numbers using computer.

## CHEMISTRY

### Outlines of Test

	Max. Marks	Time Allowed
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	7 Hrs.
	150	

**Paper-I (Theory) Inorganic Chemistry**      Max. Marks : 37  
Time : 3 Hrs.

*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

General Principles of metallurgy, occurrence of metals with special emphasis on mineral wealth of India, calcination, roasting smelting bessemerization; various methods of concentration, purification and refining (such as parting process, zone refining oxidation refining electrolytic refining and solvent extraction metallurgy of important metals like Ag, au, Zn, Cu, Ni.

(8 Hrs.)

#### Section-II

General characteristics of s & p block elements and their important compounds with special reference to metallic and non-metallic character, oxidizing and reducing capabilities, electronic configuration, atomic radionisation potential, electron affinity, electronegativity, inert pair effect, anomalous behaviour of (Li, Be and B) diagonal relationship.

(8 Hrs.)

#### Section-III

Nuclear Chemistry; Fundamental particles of nucleus (nucleons): concept of nuclides, representation of nuclides, isobars, isotopes and isotones with specific examples, The 'size' concept of nucleus and atoms. The possible forces between

(n-n, p, p, n-p) and the magnitude of nuclear forces (short range); qualitative idea of the stability of nucleus (n/p ratio), shell and liquid drop models (qualitative ideas), packing fraction, nuclear binding energy, mass defect, Einstein's mass energy relation, calculation of mass defect and binding energy, Q value, artificial transmutation-nuclear reactions, spallation, nuclear fission and fusion, Radioactive isotopes, separation of isotopes, some typical applications of radioisotopes in industry, agriculture, medicine and biochemistry, therapeutic uses of isotopes. (8 Hrs.)

#### Section-IV

Detailed study of the following compounds : Preparation, properties, bonding and structure of boric acid, borates, diborane, borazines, silicates (General Types with simple examples) and silicones; Bonding and structure of oxides and oxyacids of N, P, S and chlorine. (8 Hrs.)

#### Section-V

Detailed study of the following compounds : Preparation, properties, bonding and structure of hydrazine, hydroxylamine, hydrazoic acid, halides and oxyhalides of phosphorus, Inter-halogen & compounds ( $Ax$ ,  $Ax_3$  &  $Ax_7$  types, their reactions and structure only) pseudo-halogens and pseudo-halides.

Synthesis, properties and structures of organometallic compounds of lithium, beryllium, magnesium, aluminium and boron. (8 Hrs.)

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

Time : 3 Hrs.

*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. 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

##### Thermodynamics

Second law of thermodynamics, Carnot cycle, Carnot theorem concept of entropy, entropy changes in different processes, work function and free energy, variation of free energy with

temperature and pressure, total differential equation ( $dc = VdP - SdT$ ), Maxwell relations various criteria of spontaneity of a process, Gibbs-Helmholtz equation Clapeyron equation, Clausius-Clapeyron equation and its integrated form thermodynamic derivation of the relationship between elevation in boiling point, depression in freezing point and molality of dissolved solute.

Nernst heat theorem, third law of thermodynamics, its importance in the calculation of absolute entropies. (8 Hrs.)

## Section-II

### Partial Molar Quantities

Partial Molar free energy (Chemical Potential)

Gibbs-Duhem equation, variation of chemical potential with temperature and pressure, criteria of phase equilibria for multicomponent systems, Gibbs Adsorption equation and its application.

### Polymers

Homopolymers, copolymers, natural and synthetic polymers, linear, branched and cross-linked polymers, addition and condensation polymers numbers average, weight average and viscosity average, molecular weights of polymers; molecular weight determination by viscosity and osmometric methods.

(8 Hrs.)

## Section-III

### Electro-chemistry

Arrhenius theory, Ostwald's dilution law, Debye-Huckel theory of strong electrolytes, discussion of Debye-Huckel. Onsager equation (without derivation), concept of activity and activity coefficients.

Migration of ions, transport number and its experiments determination using Hittorff's method and moving boundary method Applications of conductance measurements in the calculation of ionic product of water, solubility of sparingly soluble salts, conductometric titrations.

Buffer solutions, calculation of pH of solutions, salt hydrolysis expression for hydrolysis constant, degree of hydrolysis and pH of solutions of different types of salts.

**Section-IV****Electrochemistry**

E.M.F. of a cell and its measurement, standard cell, reversible and irreversible cells, reversible electrodes, relationship between electrical energy and chemical energy, measurement of electrode potentials, Nernst equation for e.m.f. of cells (without transference only), liquid-junction potential (derivation excluded), applications of e.m.f. measurements in the determination of solubility of sparingly soluble salts and pH of solutions and potentiometric titrations, elementary idea of polarography and its applications.

(8 Hrs.)

**Section-V****Photochemistry**

Difference between photochemical and thermal reactions, laws governing absorption of light, Lambert's law, Beer's law, Stark-Einstein's law of photochemical equivalence, quantum efficiency and its experimental determination for a photochemical reaction (using chemical actinometer), study of photo-synthesis of HCl and HBr and photolysis of ammonia and acetone, chemiluminescence fluorescence phosphorescence and photosensitisation, photoinhibitors and photochemical equilibrium.

(8 Hrs.)

**Paper-III Organic Chemistry**

Max. Marks : 36

Time : 3 Hrs.

*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**

**Alcohols** : Preparation, comparison and mechanism of formation of alcohols by hydration, hydroboration-oxidation and oxymercuration-reduction of alkenes. Reaction of alcohols with halogen halides, carboxylic acids, thionyl chloride and phosphorus halides along with mechanism. Oxidative cleavage of glycols with lead tetra-acetate and periodic acid. Pinacol-pinacolone rearrangement and its mechanism. (3 Hrs.)

**Phenols** : Effect of substituents on the acidity of phenols, electrophilic substitution reaction of phenols, mechanism of

Kolbe's reaction, Reimer-Tiemann reaction, Fries rearrangement and Claisen rearrangement. (3 Hrs.)

**Ethers** : Preparation of ethers by Williamson's synthesis and epoxidation of alkenes by peracids. Cleavage of ethers by acids and hydrolysis of epoxides to glycols.

### Section-II

**Aldehydes and Ketones** : Preparation of aliphatic and aromatic aldehydes and ketones from alcohols, acids and acid chlorides, advantage of oxidation of alcohols with chromium trioxide (Sarett reagent), pyridinium chlorochromate (PCC) and pyridinium dichromate (PDC), comparison of reactivity of aldehydes & ketones. Mechanism of nucleophilic addition and nucleophilic addition-elimination reactions. Mechanism of Aldol condensation, Claisen-Schmidt, Cannizzaro reaction, Benzoin condensation, Perkin reaction, Knoevenagel condensation, Mannich reaction, haloform and Wittig reactions. Reduction of aldehydes and ketones with sodium borohydride and lithium aluminium hydride, Clemmensen reduction, Wolf-Kishner reduction and Meerwein-Ponndorf and Varley reduction.

(8 Hrs.)

### Section-III

**Carboxylic Acids and their derivatives** : Effect of substituents on the acidity of aliphatic and aromatic acids. Mechanism of esterification and hydrolysis. Comparison of the reactivities of acid chlorides, anhydrides, amides and esters towards nucleophilic acyl substitution reactions.

**Reformatsky reaction and its mechanism**. Preparation and synthetic applications of diethyl malonate and acetoacetic ester. Mechanism of Claisen ester condensation and Keto-enol tautomerism.

(6 Hrs.)

**Sulphonic acids and their derivatives** : Sulphonation of alkanes and arenes. Comparison of properties of benzoic acid and benzene sulphonic acid. Derivatives of sulphonic acids- benzene sulphonyl chloride, benzene sulphonamides and Saccharin, Long chain alkene sulphonic acids as detergents.

(2 Hrs.)

### Section-IV

**Nitro Compounds** : Preparation of nitroalkanes (vapour-phase nitration) and nitroarenes. Reduction of aromatic nitro compounds under neutral, acidic, basic media and electrolytic reduction. Selective reduction of dinitrobenzenes. Effect of nitro group on the reactivity of halogens in halonitroarenes. (2 Hrs.)

**Amines** : Preparation of aliphatic and aromatic amines by reduction of nitro compounds, nitriles, reductive amination of aldehydes and ketones. Gabriel phthalimide reaction and Hofmann-bromamide reaction alongwith its mechanism. Effect of substituents on the basicity of aliphatic and aromatic amines,  $pK_b$  values. Distinction and separation of primary, secondary and tertiary amines. Reactions of amines with nitrous acid, mechanism of carbylamine reaction, Hofmann elimination and Cope eliminations. (4 Hrs.)

**Diazonium salts** : Mechanism of diazotisation, structure of benzene diazonium chloride. Replacement of diazo group by H, OH, F, Cl, Br, I,  $NO_2$  and CN groups, reduction of diazonium salts to hydrazines, coupling reaction and its synthetic application. (2 Hrs.)

### Section-V

#### Ultra-violet spectroscopy

Basic theory and instrumentation, chromophores and auxochromes, bathochromic shift and hypsochromic shift, hyperchromic effect and hypochromic effect, absorption laws and absorption intensity, types of electronic transitions, Application of ultra violet spectroscopy in structure elucidation of organic compounds. (4 Hrs.)

#### Infrared spectroscopy

Basic theory and instrumentation, Infrared spectrum-functional group and finger-print regions, absorption of infrared radiation and molecular vibrations. Frequency of vibration of a diatomic molecule, number of fundamental vibrations and selection rules, intensity and position of infrared bands. Spectral features of the following classes of compounds. Hydrocarbons (saturated and unsaturated), hydroxy compounds aldehydes,

ketones, esters, anhydrides, amides, amines and nitro compounds.  
Applications of IR spectroscopy in structure elucidation of organic compounds. (4 Hrs.)

**Paper-IV (Practicals)**

Max. Marks : 40

Time : 7 Hrs.

(Spread over two days)

**Section-I (Inorganic)**

1. Gravimetric Analysis : Quantitative estimations of  $\text{Ba}^{2+}$  as  $\text{BaSO}_4$ ,  $\text{Fe}^{3+}$  as  $\text{Fe}_2\text{O}_3$ ,  $\text{Al}^{3+}$  as aluminium oxinate,  $\text{Cu}^{2+}$  as  $|\text{Cu}(\text{SCN})|$  and  $\text{Ni}^{2+}$  as Ni-dimethylglyoxime.
2. **Preparations** : Preparation of cuprous chloride, prussian blue from iron fillings, tetra-mine cupric sulphate, chrome alum, potassium trioxalatochromate (III).

**Section-II (Physical)**

1. To determine the absorption of acetic acid from aqueous solution by activated charcoal at room temperature.
2. To determine the solubility of a given sparingly soluble salt by conductance method (cell constant to be determined).
3. To study the conductometric titration of a strong acid/strong base.
4. To study the conductometric titration of a weak acid/strong base.
5. To determine the molecular weight of a given polymer by viscosity method.

**Section-III (Organic)**

Preparation and characterization (through determination of melting point) of the following derivatives :

- i) S-Benzylisothiuronium salts of benzoic acid, salicylic acid, cinnamic acid and aspirin.
- ii) Picrates of naphthalene, anthracene, acenaphthene P-toluidine, B-naphthol and -naphthol.
- iii) Oxime of benzophenone.
- iv) Acetyl derivative of glycine, P-toluidine, vanillin and hydroquinone.
- v) Nitro derivatives of P-dichlorobenzene, P-nitrotoluene and nitrobenzene.



- vi) Anhydrides of phthalic acid and succinic acid.
- vii) Osazone of Glucose.

**Distribution of Marks**

- |                                       |           |         |
|---------------------------------------|-----------|---------|
| 1. Section-I                          | (6+3)     | 9 marks |
| 2. Section-II (only one experiment)   |           | 9 marks |
| 3. Section-III (Two experiments only) | (4½ + 4½) | 9 marks |
| 4. Viva-Voce                          |           | 5 marks |
| 5. Lab. Record                        |           | 8 marks |

**BOTONY**  
**Outlines of Test**

Paper	Nomenclature	Max. Marks	Time Allowed
Paper-I (Theory)	Bryophytes, Pteridophytes Gymnosperms and Phytogeography	55	3 hours
Paper-II (Theory)	Physiology and Biochemistry	55	3 hours
Paper-III (Practicals)		40	4 hours (in one session)

**Paper-I (Theory) BRYOPHYTES, PTERIDOPHYTES**  
**GYMNOPERMS AND**  
**PHYTOGEOGRAPHY**

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. Introduction, habitat and habit, structure modes of reproduction and economic importance of Bryophytes.
2. Smith's (1955) classification upto classes.
3. Occurrence, external and internal morphology and life cycles,

(excluding developmental details) of MARCHANTIA, ANTHOCEROS and FUNARIA.

4. Evolution of Sporophytes in Bryophytes.

Unit-II

1. Introduction, habitat and habit, structure, modes of reproduction and economic importance of pteridophytes.
2. Engler's system of classification upto classes.
3. Occurrence, external and internal morphology of sporophytic and gametophytic phases (excluding developmental details) and gametophytic phases (excluding developmental details) and life cycles of -SELAGINELIA, EQUAISETUS, PTERIS.
4. Stear system in Pteridophytes, heterosopory and seed habit in Sela gnella.

Unit-III

1. Introduction, habitat and habit and economic importance of Gymnosperms.
2. Pilger and melchier (1954) classification upto classes.
3. Occurrence, external and internal morphology of sporophytic and gametophytic phases (excluding developmental details) and life cycles of : CYCAS; AND PINUS

Unit-IV

1. Introduction, formation of fossils, techniques of study of fossils, Geological time scale, a brief idea.
2. Fossil Pteridophytes-RHYNIA, LEPIDODENDRON.
3. Fossil Gymnosperms - WILLIAMSONIA GLOSSPTERIS.

Unit-V

1. Phytogeography; Definition, Significance and Principles.
2. Speciation, Extinction and Endemism - a Brief idea.
3. Floristic Regions of India.
4. Major Forest types of India.
5. Ethnobotany (Definition and Significance).

**List of Test Books**

1. Parihar, N.S. An Introduction to Embryophyta. Vol. I. Bryophyta Reprint 1972. Central Book Limited Allahabad.
2. Scheffield, W.B. Introduction to Bryology McMillan.
3. Waston, E.V. 1982, Structure and life of Bryophytes B.I. Publisher.

4. Sporne, K.R., The Morphology of Pteridophytes, B.I. Publisher.
5. Sporne K.R., 1982 The Morphology of Gymnosperms. B.I.
6. Jain, S.K. 1981 Glimpses of Indian Ethnobotany Oxford.
7. Martin, G.J. 1995. Ethnobotany : A methods of manual Chapman & Hall, New York, Madras.
8. Puri, G.S., K.K. Gupta, V.K. Meher - Homji and S.Puri. 1989 Forest Ecology : Plant form, diversity, Communities and succession, Volume 2. Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi.

### Paper-II (Theory) PHYSIOLOGY AND BIOCHEMISTRY

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. Movement of water, across the membrane; ascent of sap; transpiration.
2. Methods of study of macro and micro element nutrition availability, role and uptake.
3. History and mechanism of photosynthesis; role of light; Carbon fixation in C<sup>3</sup> and C<sup>4</sup> plants; photorespiration; structure of chloroplasts as related to photosynthetic functions, CAM plants.

#### Unit-II

4. General Principles and mechanisms of translocation of organic substances.
5. Nitrogen fixation, Nitrate assimilation; Transamination and Reductive amination.
6. Significance and mechanism of respiration, ATP synthesis, structure of mitochondria as related to oxidative function. R.Q. Compensation points, Pasteur's effect.

#### Unit-III

7. Physiology of dormancy and seed germination; vegetative and reproductive growth; photoperiodism and vernalization.
8. Senescence; growth regulators (auxins, gibberellins,

cytokinins), plants Movements and Plant Morphogenesis.

#### Unit-IV

9. Enzymes as biological catalysts; coenzymes; Classification and regulation of enzyme action.
10. Types and structure of Biomolecules; Gu Sugars and Carbohydrates; amino acids and proteins, lipids (fats and oils) and fatty acids.
11. Nucleic acids; Nucleotides in DNA and RNA; Double Helical Structure of DNA; Types of RNA.
12. General Account of structure and biosynthesis of Proteins.

#### List of Text Books

1. Power, C.B. and Chatwal, G.R. 1989. Biochemistry (IInd edition), Himalaya Publishing House, Bombay.
2. Weil, J.H. (1990). General Biochemistry. (Sixth edition). Wiley-Eastern, New Age Internal Publisherational, Publisher, New Delhi.
3. Zubay, Geefirey, (1989). Biochemistry, McMillan Publishing Co. New York.
4. Giese, Arthur C. (1979). Cell Physiology (Vth edition). W.B. Saunders Co. Philadelphia.
5. Karp, Gerald (1984). Cell Biology.(11th edition) McGraw Hill New York.
6. Krishanamoorthy, H.N. (1993). Physiology of Plant Growth and Development, Atma Ram & Sons; Delhi.
7. Kumar, H.D. and Singh, H.N. (1993) Plant Metabolism (22nd edition). Affiliated East-West Press Pvt. Ltd., New Delhi.
8. Noggle, G.Ray and Fritz, George, J. (1976) Introductory Plant physiology. Prentice Hall of India Pvt. Ltd., New Delhi.
10. Power, C.B. (1983) Cell Biology, IIIrd edition), Himalaya Publishing House, Bombay.
11. Salisbury, Frank, B.and Ross, Clean, (1974). Plant Physiology Prentice Hall of India Pvt. Ltd., New Delhi.
12. Wilkins, M.B. (editor) (1969). Physiology of Plant Growth and Development, Tata McGraw Hill, India.

**Paper-III (Practicals) BRYOPHYTES, PTERIDOPHYTES  
PHYSIOLOGY, BIOCHEMISTRY**

Max. Marks : 40

Time : 6 Hours.

1. Identify, classify and write-brief morphological notes giving well labelled relevant diagrams of the specimens A, B and C. (one material each from Bryophytes, Pteridophyte and Gymnosperms as per syllabus).
2. Cut T.S. and Prepare a double stained permanent mount of it. Identify giving reasons and show it to the examiner. 6
3. Identifying giving two important character of identification 1 and 2. (One material/slide each from Bryophyta and Pteridophyte or Gymnosperms. 3
4. Devise an experiment to demonstrate the physiological process (as per the list of experiments in syllabus) perform it and show it to the examiner. 7
5. Test for carbohydrate/Protein/fats/peroxidase activity. 2
6. Comment of the Physiology / Biochemistry experiment / specimen/chart. 4
7. Note-book and collection/collection report. 4+4
8. Viva-Voce 4

**Paper-III (Practicals) PHYSIOLOGY/BIOCHEMISTRY**

1. Demonstration of imbibition by plaster of paris method.
2. Osmotic pressure of Opion Scale/Rhoeo leaf peel by plasmolytic method.
3. Comparison of stomatal and cuticular transpiration by four leaf method/Cobalt chloride method.
4. Demonstration of transpiration by Gauongs photometer/ Farmer's photometer.
5. Separation of plant pigments by thin layer / paper chromatography.
6. Demonstration of Ascent of Sap/Transpiration pull.
7. Rate of photosynthesis under varying  $\text{CO}_2$  concentration.
8. Effect of kind of light intensity on oxygen evolution during photosynthesis using Wolmott's bubbler.
9. Demonstration of aerobic and anaerobic respiration.
10. Evolution of heat during respiration.

11. Demonstration of manometric determination of R.Q.
12. Determination of peroxidase activity.
13. Experiments on Beotropism, phototropism and hydrotropism.
14. Osmosis-by potato Osmoscope Method.
15. Plasmolysis and Deplasmolysis Expt.
16. Structure of Stomata.
17. Simple Tests for the detection of carbohydrates (Monosaccharides, Disaccharides and Starch); Protein and fat.

## ZOOLOGY

### Outlines of Test

	Max. Marks	Time
Paper-I (Theory) Chordates	55	3 Hours
Paper-II (Theory) Developmental Biology, Evolution and Ecology	55	3 Hours
Paper-III Practical	40	3 Hours

### Syllabus and Courses of Reading

#### Paper-I Theory Chordates

Max. Marks : 55

Time : 3 Hours

#### Section-A (General Account)

Classification of the following upto orders giving important characters and examples : Hemichordata, Urochordata, Cephalochordata, Cyclostomata, Chondrichthyes, Osteichthyes, Amphibia, Reptilia, Aves, Mammalia.

Systematic position, distribution, ecology, morphology, anatomy and affinities of the following types :-

Hemichordata - Balanoglossus

Urochordata - Herdmania

Cephalochordata - Branchiostoma

Cyclostomat - External morphology of Petromyzon : an account of ammocoetes larva and affinities of Cyclostomata.

Affinities of Prototheria & Metatheria.

#### Section-B (Comparative account of Vertebrates)

Study of comparative anatomy of the following systems with emphasis on evolutionary trends from superclass Pisces to class

**Mammalia :**

**Integumentary system :** Comparative account of integument and its derivatives.

**Skeletal system :** Comparative account of jaw suspension, visceral arches and vertebral column.

**Digestive system :** Comparative account of alimentary canal and associated glands, and dentition in mammals.

**Circulatory system :** Evolution of heart, aortic arches and venous system.

**Respiratory system :** Comparative account of respiratory tract, respiratory organs; different kinds of respiratory mechanisms, cutaneous, gill and pulmonary.

**Nervous system :** Anatomy and evolution of brain and cranial nerves,

Sympathetic and parasympathetic nervous system in mammals; sense organs : Eye and ear.

**Urinogenital system :** origin and evolution of kidney, evolution of gonads and urinogenital ducts.

**Instructions :** 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 and should 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 both the sections A & B, four from each section. The candidate is required to attempt four questions, two from each section.

**Paper-II (Development Biology, Evolution & Ecology)****Theory**

Max. Marks : 55

Time : 3 Hours

**Section-A (Developmental Biology)**

Generalized structure of mammalian ovum and sperm, spermatogenesis and oogenesis, fertilization, parthenogenesis, different types of eggs and pattern of cleavage, three germinal layers and their fate; concept of differentiation; basic concepts of organizers and inductors.

Development of **Herdmania Amphioxus**, Frog and Chick (except organogenesis). Metamorphosis in **Herdmania**, **Amphioxus**, frog and insects. Fate maps of frog and chick; foetal membranes, their formation and role; mammalian placenta, its formation, types and function. Ageing & its theories.

### Section-B (Evolution & Ecology)

- i) Origin of organic compounds, co-acervates and formation of primitive biomolecules. Formation of prokaryotic and eukaryotic cells.
- ii) Means of evolution (isolation, dispersal, natural selection) Blastogenic and Somatogenic variations; Continuous and Discontinuous variations.
- iii) Theories of organic evolution, i.e. Lamarckism, Neo-Lamarckism, Drawinism, Neo-Drawinism and Mutation theory of Hugo De Vries. Evidences (Anatomical, Embryological, Palaentological and Bio-chemical).
- iv) Modern concept of evolution and speciation.
- v) Fundamental of systematics.
- vi) Distribution of animals in space and time : Zoogeographical realms and their mammalian fauna. Geological time scale and their predominant animal forms.
- vii) Concept of ecosystem : Biospheres, biomes, ecological niche, ecotone & edge effect, food chains and food webs, trophic structure and ecological pyramids. (Co-existence, predation, competition, parasitism, symoitic relationship and proto co-operation).
- viii) Physical factors of the environment and their impact on living organisms.
- ix) Biogeochemical cycle of earbon, oxygen, nitrogen and phosphours.
- x) Source of pollution of air, soil and water; their preventive measures; Radiation & Chemical hazards and protection therefrom.

**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 and should 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 both the Sections A & B, four question, two from each section.

**Paper-III (Practicals)**

Max. Marks : 40

Time : 3 Hours

1. Classification upto orders, Habit, habitats, external characters and economic importance (if any) of the following animals :

Protochordata : Balanoglossus, Molgula, Botryllus, Pyrosoma, Doliolum, Oikopleura and Amphioxus.

Cyclostomata : Myxine, Petromyzon and Ammocetus larva.

Chondrichthyes : Zygaena, Pristis, Narcine (electric ray), Trygon, Rhinobatus, Raja and Chimaera.

Osteichthyes : Acipenser, Lepidosteus, Muraena, Mystus, Catla, Hippocampus, Syngnathus, Exocoetus, Anabas, Diodon, Ostracion, Tetradon, Echiene, Lophius, Solea and Polypterus. Any of the Lung Fishes.

Amphibia : Necturus, Puteus, Amphiuma, Salamandra, Amblystoma, Axolotl larva.

Reptilia : Hemidactylus, Calotes, Draco, Varanus, Phrynosoma, Chamaeleon, Typhlops, Python, Eryx, Ptyas, Bungarus, Naja, Hydruis, Viper, Crocodilus, Gavialis, Chelone (Turtle) and Testudo (tortoise).

Aves : Casarius, Arden, Anas, Milvus, Pavo, Eudynamis, Tyto and Alcedo, Halcyon.

Mammalia : Ornithorhynchus, Echidna, Didelphis, Macropus, Loris, Macaque, Hystrix, Funambulus, Felix, Panthera, Canis, Herpestes, Capra, Pteropus.

2. Examine and dissect the following :

Herdmania

Herdmania : General Anatomy.

Scoliodon : Digestive and-reproductive systems : Heart, efferent and afferent branchial arteries; cranial nerves and internal ear,

Hemidactylus : Digestive, arterial, venous and urinogenital systems.

Rat : Digestive, arterial, venous and urinogenital systems.

3. Study of the skeleton of *Scoliodon*, *Labeo Ran* (frog), *Varanus*, *Gallus* and *Oryctolagus*.
4. Study of the following prepared slides :
  - T.S. **Balanoglossus** (through various regions).
  - Tornaria* larva, T.S. **Amphioxus** (through different regions).
  - Oikopleura**, histology of rat/rabbit (compound tissues).
5. Make permanent stained preparations of the following :
  - Salpa, Spicules pharynx (apart) of *Hardmania*, amphioxus, Placoid scales and ampullae of *Lorenzine* of *Scoliodon*.
6. Development Biology : Permanent slides, Sections of early development stages of frog upto tadpole, early development stages of chick upto 24 hours, gametogenesis, structure of egg and sperm. Study of prepared slides of estous cycle of rat.
7. Ecology :
  - a) Determination of PH of a given sample of soil and water.
  - b) To investigate the chloride contents of water sample (i.e. rough estimate of salinity).
8. Zoological excursion and its report of 8 marks is compulsory for the practical examination.

## GEOLOGY

	Max. Marks	Time
Paper-I Optical Mineralogy and Petrology	45	3 Hrs.
Paper-II Palaeontology	45	3 Hrs.
Paper-III Practical	60	3 Hrs.

### Syllabus and Courses of Readings

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

#### **Paper-I (Theory) Optical Mineralogy and petrology.**

Max. Marks : 45

Time : 3 Hrs.

Principles of optics and use of polarising, rocks, microscope, optical properties of common rock forming minerals.

Study of igneous, sedimentary & matamorphic rocks, their structure and textures, minerals and chemical composition, classification and origin.

### Paper-II (Theory) Paleontology

Max. Marks : 45

Time : 3 Hrs.

Fossils, their economic and stratigraphic significance standard stratigraphic scale, modes of preservation. A study of the representative forms belonging to the following.

Forminifera, Radiolaria Actinoxoa, Graptolithina Echinoidea, Crinoidea Trilobites Gastropoda Lamellibranchiata Cephalopoda and Brachipoda.

Study of the more important vertebrate and plantfossils of India.

### Paper-III (Practical)

M.M. : 60

Time : 3 Hrs.

*Note : Emphasis may be laid on field work which is compulsory for all candidates :*

Study of common igneous, sedimentary and metamorphic rocks in hands specimen and their identification.

Study of the optical properties of common rocks forming minerals under microscope and their identification Study of common rocks of all the three in thin sections.

Study of the common types of the fossils mentioned under theory papers and their identification.

#### Text :

Tyrell, G.W.	:	Principles of Petrology.
Smith, H.G.	:	Minerals under Microscope
Harkar, A.	:	Petrology for Student.
Hatch and Wells	:	Petrology for student.
Kerr, Paul F.	:	Petrology
Woods, H.	:	Optical Minerology.
Moore, Lalicker and Fisher	:	Palaentrology. Invertebrate Fossils.

**COMPUTER SCIENCE****Outlines of Test**

**B.Sc. IInd Year (Computer Science)**  
**B.A. IInd Year Computer Applications**  
**Outlines of Test**

	Max. Marks	Time
Paper-I Computer Oriented Numerical and Statistical Methods	45	3 Hours
Paper-II Business Data Processing - I	45	3 Hours
Paper-III Practical and Viva-Voce	60	6 Hours
		(Two sittings)

**Syllabus and Courses of Reading**

**Paper-I Computer Oriented Numerical and Staticstical Methods.** Max. Marks 45 Time : 3 Hours.

*Note : i) Twelve questions will be set in the paper with two from each UNIT. The candidates shall be required to attempt in all six questions selecting one question from each UNIT. All questions shall carry equal marks.*

*ii) Emphasis will be on concepts, applications and algorithms, Derivations are not to be covered.*

**Objectives of the Course :**

1. To solve linear and non-linear algebraic equations, perform operations of calculus, fit curves and solve differential equations, using a computer.
2. To appreciate problems due to rounding errors and of convergence.
3. To introduce Statistical Methods & elementary forecasting techniques.

**Course Contents :** (Electronic calculators are allowed)

**UNIT-1**

**Computer Arithmetic :** Floating point representation of numbers, arithmetic operations with normalised floating point numbers and their consequences.

Error in number representation-inherent error, truncation error, round-off error.

**UNIT-2**

**Interactive Methods :** Bisection, False position, Newton-

Raphson Methods, Interaction Method, discussion of convergence, Bairstow's Method.

#### UNIT-3

**Solution of simultaneous Linear equations and ordinary differential equations** : Gauss-Elimination methods-pivoting, Ill-conditioned equations, refinement of solution. Gauss-Seidal Iterative Method, Euler Method. Taylor-Series Method Runge Kutta Methods, Credictor Corrector Method.

#### UNIT-4

- (i) **Interpolation and Approximation** : Polynomial interpolation Newton, Lagrange : Approximation of functions by Taylor Series and Chebyshev Polynomial.
- (ii) **Numerical Differentiation and Integration** : Differentiation Formulae based on Polynomicial fit, pitfalls in differentiation. Trapezoidal & Simpson Rules, Gaussian Quadrature.

#### UNIT-5

**Statistical Methods** : Frequency distributions, Bionomial, Poisson, Normal, Mathematical expectation, moments generation & Cumulative functions, method of Least Squares and Curve Fitting, Correlation and regression.

#### UNIT-6

**Test of Significance** : Z-test, T-test, Chi-Square test. One way ANOVE, Bay's theorem in decision making, forecasting techniques.

#### **Suggested Books :**

1. Rajaraman, V : Computer Oriented Numerical Methods (PHI).
2. Sastry, S.S. Introductory Methods of Numerical Analysis (PHI, New Delhi).
3. Jain M.K. & Iyenger, S.R.K. : Numerical Methods for Scientific and Engineering Computation.
4. Dorn, W.S. & Mc Cracken D. : Numerical Methods with FORTRAN-IV Case Studies (John Wiley) Wiley Eastern Ltd.)
5. Gupta S.P. : Statistical Methods (Sultan Chand & Sons. New Delhi).
6. Scalgo, F. : Elementary Computer Assisted Statistics (Von Nostland Reinhold Co. Ltd., 1978).
7. Rajaraman, V : Computer Programming in FORTRAN 77 (PHI). New Delhi).

**Paper-II : Business Data Processing-I**

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 question from each Unit. All questions shall carry equal marks.*

**Objectives of the Course :**

1. To write programs in COBOL language, in good style, debug and document them.
2. To enable students to analyse, design and implement some business systems.

**Course Contents :****UNIT-I**

**Business Files-Master Files- Transactions Files :** Files Processing sorting, searching, merging, matching, summarizing, File organisation techniques-Serial Indexed, Random.

**Introduction to COBOL :** History of COBOL : File concepts; record Layout; coding format for COBOL Programs; Structure of a COBOL Program; Character Set. COBOL Words, Data Names & Identifiers, Literals, Figurative Constants, language Description, Notation, Implementation Differences.

**Identification Division :** Environment Division and its all sections, Data division and its all sections (details about Report section).

**UNIT-II**

Verbs : MOVE, ADD, SUBTRACT, MULTIPLY, DIVIDE, COMPUTE, GO TO, STOP, OPEN, CLOSE, READ, WRITE, ACCEPT, DISPLAY, IF; Categories of COBOL Statements.

COBOL Program writing, runing & Testing : Program style.

USAGE, SYNCHRONIZED, JUSTIFIED, REDEFINES, RENAMES, SIGN clauses: Elementary and group moves : MOVE corresponding : ADD & SUBTRACT corresponding : General Rules about CORRESPONDING option, rounded and ON-SIZE ERROR option.

Conditional & Sequence control verbs : Relational, Sign, class, condition-name and negated simple conditions : compound condition, IF statement : Nested IF Sentence : GO TO with DEPENDING Phrase: ALTER PERFORM, EXIT Statements.

## UNIT-III

**Table Handling** : OCCURS Clause and subscripting; Assigning values to Table elements; Multi-Dimensional tables, PERFORM verbs and Table Handling; Indexed Tables and Indexing; Set and Search Verbs; OCCURS DEPENDING Clause; Sorting a Table; Index Data Item : Use of Indexes and Index data Item.

**Sequential Files** : File characteristics; File Control Entries for Sequential Files; File description-fixed length records, statements for sequential Files-OPEN, CLOSE, READ, WRITE and REWRITE Statements Line-printer files.

**Sorting & Merging of Files** : Simple Sort & Merge Verb; File Updation Variations of Updation; File Matching & File Merging.

## UNIT-IV

**Introduction to Business Organisation** : Production, stock control, costing purchase control, sales order processing, wage accounting. Information system, need and role of information system in management service Department.

## UNIT-V

**System Analysis and Design** : System concepts, Role of System Analyst, Project Selection, System Life-Cycle, Feasibility Analysis, Fact Gathering, Fact Recording.

## UNIT-VI

**Logical Design & Physical Design** (Forms Design, I/O Design, File Design, Code Design, Procedure Design), System Implementation. Installation & Evaluation, Audit Considerations, Computer Workload Scheduling. System Documentation & its Importance.

**Suggested Books :**

1. Clifton, H.D. : Business Data Systems (Prentice Hall).
2. Korenke, David : Business Computer Systems. (Mitchell Publishing).
3. Lee, B. : Introductory System Analysis and Design Vol. I & II, (Galgotia Booksources).
4. A Wad, Elias M : System Analysis & Design.
5. Roy, M.K. : Dastidar, D.G. : COBOL Programming (Tata McGraw Hill).
6. Thomas, Wirth : COBOL for beginners (PHI).

**Paper-III (Practical and Viva - Voce) :** Max. Marks : 60  
 Time : 6 Hrs.  
 (two sittings of three hrs. each)

Practical Examination will be conducted in two sitting of three hours each.

First Sitting : Programs in FORTRAN OR PASCAL relating to Numerical Analysis & Statistical Methods taught in Theory Paper-I.

Second Sitting : Programs in COBOL Languages.

**Distribution of Marks :**

Program in FORTRAN OR PASCAL	: 20 Marks
Program in COBOL	: 20 Marks
Viva-Voce	: 15 Marks
Practical-record	: 5 Marks

*Note : Each student must write at least 10 programs in FORTRAN or PASCAL (relating to Numerical & Statistical Methods) and 10 programs in COBOL during the Academic Session.*

**Laboratory**

The laboratory should emphasis on life Organisation and life processing techniques.

**APPLIED ART  
 (Commercial Art Designing & Painting)**

**Outlines of Test**

	Max. Marks	Time
Paper-I (Theory)	25	3 hrs.
Paper-II (Practical) Illustration	20	6 hrs.
Paper-III (Practical) Layout	20	6 hrs.
Paper-IV (Practical) Poster	20	6 hrs.
Sessional Work	15	

**Syllabus and Courses of Reading**

**Paper-I Theory,** M.M. : 25  
 Time : 3 Hrs.

*Note : Eight questions are to be set and cadidates are required to attempt five questions in all.*

What is Art ? Commercial Art, Principle of Art, Element of



Art, Detailed Theory of Design Quality of a Commercial Artist. Theory of Lettering Layout Perspective Illustration. Poster, Photography, Material used and its techniques, Various Medium in Art.

### Paper-II (Practical) Illustration

Max. Marks : 20

Time : 6 Hours.

Colour of Black and White Illustration with Pen or Brush on the following theme :

- (i) College Campus (ii) Canteen
- (iii) Class-Room (iv) Storey

Size : 10" x 15"

### Paper-III (Practical) Layout

Max. Marks : 20

Time : 6 Hours.

Layouts with very short slogan in Colour or Black and White Tone.

- i) One layout in cutting and pasting on any theme.
- ii) Industrial Product on any three themes.

Size not more than 10" x 15"

### Paper-IV (Practical) Poster

Max. Marks : 20

Time : 6 Hours.

Simple Poster of 20" x 30" with very short slogan in Monochrome or Colour on the following theme i.e. Educational, Industrial Products or any current Topic.

#### Optional subjects (Any one of the following) :

- i) Photography : Introduction of Camera's and their Mechanism.
- ii) Batik-Creative Batik on small cloth.
- iii) Screen Printing-Simple Process.

*Note : No Examination of Optional Subject only submission of work.*

Sessional Work

15 Marks

1. Sketches

70

2. Illustration

5



**Books Recommended :**

1. Dass, B.M. : Outlines of Physical Anthropology
2. Jaunisich, Buetner : Origines of Man.
3. Haviland : Human Evolution
4. Stirtion : Time, Life and Man
5. Poirier, F.E. : In search of Ourselves
6. Wadia, D.N. : Geology of India.
7. Pit Seam, David : The Evolution of Man.

**Paper-II (Theory) Social Anthoropology**

M.M. : 50

Time : 3 Hrs.

1. **Introduction to the Study of Man, Culture and Society;** Definition, aims and Scope of Social Anthropology-Differences from Ethnology, Ethnography and Cultural Anthropology. Relationship with other disciplines concerned, with other disciplines concerned with the Study of Man notably Sociology, History Economics and Psychology.
2. **Definition And Attributes of Culture :** athos and eidos; Explicit and Implicit elements; Culture determinism; Culture vis-a-vis the individual; Culture and Civilisation. Theories of culture growth; Evolutionism; diffusionism; Kulturkreise Theory; Culture areas and Marginal areas; British Diffusionists; Acculturation. Theories of Cultural-Integration : Functionalism; pattern of culture; themes, Style of life.
3. **Basic Concept :** Group community, tribe caste and class, Caste system in India.
4. **Family :** deifnition and function of family, distinctive features of family; Types of family; unclear, extended and joint family stability and change in the Indian Family.
5. **Marriage :** Reasons underlying marriages; forms and types of marriage prescriptive and preferential (exogamy, endogamy, cross-cousin marriage, levirate, sororate, hypergamy and polygamy); ways of acquiring a mate in Tribal India; Marriage among Hindu and Muslim societies; problems of incast.

6. **Kinship** : Types of Kinship; Consanguaneous and affmil. Degree of Kinship; Range of Kinship System : Broad and Narrow; descent; cognates, agnats and uterine Kin; Kinship usages : avoidance, familiarity Teknoymy, avunculate amitate, couvade; Kinship terms : classificatory and descriptive.
7. **Religion and Magic** : Definition of religion, Mana, Taboo; Totamism, witchcraft and Sercery.
8. **Economic organisation** : Definition of Economic activity; economic and property relations in primitive societies; owners, ownership production, distribution and exchange in primitive societies with reference to Indian Tribes.
9. Political organisation of simpler societies and primitive law; Political system; definition and types.
10. Applied value of Social Anthropology.

#### **Books Recommended**

1. Majumdar, D.N. and Madan, T.N. Introduction to Social Anthropology.
2. Mair, L-Introduction to Social Anthropology.
3. Herskivits, M.J. Cultural Anthropology.
4. Beaty, John, Other Cultures.
5. Beals and Hoijar-Introduction to Anthropology.
6. Herskovits, M.J. Man and his Works.
7. Evans Pritchard, F.E. Social Anthropology.
8. Kroeber, A.L. (ed.) -Anthropology Today.
9. Thapar, Romesh (ed.) -Tribe, Caste and Religion in India.

#### **Paper-III (Practical)**

Max.Marks : 50

Time : 3 Hrs.

Selected Measurements of Somatometry, Craniometry and Ostemetry besides Somatoscopy in detail.

#### **A. Somatometric Measurements**

1. Wieght linear Measurements
2. Height Vertex
3. Sitting Height Vertex
4. Total Arm Length (Ht. acromion minus Ht. Dactylin)
5. Height iliospam
6. Biacromial diameter

7. Chest breath
8. Chest depth
9. Biental diamer
10. Head length
11. Head breadth

### **Circumferences**

12. Horizontal Circumference of head
13. Chest Circumference

### **Skinfolds**

14. Biceps skinfold
15. Triceps skinfold

### **Bone Breadth**

16. Wrist breadth
17. Humerus bicondyar diameter
18. Femur Bicondyar Diameter

### **B. Craniometry**

1. Maximum Cranial length
2. Maximum Cranial breadth
3. Minimum frontial diameter
4. Bi-mastoid diameter
5. Bizgomatic breadth
6. Outer bi-orbital breadth
7. Maxillo-Alveolar breadth
8. Maxillo-Alveolar length
9. Bigonial breadth of mandible
10. Bicondyar breadth of mandible

### **C. Osteometry**

Following measurements to be recorded on Femur, Tibia and Humerus.

1. Maximum/Physiological length.
2. Breadth of proximal and disial ends.
3. Transverse diameter of shaft.
4. Sagittal diameter of shaft.
5. Least-circumference of shaft.

**D. Sumatotomy**

1. Skin colour of cheek/forehead and inner side of the upper arm.
2. Hair : form, texture, colour and whorls.
3. Eye : colour, iris, sclere, eyeslits, eyefold, eyebrows.
4. Supra orbital ridges.
5. Nose : Nasion depression, nasal bridge, Nasal septum, Nasal tip.
6. Forehead : slope, height, width.
7. Lips : thickness and eversion.
8. Pragnathism : Alveolar and facial.
9. Chin.
10. Body : Musculture

**Paper-III Practical**

Max. Marks : 60

Time : 3+3 Hours

## List of Experiment

(on two days)

*Note : (Minimum 6 experiments from Section A. 5 from Section B and one from Section-C should be performed by each student.)*

**Section-A**

1. To study the methods for stabilization of quiescent operating point of transistor.
2. Study of transistor bias stabilization circuits.
3. Effect of negative feedback on transistor amplifier voltage gain input impedance and out-put impedance.
4. To study the design of Hartley Oscillator and measure its frequency.
5. To study the design of Colpitts Oscillator and measure its frequency for two values of L.  
(inductance with and without ferrite core)
6. RC Oscillator design base shift oscillator.
7. Wien-bridge audio oscillator-study of the condition for sustained oscillations.
8. Operational amplifier as :
  - i) Unity gain buffer stage.
  - ii) Non-inverting amplifier.
  - iii) Inverting amplifier.

9. Applications of operational amplifiers as :
  - i) Summing amplifier
  - ii) Differential amplifier
10. Measurement of offset voltage and bias currents of operational amplifier.

### Section-B

11. To design a transistor as able multivibrator and measure its frequency.
12. To study the operation of a transistorised monostable multivibrator circuit and measure its delay time.
13. To design a transistor bistable multivibrator circuit and study its operation.
14. To study the various triggering methods of bistable multivibrator circuits.
15. Measurement of common mode rejection ratio of op-amps.
16. Integrating and differentiating circuits using op-amps.
17. To design a DTL NAND gate using discrete components and verify its truth table.
18. To design a TTL NAND gate using discrete components and verify its truth table.
19. Use a desital trainer to verify the given boolean indentities.

### Section-C

20. Design and assemble any one of the following and evaluate its performance experimentally.
  - a) Electronic multimeter using IC.
  - b) Solid State variac using thyristors.
  - c) Transformerless output amplifier stage.
  - d) Function generator using IC
  - e) Stabilised power Supply, single output, using IC regulators.
  - f) Design of a under over voltage cut off circuit.
  - g) Battery eliminator using zener diode.
  - h) Transistor tester.

The evaluation of report on Practical training for 4 weeks in summer vacation at the end of 2nd year of B.Sc. in the subject of Electronics be done by teacher-in-charge of the class of the respective colleges immediately after the completion of the training. The evaluation be given in grades, viz Excellent,

Good Average and Poor.

1. Components, test equipments and other accessories for the projects in each class will be provided by the college concerned.
2. Since this course is of practical nature, the number of students in a practical group should not exceed 10.

### References

1. Experiments in Electronics by W.H. Evans (Prentice Hall, India).
2. Electronics for Scientist and Engineers by Viswanathan, Mehta and Rajaraman (Prentice Hall, India).
3. Operational amplifiers by S.V. Subrahmanyam (Mac Millan Co. India).
4. Electronics Devices and Circuits by Motterhead.
5. Electronics Devices and Circuits Discrete and Integrated by Y.N. Bapat.

## FRUIT & VEGETABLE PRESERVATION, APPLIED NURITION, BAKERY, TAILORING AND HOSIERY APPLIED NUTRITION AND DIETETICS

(4 period per week)

**Paper-I (Theory)**

Max. Marks.

B.Sc. B.A.

45 30

Time : 3 Hours

### Syllabus and Courses of Reading

- (a) Definition of nutrition, Nutrients, the functions, sources and deficiency diseases. Digestion and absorption of Nutrients, Malnutrition, its causes and prevention, food fads and Falladies.
- (b) Recommended Dietary Allowances for different age and sex group under different conditions of working and physiological stress. Balanced diet, low cost nutritious recipes from locally available food-stuffs.
- (c) Planning and composing of Nutritionally adequate diets for family, sportsmen, pregnant and lactating mothers infants, children, adolescent and old persons. Therapeutic diets for hypertension, obesity and gastritis.



**BAKERY**

(4 periods per week)

Paper-II

Max. Marks.

B.A. B.Sc.

30 45

Time : 3 Hours

**Syllabus and Courses of Reading**

- (a) Types and function of Wheat, flour.
- (b) Function of sugar, shortening, eggs, milk, salt and coco in cake and cookies making. Methods of cake making. Heat an important factor in Bakery.
- (c) Methods and principles of making Biscuits, doughnuts, cones and pastries. Methods and principles of making salties, cheese straws, cheese fingers, etc.
- (d) Methods and principles of making loaves and buns Nutritive value of bread and its enrichment.

**Paper-II Practical**

Max. Marks

(4 Periods per week, spread over 2 days)

B.A. B.Sc.

60 40

Time : 3 Hours

- (a) Approximate analysis of food samples.
- (b) Planning and conducting a food consumption survey and their analysis and interpretation.
- (c) Planning and preparation of family meals and some therapeutic diets.
- (d) Study of bakers oven, its plan of construction, Proportionate diagrams of bakers oven.
- (e) Moulds and tools used in a Bakery. Proportionate diagram and their uses. Identification of bakery products.

**RURAL INDUSTRIALISATION**

Max. Marks : 100

Time : 3 Hrs.

- Note : 1. *Special lectures by specialists in the field concerned.*  
 2. *Five questions out of 10 each of 20 Marks.*

Elementary ideas : Survey report Feasibility report and Project report.

**Problems** : Location; Industrial Estates; Focal Points; Industrial development colonies.

**Factors determining Location** : Problems relating to Raw materials Skilled labour, Management, Finance, Marketing, Quality Control.

After having elementary idea about survey, feasibility and project reports, the students would start working on their individual projects to be submitted by the end of December of the succeeding year i.e. Part-III.

### LOCAL SELF GOVERNMENT

Max. Marks : 100

Time : 3 Hours

#### Panchayat Raj in India

(The students are expected to be familiar with the organisation and working of Panchayat Raj in Haryana. It is also expected that educational institutions, will make arrangements for the students to witness the actual working of Panchayat Raj in their respective areas).

1. Meaning and Importance of Panchayat Raj.
2. Evolution of Panchayat Raj.
3. The structure of Panchayat Raj : Zila Parishad, Panchayat Samiti. Gram Panchayat and Gram Sabha.
4. The organisation of deliberative and executive wings and problems of their relationship.
5. The powers and functions of Panchayat Raj Bodies.
6. Personnel Management : the problems of their recruitment, training and promotion.
7. Financial : sources of income, financial administration and the problem of their augmentation.
8. State control over Panchayat Raj institutions.
9. Problems of Panchayat Raj.
10. Future of Panchayat Raj in India.

**Paper                      MARKETING****Max. Marks : 100****Time : 3 Hours****Selesmanship and Agricultural Marketing**

*Note : At least ten questions shall be set in 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 at least one question from each unit.*

**Unit-I Salesmanship**

Meaning; Significance; Nature of Salesmanship Science, or profession ; Kinds of salesmanship; criticism of salesmanship and advertising.

**Unit-II Fundamenfals of Successful of Salesmanship**

Qualities of successful salesman, knowledge of products; knowledge of customers, 'sizing up' the customer; classification of customers and different ways to deal with different customers.

**Unit-III Selling Process**

Concept of Selling Process; steps in selling process- prospecting, pre-approach, approach, presentation and demonstration, overcoming objections and closing sales.

**Unit-IV Marketing of Agricultural Product in India**

Different kind of mandies and their organisation, Agencies involved in marketing agricultral produce, Defects of the uses of system; steps taken by Indian Govt. to improve the system of agricultural marketing.

**Unit-V State and Agricultural marketing in India**

Government's control and regulation of agricultural marketing in India; Regulated market co-operative marketing societies; Warehousing Agencies; State trading in foodgrains; price control and rationing, public distribution system.

**LABOUR WELFARE****Max. Marks : 100****Time : 3 Hours****1. Concept of Labour Welfare :**

Definition of labour welfare; approaches to labour welfare; scope of labour welfare; principles of labour welfare.

**2. Labour Welfare Policy**

Objectives of labour welfare policy; Review of various labour welfare policies; labour welfare policy after the planning era; growth of welfare legislation; factors stimulating growth of welfare legislation.

**3. Labour Welfare and Trade Unions :**

Role of trade unions in labour welfare; welfare orientation of unions; activities in the field of health, housing, legal and co-operative etc.

**4. Social Security**

The concept of social security; workmen's compensation, industrial health insurance, old age relief, gratuity, unemployment.

**5. Welfare of Special Group**

Women work force, Child labour, physically handicapped agricultural labour and Scheduled Caste and Tribes and other unorganised labour.

**OFFICE MANAGEMENT****Paper- Secretarial Practice****Max. Marks : 100****Time : 3 Hours.**

- 1. Introduction :** Meaning and type of secretaries, Qualifications, position, rights, duties and responsibilities of Secretary.
- 2. Role of Secretary in Government Office, Organisation of Haryana Govt. Secretariat.**
- 3. Role and Function of personnel assistants in business houses.**
- 4. Secretarial practice relating to the formation of a company, procedure of issue of shares, allotment of shares, issue of share certificates share, warrants, dividend warrants.**
- 5. Procedure of convening meetings with reference to notice, quorum agenda, motions and resolutions, sense of the meeting, adjournment of the meetings, and the minutes.**
- 6. Drafting director, report and other numerical returns.**

**ARCHAEOLOGY, MUSEUM AND TOURISM****One Paper-Museum**

The paper shall be divided into two parts : Theory and Practical.

**Part-I (Theory Paper)**

Max. Marks : 75

Time : 3 Hours

- Note : 1. In all ten questions shall be set in this paper with four questions from section-A and three questions each from Section-B and C. The candidates shall be required to attempt in all five questions with at least one question each from all Sections. All questions shall carry equal marks.*
- 2. The questions set in the paper shall be of an elementary nature, not requiring an advanced or specialised knowledge of the topics prescribed.*

**Syllabus and Courses of Reading**

- a) Museum - Its meaning and scope, types of Museum, Collection and Recording of Museum objects.
- b) Display of objects-An idea of Museum building and lighting and staff. Elementary knowledge of cleaning and preservation of Museum objects.
- c) A brief history of museum in India. Museum and Education.

**Books Recommended**

1. Nigam, M.L. : Fundamentals of Museology Navahind Prakashan, Hyderabad, (1966).
2. Baxi, S.J. Dwivedi, V.P. : Modern Museum (Abhinav Publications New Delhi, 1973).
3. Shachim Roy, Agrawal, : Sangrahalaya Anusilana (M.K. O.P., Roychoudhury, D. & Publication, Delhi 1965).  
Nilima Roy (Translation :  
Ramesh Verma)

**Paper-II Practical Work (in the Museum)**

25 Marks

**INSURANCE****Law and Practical of Insurance**

Max. Marks : 100

Time : 3 Hours

*Note : At least ten questions 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 at least one question from each Unit.*

Unit-I Salient Aspects of Law of Contract; Contract of Agency and Indemnity.

Unit-II Insurance Contracts; Agency of Insurance, Laws of Insurance (Based on the Insurance Act 1938,) underwriting and claims.

Unit-III Laws relating to General, Fire and Marine Insurance.

Unit-IV Preparation of Revenue Accounts and Balance Sheet of General Insurance Companies.

Unit-V Accounts of Life Insurance Corporation in India.

**COMMERCE****Paper-I-****Basic of Accounting**

Max. Marks : 100

Time : 3 Hours

1. Basic Concepts and Conventions of Accounting, Concept of Capital and Revenue, Systems of Accounting.
2. Types of Accounting.
3. Double Entry System of Accounting. Books of Original Entry. Ledger, Subsidiary, Books and Trial Balance.
4. Banking Transactions and Bank Reconciliation Statement
5. Account current and average due date.
6. Errors and their rectifications.
7. Depreciation Methods and Accounting.
8. Preparation of final Accounts with simple adjustments.
9. Receipt and Payment Account, Income and Expenditure Accounts.

**B.A. (Computer Applications)- Vocational Course**

**SCHEME OF EXAMINATION**

The existing Scheme of Examination applicable to B.A. (Part- I

II & 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 & III B.A. Examinations are as under :-

Examination	Title of Paper	Max. Marks	Time
B.A. (Part-I)	C.A. I Computer Fundamentals & Introduction to IBM PC'	35	3 hrs.
	CA. -II Operating Systems and Business Data Processing	35	3 hrs.
Practical Examination	Ist Sitting	7.5	4 hrs.
	IInd Sitting	7.5	4 hrs.
REPORT ON :	On-The-Job Training of 4 weeks duration during autumn & winter breaks.	15	
B.A. (Part-II)	CA-III Data Base-Management Systems	35	3 hrs.
	CA-IV Structured Programming and Computer graphics.	35	3 hrs.
Practical Examination	Ist Sitting	7.5	4 hrs.
	IInd Sitting	7.5	4 hrs.
REPORT ON :	On-The-Job Training of 4 weeks duration during autumn & winter break.	15	
B.A. Part-III	CA-V Computer Aided Drafting & Advanced topics in Computer	35	3 hrs.
	Practical Examination	15	4 hrs.
	CA-VI Project Report	50	

(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 Courses.

#### **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 questions 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-book 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-II  
(Vocational Course)**

**Paper CA-III Data Base Management Systems**

Max. Marks : Time:

B.Com : 70 3 Hours

B.A. : 35

*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 at least two questions from each section.*

**Section-A**

Categorization of DBMS Systems, Network, Hierarchical and relational Databases. Application of DBMS systems.

Relational data base Management systems, why to use them and where. Data Description Language. Data Manipulation Language and Data Control Language.

Introduction to D-BASE, D-BASE COMMANDS, Development of an application under D-BASE using forms, screens and PRG files.

Security considerations in Database Management Systems. Performance improvement in databases.

**Section-B**

Relational databases-advanced concepts. Introductions to ORACLE on a multiuser environment.

Structured query language, Form design on a advanced RDBMS. Reprot generator. Query by example and Report by form. Accessing RDBMS using programming languages.

System Management, User Management, Security considerations.

**Paper : CA-IV Structured Programming & Computer Graphics**

Time : 3 hrs.

Max. marks : 70 (B.Com)/35 (B.A.)

*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 at least two questions from each section.*

## Section-A

**Introduction :** Need of structured programming. Methods of documentation. Methods of Analysing a program requirements. Data flow diagram. Entity relationship Charts. Flow Charts.

Various categories of programming languages (3GL, 4GL, etc.)

Introductions to C and COBOL, Program development in C using structured programming concepts.

## Section-B

**Why Graphics?** Various types of graphics program. Drafting packages. DTP packages. Microsoft windows. Various documentation cum packages e.g. Wordperfect, Microsoft Word etc.

**Introduction to a Pagemaker :** Preparation of documents using DTP packages, Formating, Printing, Vartious fonts and character sets. Various types of printers used in DTP Introduction to Commercial DTP systems available in market. Indian language fonts. Creation of Indian Language fonts.

<b>Practical Examination</b>	<b>Max. Marks</b>	<b>Time</b>
(1st sitting) - Design of a database for a Business Application. Design of Data Entry forms and report layouts for this database.	15(B.Com)	4 hrs.
Creation of programs to access and manipulate database.	7.5 (B.A.).	
Development of a Business Application in RDBMS (IInd sitting) - Development of a Business Application using C.	15(B.Com)	4 hrs.
Managing a Microsoft Window Session. Creating groups and program items under windows. Tuning windows for a Computer System. Preparation of a document and publishing it using a DTP system, Pagemaker. Creation of fonts.	7.5 (B.A).	
On-The-Job Training Report* based on Business Systems using C, COBOL,	30 (B.Com.)	Four weeks duration.

Programming languages, Fox Pro/d Base/  
 Ventura/Pagemaker/ORACLE/INGRESE

*\*Note : The candidate will be required to prospectue Job tranning in an Industrial Environment of Software development house or any other suitable place approved by the Principal of the College concerned on the recommendations of the teacher concerned in Computer Science and Applications of the concerned college. On the Job Training Report of second year must be submitted to the Controller of Examinations through the Principal of the college concerned atleast one month before the commencement of second year annual examinations. On the job training should be organised during Autumn and winter breaks when the students are free from regular classes and can concentrate on this training.*

**TOURISM AND TRAVEL MANAGEMENT**

(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 the Paper	Time Allowed	Max. Marks
Theory Paper-I	Tourism business	3 Hrs.	35
	(Group discussion and assignment)	3 Hrs.	15
Theory Paper-II	Tourism Products	3 Hrs.	35
	(Group discussion and assignment)	3 Hrs.	15
B.A.-II	Tourism	3 Hrs.	35
Theory Paper-III	Marketing		
Paper-IV	Travel Agency,	3 Hrs.	35
	Tour		30
	Business and Accommodation (Field Trips Report)		

<b>B.A. -III</b>	Emerging	3 Hrs.	35
Theory Paper-V	concepts for Effective Topurism Development		
Theory Paper-VI	Information, Communication and Automation (Training/Project Report)	3 Hrs.	35       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 at least 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-III

### TOURISM MARKETING

#### Introduction

This Course covers analysis of the markets and their possible developments. Packing of the product, pricing policies and their publicity and Advertising in the Media-Print and Electronic. A Study of the Marketing and Publicity aids like books, periodicals, Brochures, Posters, Hand outs Press Release Audio Visuals. The paper would also include promotional and Public Relations Methods Employed in Tourism Marketing.

1. The Concept Marketing, Nature, Classification and Characteritics of Services and their marketing. Implications

Development marketing Strategies for services Firms, Linkage in Tourism and other Sectors (Travel, Agency Accommodation, Food, Nutrition, Catering).

2. Tour Packaging : Concept, Characteristics Methodology considerations and pricing of tour Packing, Designing and Printing of Tour Brochure.

*Note : The paper setter should set ten questions. The examinee should be required to attempt any five questions.*

### **Suggested Readings**

1. Kettler, Philip Marketing Management, Universal Publications New Delhi.
2. Maccarthy, D.K.J. Basic Marketing-A Management Approach.
3. Douglas Foster Travel and Tourism Management.
4. Negi, M.S. Tourism and Hotelling.
5. Wahab, S. Grampter, L. & Reth Fibbs Tourism Marketing : Tourism International Press, London, 1976.
6. Stephen F.Witt & Kluiz Moutinch Tourism Marketing and Management Handbook Prentice Hall, New York, 1985.
7. Renal, A.Nykiel Marketing in Hospitality Industry (2nd Ed.) Van Nostrand Reinhold, 1986.
8. Maclean, Hunter Marketing Management (Tourism in your Business) Canadian Hotel and Restrurant Ltd. 1984.

### **Paper-IV TRAVEL AGENCY & TOUR OPERATORS BUSINESS**

#### **Introduction**

The study includes the functions, Differentiation Regulations, organisations recognition of Travel Agents, Tour Operators and Excursion Agents. The Role in details of Sectors like Airline-International Domestic, Air Taxies, Ticketing, Cargo, Railway-Transport Operations the allied business of Travel Agencies has been included in the course. A Study of types of accommodations their Organisations and Management.

1. **Definition** : Main Functions Organisational Structure of a

- Travel Agency and the Tour Operators. Different Types of Travel Agents and their Responsibilities, Procedures for becoming a Travel Agent and Tour Operator in India.
2. Role of Indian Airlines, Indian Railways, Air India and Vyudoot in the Growth of Travel Agency and Tour Operators Business.
  3. Accommodation- Types Organisation and Management.
- Note : The paper Setter should set ten questions. The examinee should be required to attempt any five questions.*

### Suggested Readings

1. Merissen Jome, W. Travel Agents and Tourism.
2. David H.Howel Principles and Methods of Scheduling Reservations (National Publisher) 1987.
3. Aggarwal, Surinder Travel Agency Management (Communication India 1983).
4. Go, Chack Professional Travel Agency Management : Prentice Hall London, 1990.
5. Bhatia, A.K. Tourism Development Principles and Policies Sterling Publisher, 1991, New Delhi.
6. William Cordve Travel in India.
7. National.Publishers The World of Travel, National Publishers Delhi, 1979.

### प्रयोजनमूलक हिन्दी (Functional Hindi) (Vocational Course)

पेपर-1 टिप्पण, आलेखन और व्यावसायिक पत्राचार

कुल अंक : ७०

समय : ३ घण्टे

(क)

टिप्पण का सामान्य परिचय-प्रकार-टिप्पण के अंग-टिप्पणी की विशेषताएँ और औपचारिकताएँ टिप्पणी में प्रयुक्त भाषा और शिल्प-मामले (केस) का इतिहास संदर्भों की निशान पची लगाना मामले को तैयार करना-निष्कर्ष पर पहुँचना और कार्यवाही हेतु सुझाव।

आलेखन का परिचय- आलेखन के अंग आलेखन में प्रयुक्त भाषा-दरिष्ठ/कनिष्ठ/मुख्यालय/क्षेत्रीय कार्यालय/सरकारी कार्यालय को सम्बोधन सम्बन्धी औपचारिकताएँ।

कागज़ों और दस्तावेज़ों को फाईल करने की विधि।

(ख)

व्यावसायिक और व्यापारिक पत्र के गुण-व्यापारिक पत्र का प्रारूप-प्रकार व्यावसायिक और सरकारी पत्र में अन्तर, आदेश भेजने के पत्र-बैंक विनिमय-पत्र, बीमा-पत्र कष्टों का निपटान- दावों का निपटारा- व्यवसायिक पत्रों की शब्दावली।

विज्ञापनों का परिचय - महत्व क्षेत्र और क्षितिज-विज्ञापनों में प्रयुक्त भाषा और विशेषण सफल अभिव्यक्ति सफल विज्ञापन - लेखक के गुण।

नोट :-

इस प्रश्न-पत्र में कुल आठ प्रश्न पूछे जाएंगे। प्रत्येक भाग में से दो प्रश्न करने अनिवार्य हैं। प्रत्येक प्रश्न १५ अंकों का होगा। व्यापारिक शब्दावली दस अंकों की होगी। पाँच अंक अंग्रेजी से हिन्दी और पाँच हिन्दी से अंग्रेजी के लिए निर्धारित हैं। कम से कम सात शब्द दोनों प्रकार के दिए जाएंगे।

पेपर-।।निर्वचन और प्रैस विज्ञप्ति

कुल अंक : ७०

समय : ३ घण्टे

(क)

निर्वचन का परिचय - क्षितिज और क्षेत्र-भूमिका-दुभाषिये की विशेषताएँ और दायित्व संक्षिप्तीकरण और विस्तृतीकरण-दुभाषिये का हिन्दी-अंग्रेजी और क्षेत्रीय भाषा पर अधिकार-अनुवादक और दुभाषिये में अन्तर आशुअनुवाद अनुवाद का संपादन बैठकों और विचारविमर्शों के निष्कर्ष का निर्वाचन भाषणों और वक्तव्यों का निष्कर्ष।

(ख)

प्रैस नोट-प्रैस विज्ञप्ति संरचना दोनों में अन्तर-प्रैस हेतु जारी करने के मुख्य विषय भाषा शैली-प्रैस हेतु जारी करने के लिए अधिकार -प्रैस हेतु जारी करने के लिए कानूनी पक्ष-निविदा-सूचना।

प्रेस-रिपोर्ट, रिपोर्ट लिखने की कला कार्यक्रम की कवरेज उसका संपादन-प्रेस रिव्यू-आलेखन -रिपोर्ट तैयार करना. प्रूफ-पठन।

#### 6 नोट :

इस प्रश्न पत्र में कुल आठ प्रश्न होंगे। प्रत्येक भाग में से दो प्रश्न करने अनिवार्य हैं। पाँचवें प्रश्न को किसी भी भाग में से किया जा सकता है।

#### प्रेक्टिकल

कुल अंक : ६०

चुने हुए विषयों पर बहस और उनका निर्वचन। तत्काल अनुवाद का अभ्यास। विभिन्न भाषणों / कार्यक्रमों के संदेश को प्रेषित करने का अभ्यास।

पुस्तिका में अंग्रेजी समाचारों-मदों-सूचनाओं का हिन्दी में अनुवाद करना और उसे परीक्षणार्थ तैयार करना।

प्रेस नोट तैयार करना।

### Functional English (Vocational Course)

There will be two papers each of 50 marks and 3 hours duration.

Paper-A : Writing Skills and Introducing to Broadcasting Media.

Teaching Periods (per Week) = 6 periods (4 hours)

Theory = 4 periods

Practicals = 2 periods

for a batch of ten students

Time : 3 Hours

Mode of Examination : Max. Marks 50

Theory 40 marks

Oral Examination/ 10 marks

Viva

#### Objectives :

1. To teach the students the technique of writing.
2. To enable them to develop power of Communication and expression through composition.
3. To introduce them to the fundamentals of Radio and Television.



## Unit-I Writing Skills

Marks : 30

## Course Contents

- i) Imaginative use of parts of speech.
- ii) How to plan paragraph writing.
- iii) How to change direct into indirect speech and vice-versa.
- iv) Substitution and ellipsis.
- v) Imaginative features of language.
- a) Figures of Speech - (Alliteration, Assonance, Simple Metaphor, Apostrophe, Personification, Hyperbole).
- b) Idioms and phrases.

**Practical exercise :**

Letter Writing (formal, informal and business)

Precis and Comprehension, report writing, Paraphrasing and expansion.

## Unit-II Introducing of Broadcasting Media

Marks : 10

- i) Fundamentals of Broadcasting - Definition, Nature and scope.
- ii) Radio as a Media of Communication.
- iii) T.V. as a Media of Communication.
- iv) T.V. Network in India and Educational T.V.

**Paper-B : Conversational English**

**Objectives :** To equip the students to develop conversational skills and fluency in English speech in different social situations.

Teaching Periods (Per Week)	6 (4 hours)
Theory	4 periods
Practical	2 periods for a batch of ten students
Duration	3 Hours
Mode of Examination	Max. Marks 50
Theory	40 marks
Oral Exam./Viva	10 marks

**Course Contents :****Unit-I**

20 marks

- i) Language and Society Styles and Registers  
(Language as the index of cultural and social habits colloquial language, textual language)

- ii) Language and Communication (Definition, nature, scope, objectives of public relations, elements of Communication, essentials of speech making).

**Unit-II**

20 marks

- i) English in Situations:

1. Greetings
2. Receiving and Seeing people off
3. Making complaints
4. Making an appointment
5. Buying at shops
6. Placing orders
7. Offering apologies
8. Consulting a Doctor
9. Making enquiries
10. Conversation on telephone
11. Asking the time : Time Expression
12. In the post-office
13. At the bank
14. At the customs
15. At the airport
16. At the travel agency
17. Booking a room at a hotel
18. Buying guidebook
19. At the temple
20. At the police station
21. At a dinner party
22. Taxing a taxi
23. At the stock exchange
24. At the chemist
25. At the Restaurant
26. Description of events

**Field Work & Practical Training**

- i) Visit to various places offering different situations and practising conversation in actual situations.
- ii) Students should be asked to write dialogues relating to the situations.

**Books Recommended :**

1. English in Situations by R.O. 'Neill (O.U.P).
2. English Conversation Practice by Grant Taylor (Tata Mc. Graw Hill Co.).
3. Developing Communication Skills.  
By-Krishana Mohan, Meera Banerji  
(Macmillan India Ltd.)
4. Sasikumar V. and P.V. Dhamija - A self learning Guide to conversation Practice (with cassette) New Delhi : Tata Mac Graw Hill Co.
5. Success with English : The Penguin Course  
Course book I & II by Geoffry Bronghton  
(Penguin Books)
6. What to say when Ed. Viola Huggins (BBC London).