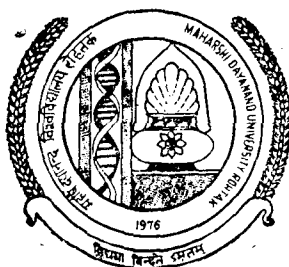


Maharshi Dayanand University Rohtak



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

Session—1999-2000

Available from :

Deputy Registrar (Publication)

Maharshi Dayanand University

Rohtak-124 001 (Haryana)

Price :

At the Counter : Rs. 50/-

By Regd. Parcel : Rs. 75/-

By Ordinary Post : Rs. 60/-

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

1. The duration of the course of instruction for the B.A./ B.Sc./ B.Com./ B.Sc. (Home Science) shall be three years and the examination shall be held in three parts. Part-I examination 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 3rd year. The examination in Part-I and Part-II shall be held once a year ordinarily in the month of April 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 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 of Rs. 105/- 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 or in the next annual examination held in March from the Board concerned. Such a candidate shall have to furnish to the University proof of his/her having cleared the subject of English before the declaration of result of B.A./B.Sc./B.Com./B.Sc. (Home Science) Part-I examination failing which his/her result of B.A./B.Sc./B.Com./B.Sc. (Home Science) Part-I examination shall be withheld.*
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 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 two consecutive chances. If he/she fails to produce/submit the proof of having passed the compartment subject even at the second chance to be held simultaneously with TDC-I exam. his/her candidature/result for the TDC-I exam. shall stand automatically cancelled.

Provided that a candidate who joins Part-I of B.A., B.Sc. (Home-Science), B.Com., B.Sc., as the case may be must have obtained atleast 33%, 35%, 40%, 45% marks respectively 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 upto 50% subject in TDC-I exam. of this University may be allowed promotion to TDC-II, Similarly, a candidate who is placed under compartment/re-appear in upto 50% subjects TDC-II examination of this University may be allowed promotion to TDC-III. Two additional consecutive chances for each of three parts of TDC Exam. shall be admissible for passing/clearing compartment this is however, subject to Clause 9.2.

- 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 subjects - Psychology, and 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 25% marks in the aggregate of all the subjects in the result of 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 recommendation of the Principal of the College concerned, to appear in the examination as an ex-student without attending a fresh course of instruction. This is however, subject to Clause 9.2 below.
- 9.2 The period of passing TDC Final year examination shall be 6 years from the year of joining the TDC-I for the first time i.e. within six academic years.
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 under :

	B.A.Part-I ,II & III	B.Sc.Part-I ,II & III	B.Sc.(Home Science) Part-I,II & III	B.Com. Part-I,II & III
College Candidates	Rs. 90/-	Rs. 110/-	Rs. 90/-	Rs. 90/-
Ex-Students	Rs. 100/-	Rs. 120/-	Rs. 110/-	Rs. 110/-

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 :
- Hindi in case of Sanskrit.
 - the language concerned in case of other languages.
 - in both Hindi and English in case of other subjects.
- iii) The candidates shall write their answer in :
- 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/compartment in the theory or practical or both parts, as the case may be of that subject).

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

- i) those who obtain 60% or more of the aggregate number of marks in all the subjects 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 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 thereafter 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-I and Part-II in annual examination and for Part-III in supplementary examination. Such a candidate shall apply on one examination form available at Rs. 125/-. In case, he/she fails in Part-I/II/III he/she may appear in the immediate next annual examination. Such a candidate

20) submit one examination form for Part-I and II or Part-I, II & III (in case of failure). 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 Colleges 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 examination 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).

21) Minimum marks required to pass in each subject shall be as follows in theory and practical separately.

22) Candidates who have passed the examination in B.Sc. (Home-Science) examination in second or third division be allowed to reappear in one or more subject(s)/in theory papers only of the Part-I, II and Part-III examinations for improvement of division. The candidate may also be allowed to improve their score of marks upto 45% in the same manner. However, for improvement of division from III to II and II to I as well as improvement of score of marks upto 45% only one chance shall be allowed. Such a candidate, after his/her passing the B.A./B.Sc./B.Com./B.Sc.(Home Science) in the annual examination held in April/May shall appear for Part-III in the immediate supplementary examination and Part-I and/or Part-II in April/May next. His/her result of improvement of Part-III supplementary examination shall be finalized by taking into consideration the marks obtained by him/her in Part-I and/or Part-II in April/May next. Provided that the result of the said Part-III supplementary examination shall be declared if the candidate had furnished undertaking at the time of submission of examination admission form to the effect that he/she is not interested in the improvement of Part-I & II. Like-wise a candidate passing his/her Part-III in

September of the following calendar year. However, if such candidate gives an undertaking at the time of submission of examination admission form of Part-I and/or Part-II for improvement in the next annual examination that he/she is not interested in improvement of Part-III, his/her result of improvement shall be finalized on the basis of Part-I and II.

ii) The higher score in the paper(s)/subject(s) in which he/she re-appears 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 the division 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 shall be Rs.110/- and additional fee of Rs.10/- 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

for B.A. Part-I,II and III

Compulsory Subjects

1. English Two papers of 50 marks each in Part-I, Part-II & Part-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 Archacology
 3. Economics
 - *4. Education
 5. History
 - *6. Linguistics
 7. Pol. Science
 8. Philosophy
 9. Public Administration
 10. Sociology
 11. Mathematics
 12. Art OR History of Art OR Clay Modelling
- 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 paper of 50 marks each.
- One paper of 30 marks and three Practicals of 20 marks each and 10 marks for sessional work.
- One Paper of 100 marks.
- One paper of 30 marks and two practicals of 30 marks each and 10 marks for sessional work.

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MAHARSHI DAYANAND UNIVERSITY, ROHTAK

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| 13. Applied Art | One paper of 25 marks & three practicals of 20 marks each & 15 marks for sessional work. |
| 14. Music (Vocal) | One paper of 40 marks and one practical of 60 marks. |
| 15. Music (Instrumental)
OR
Music (Tabla) | One paper of 40 marks and one practical of 60 marks. |
| 16. Indian Classical Dance | One paper of 40 marks and one practical of 60 marks. |
| 17. Geography | One paper of 60 marks and one practical of 40 marks, in case of Part-III two Theory papers of 40 and 20 marks and one Practical of 40 marks. |
| 18. Psychology | One paper of 70 marks and one practical of 30 marks. |
| 19. Defence Studies | One paper of 70 marks 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 and one practical of 30 marks. |
| 23. Communicative English | Two papers of 50 marks each. |
| 24. Health and Physical Education | One paper of 60 marks and one practical of 40 marks. |

Note : The following combinations of the elective subjects shall not be allowed :

- a) (i) History and Ancient Indian History, Culture & Archaeology.
(ii) Education and Mathematics.
(iii) Education and Art and History of Art.
(iv) Home Science and Geography.
(v) Music (Vocal) and Sociology.
(vi) Clay Modelling and Psychology.

- (vii) Linguistics and Indian Classical Dance.
 - (viii) 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 College New Delhi.

May be taken as having completed 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.

SCHEME OF EXAMINATION
for B.Sc. Part-I,II and III

Compulsory Subjects

B.Sc. Part-I	
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 each.
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 of 50 marks.
9. Geography	One paper of 90 marks and one practical of 60 marks, in case of 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	} The scheme of papers will be notified later if required.
12. Human Anatomy	
13. Physiology	
14. Micro Biology	

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 :-

- (i) 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.
- (ii) A candidate who took up Agriculture as one of his Elective group subjects for XII class of Sr. Secondary Certificate Examination may offer Botany or Zoology or both for the B.Sc. Examination.
- (iii) 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 and III be allowed :-

1. 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.

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

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

Subject to the condition that the students opting for above combination must have studied 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.

**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, Commercc, Economics.Political Sc., History, Sociology, Geopgraphy, 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. (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.
2.	Archaeology, Museum and Tourism	English or Hindi or Sanskrit, History, Pol. Sc.,Sociology, Geography, Economics	-do-

3.	Commercial Art, Designing & Painting	English or Hindi or Sanskrit or Punjabi / Urdu, History or Economics, Commerce, Pol.Sc., Sociology, Music or Dance, Psychology.	-do-
4.	Rural Industrialisation	English or Hindi or Economics, Commerce, Public Administration, Sociology, Pol.Sc., Geography.	-do-
5.	Local Self Government	English or Hindi, Pol.Sc., Economics, History, Sociology, Geography, Public Administration.	-do-
6.	Marketing	English or Hindi, Economics, Commerce, Pub. Adm., Pol.Sc., Sociology, History, Geography.	-do-
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 (Instrument 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 COURSES (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

Outlines of Test

	Max. Marks	Time
Paper-A	50	3 Hours
Paper-B	50	3 Hours

Syllabus and Courses of Reading

Paper-A	Max. Marks : 50 Time : 3 Hours
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Books Prescribed

- (a) 'Songs and Sonnets' a text-book of poetry edited by Mr. Sushil Kumar (Vikas Publishing House (P) Ltd., Delhi).
- (b) 'Reflections' a text-book of short stories; one-act plays and essays edited by Dr. R.K. Malhotra and Dr. I.P. Anand (Natraj Publishing House, Karnal).

SCHEME OF EXAMINATION

Question-I	Reference to the context The candidate will be required to attempt two references (with internal choice) one from each text book	10 Marks
Question-II	Short questions on poems (five out of ten)	5 Marks
Question-III	Short questions on short stories one-act plays and essays (three to five out of double the number)	5 Marks
Question-IV	Essay-type questions (Two with internal choice) on poems	10 Marks

- Question-V Essay-type questions (Two with 10 Marks
internal choice) on short stories
one-act plays and essays.
- Question-VI Comprehension passage (with
internal choice)
(a) from the 'Songs and Sonnets 5 Marks
(with internal choice)
(b) from Reflections (with internal 5 Marks
choice)

Paper-B

Max. Marks : 50
Time : 3 Hours

Books Prescribed

1. Godan by Prem Chand, translated, abridged and edited by Dr. Dinesh Kumar and Mr. A.L. Madan (Vikas Publishing House, (P) Ltd., Delhi).
2. A Textbook of English Grammar, composition and translation by Dr. Sunita Sharma (Vikas Publishing House (P) Ltd., Delhi).

SCHEME OF EXAMINATION

- Q.I Five short questions (with internal choice) on Godan based on the questions framed by the editors. 15 Marks
- Q.II Questions on Grammar on the prescribed items (tenses, articles, prepositions, voice, narration, auxiliaries) based on the text book but not necessarily the same as those given in the text- book of grammar and other text- books prescribed for Paper-A. 20 Marks
- Q.III A paragraph of about 100 words (descriptive and narrative type) 8 Marks
- Q.IV Translation from English into Hindi or in lieu thereof expansion of an idea (with internal choice) into 100 words or so, for foreign students including students of non-Hindi speaking states 7 Marks

ADDITIONAL ENGLISH**One Paper**

Max. Marks : 100

Time : 3 Hours

Part-A**Text**

55 Marks

The candidate will be required to study the following text :

- A. Brief Biographies Ed. Champa Tickoo and others, O.U.P. Excluding Chapter 2 Durgabai Desmukh by C.D. Desmukh Chapter 10 Albert-Luthuli by Nadine Gordiner Chapter-II Charle Chaplin-I by Teodore Huff and others,
- B. Fine Frinzy Ed. KPK Menon, Orient Longman.
- C. Time Machine (Novel by H.G. Wells).

The following types of questions will be asked :

- (i) Explanation with reference to the context from A & B above
5x2=10 Marks
- (ii) General essay type question on 'A' above.
15 Marks
- iii) (a) One question on theme, central idea, argument incident, story summary etc. on 'B' above. 10 Marks
- (b) One question based on the Glossary and exercise appended to 'B' above. 5 Marks
- iv) One General essay type question requiring a first hand study of the prescribed Novel (at 'C' above)
15 Marks

Part-B**General**

45 Marks

- i) Essay (Both reporting and reflective types). The candidate will be required to write above 400 words on any one of the four/five given topics. 15 Marks
- ii) Precis : reducing a given passage of about 200 words to about one third of its length (in the candidates own words) 15 Marks
- iii) Remedial English 15 Marks

Communication skill in English OUP Chapters 1,2,3,4,& 8.

हिन्दी (अनिवार्य)

पूर्णांक : 100

समय : 3 घण्टे

1. काव्य 40 अंक
व्याख्यार्थ दिए गए चार काव्यांशों में से दो की सप्रसंग व्याख्या करनी होगी। पूछे गए दो कवियों में से एक कवि का साहित्यिक परिचय लिखना होगा। पाठ्य पुस्तक की अनुशीलनी में से पूछे गये चार समीक्षात्मक प्रश्नों में से दो का उत्तर देना होगा। अंकों का विभाजन इस प्रकार है :-
व्याख्या के लिए 16 (8+8) अंक
कवि परिचय के लिए 8 अंक
समीक्षात्मक प्रश्नों के लिए 16 (8+8) अंक
2. गद्य 30 अंक
व्याख्यार्थ दिए गए चार गद्यांशों में से दो की सप्रसंग व्याख्या लिखनी होगी। पूछे गए दो लेखकों में से एक लेखक का साहित्यिक परिचय देना होगा। पूछे गये दो समीक्षात्मक प्रश्नों में से एक का उत्तर देना होगा। अंकों का विभाजन इस प्रकार है :-
व्याख्या के लिए 12 (6+6) अंक
लेखक-परिचय के लिए 8 अंक
समीक्षात्मक प्रश्नों के लिए 10 अंक
3. हिन्दी साहित्य का इतिहास (आदिकाल) 10 अंक
हिन्दी साहित्येतिहास का काल-विभाजन, आदि काल का नामकरण, परिस्थितियाँ, सामान्य प्रवृत्तियाँ, प्रमुख रासों ग्रंथ (पृथ्वीराज रासो, बीसल देव रासो तथा परमाल रासो) का सामान्य परिचय। इनसे सम्बन्धित, पूछे गये दो प्रश्नों में से एक का उत्तर देना होगा।
4. संक्षेपण 10 अंक
लगभग सौ शब्दों पर आधारित अवतरण में शीर्षक के लिए 2 अंक और दिए गए दोनों प्रश्नों-त्तरों के लिए 4-4 अंक नियत हैं।
5. भाषा 10 अंक
वर्तनी शोधन और वाक्य शोधन सम्बन्धी दो प्रश्न 5-5 अंक के होंगे। पूछे गये आठ शब्दों और आठ वाक्यों में से पाँच-पाँच करने होंगे।

पाठ्य ग्रन्थ

1. अभिनव पद्य गरिमा - महर्षि दयानन्द विश्वविद्यालय प्रकाशन।
2. अभिनव गद्य गरिमा - कुरुक्षेत्र विश्वविद्यालय प्रकाशन।

सहायक-ग्रंथ

1. हिन्दी साहित्य का विवेचनात्मक इतिहास : डॉ० तिलक राज शर्मा,
आर्य बुक डिपो, दिल्ली ।
2. हिन्दी साहित्य का संक्षिप्त इतिहास : बाबू गुलाबराय, लक्ष्मी नारायण
अग्रवाल, आगरा ।
3. हिन्दी साहित्य का इतिहास : डॉ० लालचन्द गुप्त 'मंगल',
युनिवर्सिटी बुक सैण्टर, कुरुक्षेत्र।
4. हिन्दी साहित्य का संक्षिप्त इतिहास : डॉ० विश्वनाथ त्रिपाठी, राष्ट्रीय
शैक्षिक अनुसंधान और प्रशिक्षण
परिषद, दिल्ली ।
5. हिन्दी साहित्य का संक्षिप्त इतिहास : आचार्य नन्द दुलारे वाजपेयी, वाणी
प्रकाशन, दिल्ली ।
6. संक्षेपण : सिद्धान्त और प्रयोग : डॉ० ओम प्रकाश सिंहल एवं
आजदा असद, लक्ष्मीनारायण
अग्रवाल, आगरा ।
7. अच्छी हिन्दी : रामचन्द्र वर्मा लाक भारती प्रकाशन,
इलाहाबाद ।
8. हिन्दी का सामान्य ज्ञान (भाग 1 तथा 2): डॉ० हरदेव बाहरी, लोक भारती
प्रकाशन, इलाहाबाद ।

नोट : " मद्य निषेध" - लेखक डॉ० बैजनाथ सिंहल 'अभिनव गद्य गरिमा' पुस्तक
में नौवें पाठ के रूप में सम्मिलित किया गया है ।

हिन्दी (अनिवार्य) पुस्तक 'अभिनव गद्य गरिमा' का अन्तिम पाठ ।

लेखक - बैजनाथ सिंहल

मद्य-निषेध

'खैर खून खांसी खुशी, बैर प्रीति मदपान
रहिमन छिपाय न छिपै, जानै सकल जहान' ।

अर्थात् दान, कत्ल, खांसी, खुशी, शत्रुता-मित्रता तथा मदपान अर्थात् मदिरा का पीना - ये सभी चीजें छिपाने का कितना भी प्रयत्न क्यों न किया जाए, छिप नहीं सकती । सारी दुनिया को पता चल जाता है । रहीम ने इस दोहे के माध्यम से जो सारी दुनिया को पता चल जाने की बात कही है, वह महत्वपूर्ण है । उनका संकेत अच्छे काम की अच्छाई और बुरे काम की बुराई के अपने-आप प्रचारित हो जाने की ओर है । कोई मद्यप अर्थात् शराबी अपने मन को भले ही सन्तोष देता रहे कि उसकी पीने की बुराई का पता केवल घर

वालों या दो चार मित्रों तक ही सीमित है, परन्तु उसका पता धीरे-धीरे सबको लग जाता है। उसे आश्चर्य तब होता है, जब वह अपने विरुद्ध पहले दबी जुबान से और फिर खुलेआम फब्तियाँ, व्यंग्य और बदनामी भरी बातें सुनता है, यथा - 'वह जा रहा है शराबी', 'आइए, आज लगता है कि पीने को नहीं मिली' या आज लगता है पूरी बोटल ही चढ़ा कर आए हों, अरे, ऐसे शराबी का कौन विश्वास करे आदि-आदि। ऐसे व्यक्ति का धीरे-धीरे समाज में विश्वास उठने लगता है। उसे अनैतिक माना जाता है। उसे अपने बच्चों के लिए योग्य रिश्ते तक ढूँढने में कठिनाई होती है। उसके रिश्तेदार और मित्र उससे किनारा करने लगते हैं। अपने ही परिवार में पत्नी और बच्चों की नजर में वह हेय हो जाता है। इस प्रकार वह अपमानित होकर कुण्ठित हो जाता है और उसकी सारी क्षमताएँ दुर्बल हो जाती हैं। 'जाने सकल जहान' से रहीम का यही तात्पर्य है। बिहारी ने अपने दोहे में यह बताया है कि शराबी के हाथ में दूध भी हो तो लोग शराबी होने का ही सन्देह करते हैं।

मद्यपान, स्व-विनाश तक ही सीमित नहीं है बल्कि वह परिवार, समाज, सामाजिक मर्यादाओं, नैतिक आचरण और सभी प्रकार के सांस्कृतिक, राष्ट्रीय मूल्यों की विध्वंसक भी है। ऐसा नहीं है कि मद्यपन इस तथ्य से अवगत न हो। परन्तु फिर भी वह इस लत को छोड़ नहीं पाता। इस विडम्बना के कारणों की खोज कठिन नहीं है। कुछ लोग इसे 'स्टेटस सिम्बल' अर्थात् अपने ऊँचे होने के प्रतीक के रूप में देखते हैं। फिल्मों में प्रायः - ऐसा दर्शाया जाता है। बहुत धनी, प्रतिष्ठित व्यक्ति किसी समारोह, भोज या विवाह जैसे आयोजनों पर अपने अतिथियों के लिए जी खोलकर मद्य उंडेलते हैं। बिना मद्य के जैसे सारा आयोजन ही फीका हो - ऐसा आभास दिया जाता है। देखा-देखी मध्य वर्ग के लोग भी भले ही ऋण उठाकर उन्का अनुकरण करने लगते हैं। फिर, निम्न वर्ग के लोग स्वयं को निम्न क्यों समझे। यदि कोई सात्विक मेजबान ऐसा नहीं करता तो उसे लानत भेजी जाती है। दूसरी ओर फिल्मों में ही अपराध जगत के लोगों को मद्यपान कुछ इस प्रकार करते दिखाया जाता है कि मानो मद्य में ही उनकी सारी योजनाओं और उपलब्धियों की शक्ति छिपी है। मद्य या मदिरा ही उनमें सांचने की शक्ति पैदा करती हो और उसका पान मानो जीवन की महतम उपलब्धि हो। ऐसे दृश्यों से विकृत मानसिकता के लोग बहुत शीघ्र प्रभावित होते हैं।

मद्यपन लोग प्रायः बहुत ही घटिया प्रकार के ऐसे तर्क देते सुने जाते हैं जिससे उनका पक्ष सुदृढ़ होता हो। कोई कहेगा - 'देवता भी तो सोमरस पीते थे'। कोई उनसे पूछे कि सोमरस क्या होता है तो उत्तर होगा 'मदिरा'। उन्हें कैसे समझाया जाए कि जिस विष का पान वे कर रहे हैं, सोमरस वैसा विष नहीं है। सोम का अर्थ है - 'चन्द्रमा' जिसे सुधाकर भी कहा जाता है अर्थात्

जिसकी सुधा+कर, किरणें सुधामयी हैं जो सुधा+आकर अर्थात् अमृत का कोष है। चाँदनी रातों में मन की एकाग्रता विचारों को अमृतमय बनाती हैं। वह दार्शनिक चिन्तन की सूचक हैं। यह भी माना जाता है कि सोम एक जड़ी-बूटी का नाम है जिसका रस इसलिए अमृत-तुल्य है कि वह बहुत से रोगों का समूल नाश करता है न कि मदिरा की भाँति शरीर में रोगों को जन्म देता है।

इसी प्रकार कुछ पियक्कड़ शायरी का सहारा लेने लगते हैं। वे शेर (दोहा) पढ़ेंगे - 'या तो मस्जिद में बैठकर पीने दे सकी, या ऐसी जगह बता जहां खुदा नहीं है'। गहराई से देखें तो इस शेर के अर्थ में यह बात छिपी है कि खुदा अर्थात् ईश्वर मद्यपान को अच्छा नहीं मानता। अब चूँकि मद्यप को मदिरापान करना है तो वह किस चतुराई से बात का रुख मोड़ना चाहता है। ईश्वर सभी जगह विद्यमान है। उसे मदिरा-पान अच्छा नहीं लगता। मद्यप बिना पिये नहीं रह सकता। ईश्वर से बेपर्दा हो गया है। सारी लाज-शर्म बच डाली है। इसलिए अब दुस्साहस देखिए कि मस्जिद और मद्यखाने (शराबघर) का अन्तर भी मिटा देना चाहता है। इस प्रकार के तर्क उसकी बुरी आदत और मानसिक विकृति के ही परिचायक हैं जब वह यह जानता है कि खुदा सभी जगह है और उसकी निगाहों से कहीं भी बचकर यह दुष्कर्म नहीं किया जा सकता तो वह यह भी जानता है कि मस्जिद तो बाकी स्थानों की तुलना में अधिकतम पवित्र स्थान है। परन्तु, उसे तो बहाना चाहिए। बहानों की कोई कमी थोड़े ही है। आज सर्दी बहुत है - इसलिए दो घूंट ले ली। आज खुराी ज्यादा है तो आज परेशानी ज्यादा है, आज कुछ मेहमान आ गए हैं या ऐसे मित्र आ गए हैं जिन्हें टाला नहीं जा सकता। तात्पर्य यह कि पीने वाले को पीने का बहाना चाहिए।

यह पीना-पिलाना कितने दूरगामी कुप्रभाव रखता है - इसकी और ऐसे लोगों का ध्यान नहीं जाता। छोटी सी बात उनकी समझ में नहीं आती। ईश्वर ने मनुष्य के लिए कितने अनाज, फल इत्यादि पैदा किए हैं। यदि वह मदिरा को मनुष्य के भोजन या पेय के रूप में आवश्यक समझता तो जल के साथ कुछ स्रोत और उद्गम मदिरा के भी बना देता। वास्तव में मदिरा किसी भी प्रकार से मानवीय भोजन का अंग नहीं हो सकती। जिन पदार्थों से वह तैयार की जाती है, वे पदार्थ प्रकृति ने मनुष्य के लिए उपयोगी-रूपों में तैयार किये हैं। मनुष्य ने उनका दुरुपयोग करते हुए मदिरा तैयार की है। यदि प्रकृति ने ऐसा कुछ किया होता तो उसके लिए एक पदार्थ या पौधा ही पैदा किया होता। मनुष्य तो विविध पदार्थों के सम्मिश्रण से मदिरा को तैयार करता है और वह भी उन पदार्थों का कुत्सित ढंग से उपयोग करते हुए। वह नहीं जानता कि यह मार्ग मानवीय नहीं है। मद्यपान उसे शारीरिक, मानसिक रोगी तो बनाता ही है, साथ ही पारिवारिक, आर्थिक, सामाजिक और सांस्कृतिक-राष्ट्रीय आदि स्तरों पर विनाश के मार्ग पर ले जाता है। इन सभी पक्षों का आकलन संक्षेप में इस प्रकार किया जा सकता है :-

1. शारीरिक, मानसिक पक्ष

प्रत्येक नशा, अन्त में शरीर को शिथिल बनाता है । जिस नशे में विष-तत्व जितना अधिक होगा, शारीरिक शैथिल्य उसी अनुपात में बढ़ जाएगा । अधिक नशा करने वाले व्यक्तियों का शरीर धीरे-धीरे जर्जर और फिर रुग्ण हो जाता है । उनके शरीर में प्रतिरोध-क्षमता चुक जाती है और कोई न कोई दुस्साध्य बीमारी शरीर को घेर लेती है । मदिरा-पान इसका अपवाद नहीं है । मद्यप्रातः कभी चुस्ती से उठ नहीं सकता । जब यह स्थिति रोजाना की होगी तो शारीरिक-शैथिल्य बढ़ेगा । यह सरासर गलत है कि मदिरा की एक-दो घूंट सीमा में पीने से स्वास्थ्य बढ़ता है । विष तो कम हो या ज्यादा, अन्ततः विष ही है । एक-दो घूंट से चलकर बोटल तक पहुँचते देर नहीं लगती । इसी अनुपात में शारीरिक शैथिल्य भी बढ़ेगा ।

शारीरिक शैथिल्य अकर्मण्यता को जन्म देता है । रोगी शरीर में काम करने की क्षमता उत्तरोत्तर कम होती जाती है । फलस्वरूप वह अपने काम में ही नहीं पिछड़ता बल्कि यदि नौकरी में है तो प्रताड़ना का शिकार होता है । समय पर न पहुँचना, जब-तब बीमार रहने की दशा में बार-बार छुट्टी लेना, काम में मन न लगना, साथ-साथ दवाइयों पर खर्च बढ़ना आदि-आदि रोजाना की बातें हो जाती हैं । इससे उसमें चिड़चिड़ाहट, अपराध-भावना और हीनता-बोध बढ़ते हैं । धीरे-धीरे उसे जीवन एक बोझ लगने लगता है । रक्त में मदिरागत विष जमा होने के कारण, वह चाहते हुए भी मदिरापान छोड़ नहीं पाता चूँकि यह उसके खून की मांग बन जाती है । उसकी संकल्प-शक्ति जवाब दे जाती है, हालाँकि संकल्प कर लेने पर कुछ भी त्याग करना असंभव नहीं है । कमजोर संकल्प वाला व्यक्ति इस प्रकार मदिरा का गुलाम बन जाता है ।

गुलाम व्यक्ति का अपना कुछ नहीं होता । यदि शासक अत्याचारी है तो वह अत्याचार करेगा ही । शासक-रूप में मदिरा का अत्याचार भोगना पड़ता है-शरीर के उन जीवन-वाही अंगों पर जिन्हें हम हृदय, फेफड़े, यकृत और मस्तिष्क कहते हैं । फेफड़े कमजोर होने पर खांसी पीछा नहीं छोड़ती । प्रातः खांसी इतनी ज़ोर से आती है कि पड़ोसी तक जग जाएं । कहीं एक रात मित्र या रिश्तेदार के यहाँ रहना पड़े तो अलग मुसीबत । प्रत्येक व्यक्ति ऐसे व्यक्ति को दूर रखना पसन्द करेगा । फेफड़े या यकृत की खराबी का प्रभाव पूरे शरीर पर पड़ता है । जिस प्रकार मशीन का एक पुर्जा खराब होने की दशा में मशीन काम नहीं कर पाती, वैसी ही स्थिति शरीर की भी है । किसी एक जीवनवाही अंग के खराब होने की स्थिति में शरीर बेकार हो जाता है । मशीन का पुर्जा तो बदला भी जा सकता है, परन्तु शरीर के ये महत्वपूर्ण अंग तो बाजार में नहीं मिलते । अधिक मदिरापान करने से यदि हृदय-रोग हो जाए तो भगवान ही मालिक । ऐसे व्यक्ति सीधे मौत के मुँह में जाते हैं । कभी-कभी अधिक मदिरापान मस्तिष्क

तक को गला देता है। ऐसी अवस्था में जीवन मृत्यु से भी अधिक भयंकर हो जाता है। कोई भी सोच सकता है कि एक बुरी आदत एक भले-चंगे व्यक्ति को किस प्रकार अपाहिज, घृणास्पद और मृत्यु-याचक बना देती है।

2. आर्थिक, पारिवारिक एवं सामाजिक पक्ष

'आप मरे जग प्रलय' या 'आज मरे कल दूजा दिन' वाली बात मदिरा से हुई मौत पर लागू नहीं होती। ऐसे मरने वाला व्यक्ति कितनों को तो जीते-जी मार देता है। आर्थिक दृष्टि से मदिरापान की आदत दोहरी मार मारती है। पहले तो मदिरा पर व्यय होता है। रोज पीने वाले के लिए ये कोई सस्ती आदत नहीं है। अच्छी-खासी आमदन वाले व्यक्ति की आमदन का एक बड़ा हिस्सा मदिरा की भेंट चढ़ जाता है। यदि मित्र-मण्डली बड़ी है या साथ में सिगरेट वगैरा की लत भी है तो यह अनुपात और बढ़ जाता है। जब में पैसे न हो तो हाथ फैलाने यानि उधार उठाने की नौबत आती है। समय पर वापिस न करने पर आदमी का विश्वास उठ जाता है। तात्पर्य यह है कि यह आदत नैतिक तौर पर आदमी की पहली हत्या करती है और असाध्य रोग की स्थिति में दूसरी हत्या जो लोग निर्धन है किन्तु इस व्यसन के शिकार है, वे कभी-कभी बहुत ही घटिया प्रकार की मदिरा पीने पर सीधे ही 'राम-नाम सत्य है' बोल जाते हैं। समाचार-पत्रों में 'हूच ट्रेजिडी' (घटिया मदिरा से हुई मौतों के रूप में त्रासदी) के समाचार छपते ही रहते हैं। कितने ही मजदूर, रिक्शा-चालक जो मदिरा व्यसन-ग्रस्त है, अनैतिकता की सभी सीमाएँ लांघ जाते हैं। घर में पत्नी और बच्चे आटे दाल के साथ गृह-स्वामी के लौटने की प्रतीक्षा में भूखों बैठे रहते हैं कि साहब या तो नशे में झूमते हुए या बोतल लटकाए हुए घर में प्रवेश करते हैं। इसका सीधा सा अर्थ यह हुआ कि आर्थिक स्तर पर मदिरा-पान व्यक्ति को भिखारी जैसा ही नहीं बनाती, बल्कि इतना दानवी भी बना देती है कि वह अपने बच्चों के भूखों मरने की परवाह करना भी छोड़ देता है। दूसरी ओर यदि मद्य-व्यसनी असाध्य रोग-ग्रस्त हो जाते हैं तो घर की सारी जमा-पूंजी, यहां तक के घर तक बिक जाता है और फिर भी वह भगवान को प्यारा हो जाता है।

परिवार के स्तर पर मदिरा-व्यसन बहुत महंगा पड़ता है। एक कहावत के अनुसार 'परिवार सद्गुणों का पलना है' परन्तु यदि परिवार में कोई व्यसनी है तो समझ लीजिए कि यह पलना आसुरी वृत्तियों का पालना सिद्ध होगा अर्थात् वह परिवार कभी भी बच्चों को अच्छे नागरिक नहीं बना सकता। ऐसा घर क्लेश और कलह का अड्डा बन जाता है। पति-पत्नी की नोक-झोंक धीरे-धीरे मारपीट में बदल जाती है। बच्चे सहमकर कोने में दुबक जाते हैं। पत्नी, यदि घर छोड़कर मायके या अन्यत्र चली जाती है तो भी परिवार बिखर जाता है। गाली-गालौज आम बात हो जाती है। एक-दूसरे के प्रति स्नेह, आदर

सम्मान के भाव लुप्त हो जाते हैं । ऐसे परिवेश में बच्चे कुसंस्कारी हो जाते हैं । जो अवस्था उनकी निर्माणावस्था है, वह विनाश-अवस्था बन जाती है । कर्मा-कभी पति-पत्नी का झगड़ा आत्महत्या अथवा हत्या का रूप धारण कर लेता है और परिवार पूरी तरह नष्ट हो जाता है ।

यों भी बच्चा मां-बाप से ही अपनी प्रारम्भिक अवस्था में सीखता है । यदि पिता व्यसनी होगा तो बच्चा अबोध होने के कारण उन संस्कारों को ग्रहण करेगा । इस प्रकार मदिरा-व्यसनी व्यक्ति अपना जीवन तो नष्ट करता ही है, साथ ही वह भावी पीढ़ी का जीवन भी नष्ट कर देता है । निर्धन परिवारों में यह स्थिति और भी विद्रूप-रूप में सामने आती है । ऐसे मदिरा-व्यसनी व्यक्ति के बच्चों को भूखों सोना पड़ता है । वे जब-तब पिटाई का शिकार होते हैं । उन्हें स्कूल कौन भेजे ? पिता की आय से तो मदिरा का खर्च भी पूरा नहीं हो पाता । यही नहीं वह तो पत्नी चौका-झाड़ू करके जो चार पैसे कमाती है उन्हें भी मारपीट करके छीन लेता है । कभी कोई हूच-ट्रेजिडी का शिकार हो जाए तो उस परिवार का रखवाला कौन ? ऐसे बच्चे या तो बाल-मजदूरी करने पर बाध्य होते हैं जहां उनका भरपूर शोषण होता है या फिर अपराध के मार्ग पर चल निकलते हैं । एक व्यक्ति के दुर्व्यसन की कितनी बड़ी कीमत चुकानी पड़ती है पूरे परिवार को जिसमें अबोध बच्चों भी सम्मिलित हैं ।

ऐसा नहीं है कि अमीर और प्रतिष्ठित घरों एवं परिवारों पर मदिरा-व्यसन का कोई दुष्प्रभाव नहीं पड़ता । बाल्यावस्था में जो संस्कार निर्मित होते हैं, वे निर्धन और धनी के भेदभाव से नहीं होते बल्कि परिवेश के अनुसार निर्मित होते हैं, यदि निर्धन परिवार का परिवेश उदात्त है तो उसमें पलकर बड़ा होने वाला बालक उस धनी परिवार की तुलना में श्रेष्ठतर होगा जिसका पारिवारिक परिवेश व्यसन भरा है । कितने ही समृद्ध परिवारों के बच्चे, पारिवारिक गलत परिवेश के कारण ही बड़े-बड़े अपराधों में संलिप्त पाए जाते हैं । इस प्रकार मदिरा-व्यसन जिस परिवार में होगा, उस परिवार का किसी न किसी रूप में अहित करेगा ही ।

सामाजिक स्तर पर मदिरा-व्यसन अमंगलकारी ही होता है । एक व्यक्ति से दूसरे व्यक्ति तक फैलने वाला कोई भी व्यसन, एक परिवार से दूसरे परिवार तक फैलकर अन्ततः समाज को विकृत करता है । समाज, परिवारों का समूह ही तो है । जिस प्रकार, एक गंदी मछली सारे तालाब को गंदा कर देती है, उसी प्रकार व्यसनी व्यक्ति समाज का हित करते हैं । कल्पना कीजिए, आपके पड़ोस में रोजाना गाली-गलौज मार-पीट रोने-धोने की आवाज आती हो या बच्चों के भूखों सोने या हत्या अथवा आत्महत्या का समाचार आता हो तो क्या आप चैन से रह सकेंगे ? प्रत्येक परिवार या माता-पिता अपने बच्चों को व्यसनी पिता के बच्चों से दूर रखने का भरसक प्रयास करता है । आखिर क्यों ? सभी को भय होता है कि उनके बच्चों पर बुरे संस्कारों का प्रभाव न पड़े ।

मदिरा-व्यसनी व्यक्ति को समाज में हेय दृष्टि से देखा जाता है । लोग ऐसे व्यक्ति से प्रायः बचने का प्रयास करते हैं कि पता नहीं क्या बोल दे या उधार मांग बैठे या किसी ने देख लिया तो क्या सोचेगा मेरे बारे में इत्यादि । इस प्रकार मद्य-व्यसनी व्यक्ति तो समाज में उपेक्षा का शिकार होता ही है, उसके बच्चे भी उतने ही शिकार होते हैं । निरन्तर उपेक्षा और लांछित होने से उनके मन पर बहुत गहन असर पड़ता है ।

यदि समाज व्यसनों को खुली छूट दे दे तो वहां अराजकता की स्थिति पैदा हुए बिना नहीं रह सकती । इसलिए स्वयं को सुचारु और स्वस्थ बनाए रखने के उद्देश्य से समाज किसी भी प्रकार के व्यसन की आज्ञा नहीं दे सकता । जब समाज को व्यसन अमान्य है तो व्यसनी व्यक्ति मान्य कैसे हो सकता है ? यह तो लोक प्रसिद्ध बात है कि विलासी और व्यसनी समाज अधोगति को प्राप्त होता है । अतः समाज का दायित्व है कि वह व्यसनों को पनपने न दे । मदिरा जैसे व्यसन पर तो समाज बहुत सरलता से अंकुश लगा सकता है । कहते हैं कि चोर के पाँव नहीं होते । इसी प्रकार यदि आस-पड़ोस के पाँच-दस व्यक्ति, अपने आस-पास के मदिरा-व्यसनी को समझाएँ तो कोई कारण नहीं है कि वह व्यसन का त्याग न कर दे । इससे दोहरा लाभ होगा - एक तो व्यसनी व्यक्ति का परिवार नष्ट होने से बच जाएगा और दूसरे समाज अपनी स्वच्छता बनाए रखने में सफल होगा ।

सांस्कृतिक एवं राष्ट्रीय पक्ष

सभी मूल्यों के योग को संस्कृति कहते हैं । संस्कृति शब्द संस्कार से बनता है जिसका अर्थ है-परिष्कार, सुधार आदि । इस प्रकार एक परिष्कृत जीवन-पद्धति को संस्कृति कहते हैं । जिसमें विकारों के लिए कोई स्थान नहीं होता । यदि समाज में विकृतियों पर रोक नहीं लगाई जाती तो संस्कृति विकृत हुए बिना नहीं रह सकती । संस्कृति की विकृति, पूरे राष्ट्र और उसकी समूची उपलब्धियों को निगल जाती है । मदिरा जैसा व्यसन या विकृति जो शीघ्रता से फैलती है, निश्चय ही संस्कृति और राष्ट्र के लिए घातक है । हम जान चुके हैं कि मदिरा-व्यसनी व्यक्ति जर्जर, रोगी, अकर्मण्य, परिवार और समाज पर बोझ होता है तो यदि अधिसंख्य व्यक्ति ऐसे होंगे तो संस्कृति और राष्ट्र बचेंगे कैसे? क्या हम अपनी संस्कृति और राष्ट्र को अमरबेल की तरह फैलने वाले मदिरा नामक व्यसन की भेंट चढ़ाने की कभी कल्पना भी कर सकते हैं ? उत्तर होगा - नहीं । तो आइए, समय रहते सचेत हो जाएँ और मिलकर इस व्यसन को समूल उखाड़ फेंकें ।

हमें अपने इतिहास-पुरुषों, चिन्तकों, नेताओं द्वारा प्रदत्त प्रेरणा को नहीं भूलना चाहिए । व्यसनों से उपरत, सात्विक जीवन जीते हुए इन विभूतियों ने आत्म-बल संचित करके राष्ट्र को स्वतंत्रता दिलवाई । महात्मा गाँधी मदिरा के

प्रबल विरोधी थे। उन्होंने तो यहां तक कहा था - 'मैं भारत में कुछ हजार शराबी देखने की बजाय, देश को अत्यधिक गरीब देखना पसंद करूंगा।

'नशाबन्दी के लिए सारा देश अनपढ़ भी रह जाए तो भी नशाबन्दी के उद्देश्य के लिए यह कोई मूल्य नहीं है'। स्वतन्त्रता आन्दोलन के समय नशाबन्दी हमारे नेताओं के लिए एक मुद्दा था। 1912 में गोखले, तिलक, ऐनी बेसेन्ट और मालवीय जैसे नेता नशाबन्दी के मुद्दे को लेकर एक प्रतिनिधि मण्डल के रूप में ब्रिटेन गए थे। इसी प्रकार आर्य समाज, थियोसॉफिकल सोसाइटी जैसे सुधारक संस्थाओं ने भी इस दिशा में महत्वपूर्ण प्रयास किए थे।

संसार का कोई भी धर्म या मत किसी भी व्यसन की आज्ञा नहीं देता। सभी व्यसन अशुद्धिकारक होते हैं जो मन, आत्मा, चेतना और चिन्तन को मलिन करते हैं। जब राष्ट्र के आधार-स्तम्भ संस्कृति और धर्म व्यसनों की आज्ञा नहीं देते तो मदिरा-व्यसन क्योंकि स्वीकार्य हो सकता है ?

आइए, यदि हमें अपने राष्ट्र, अपनी संस्कृति को बचाना है तथा एक स्वच्छ समाज का, खुशहाल परिवारों का, कर्मठ और कर्मण्य व्यक्तियों का निर्माण करना है तो आज इसी क्षण यह संकल्प कर लें कि यदि हम स्वयं इस व्यसन के शिकार हैं तो तत्काल प्रभाव से इसे तिलांजली देते हैं ? और यदि कोई हमारे आस-पास इस व्यसन से ग्रस्त है तो उसे इससे मुक्ति दिलाएं।

शासन का दायित्व

समाज और संस्कृति के साथ-साथ शासन-प्रशासन का यह दायित्व है कि वह सभी प्रकार के व्यसनों पर दृढ़तापूर्वक अंकुश लगाए। ऐसा अंकुश कभी निष्फल नहीं हो सकता। वास्तव में सरकार विशेषकर प्रजातन्त्र में सरकार मूलतः और प्रत्यक्षतः जन-आकांक्षों का प्रतिनिधित्व करती है। ऐसी सरकार अपने चतुर्दिक व्यक्तित्व, परिवार और समाज को समृद्ध देखना चाहती है। सरकार के पास जो दण्ड-शक्ति है, उसका प्रत्यक्ष और तत्काल प्रभाव पड़ता है। शासन-प्रशासन के माध्यम से सरकार अन्ततः समाज और राष्ट्र के प्रति ही उत्तरदायी हुआ करती है। इसी तथ्य को समझते हुए हरियाणा सरकार ने 1 जुलाई 1996 से राज्य भर में मद्य-निषेध लागू करके अपने दायित्व का पालन किया है, जिसकी चारों ओर सराहना हो रही है। 'कल्याणकारी-राज्य' की संकल्पना के पीछे यही उद्देश्य निहित है कि सरकार, राष्ट्रीय कल्याण की दिशा में प्रत्येक अपेक्षित पग उठाए।

हरियाणा सरकार की मद्य-निषेध नीति में स्पष्ट बताया गया है 'हरियाणा में किसी भी प्रकार की शराब के उत्पादन, बिक्री, खरीद अपने पास रखने और पीने पर पूर्ण पाबन्दी है'। समूचे देश में इसी प्रकार का मद्य-निषेध लागू होना चाहिए।

सरकार द्वारा मद्य-निषेध लागू कर दिये जाने का यह अर्थ कदापि नहीं है

कि अब हमारा कोई दायित्व नहीं रहा । हमें सरकार को सहयोग देना होगा । हमें नैतिक बल संचित कर, मदिरा-व्यसनी लोगों को राह पर लाना होगा । आवश्यकता पड़े तो बिना धबराये ऐसे व्यसनी लोगों की, शराब के चोरी-छिपे बिक्री-केन्द्रों की सरकार को सूचना देनी होगी । अपने आस-पास और घर-परिवार में एक स्वच्छ वातावरण बनाना होगा । इसे जन-अभियान के रूप में अपनाकर, सताज-सेवी संस्थाओं और महिला-मण्डलों के माध्यम से एक वास्तविकता बनाकर दिखाना होगा कि हमारा समूचा समाज इस कलंक से परे है । बच्चों और युवाओं को इस बुराई के प्रति अभी से सचेत करना होगा । यदि सरकार के साथ हम सब शुद्ध अन्तःकरण से इस महायज्ञ में आहुति डालेंगे तो हमारे समाज और राष्ट्र के आकाश से यह प्रदूषण सदा-सदा के लिए समाप्त हो जायेगा । हम छाती ठोककर कह सकेंगे कि यह है हमारा व्यसन-मुक्त समाज जिसमें कोई मदिरा का स्पर्श नहीं करता । इस प्रकार मद्य का मन से निषेध करने पर ही सही अर्थों में मद्य-निषेध होगा ।

अभ्यास प्रश्न

1. प्रस्तुत पाठ का सार लिखिए ।
2. 'खैर खून खांसी खुसी, बैर प्रीति मदपान
रहिमन छिपाय न छिपै, जानै सकल जहान' ।
- रहिमान के इस दोहे का विस्तारपूर्वक अर्थ बताइए ।
3. प्रस्तुत पाठ में प्रयुक्त मुहावरों का अर्थ बताकर उन्हें वाक्यों में प्रयोग कीजिए ।
4. मद्य-व्यसन के प्रभाव किन-किन स्तरों पर देखे जा सकते हैं - संक्षेप में बताइए ।
5. मद्यपान शारीरिक और मानसिक स्तर पर क्या प्रभाव डालता है - पाठ के आधार पर बताइए ।
6. मद्यपान से शारीरिक पारिवारिक एवं सामाजिक स्तर पर कौन-सी बुराइयां जुड़ी हैं, उनका विश्लेषण कीजिए ।
7. मद्यपान सांस्कृतिक एवं राष्ट्रीय स्तर पर क्यों हानिकारक है-स्पष्ट करें ।
8. व्यसन-निषेध के संबंध में सरकार का क्या दायित्व है - स्पष्ट करें ।
9. हरियाणा सरकार के द्वारा मद्य-निषेध लागू कर दिए जाने पर भी नागरिकों को किस प्रकार सहयोग देना चाहिए-इस पर अपने विचार प्रकट कीजिए।
10. भारतीय नेताओं में किस-किसने मद्य-निषेध की दिशा में प्रयास किए थे। इस संबंध में महात्मा गाँधी के विचारों का उल्लेख कीजिए ।

हिन्दी (ऐच्छिक)

पूर्णांक : 100

समय : 3 घण्टे

1. काव्य 40 अंक
व्याख्या के लिए प्राचीन कविता में से दो अंश दिए जाएंगे, जिनमें से एक अंश को सप्रसंग व्याख्या करनी होगी। इस प्रकार आधुनिक कविता में से दो अंश दिए जाएंगे, जिनमें से एक को व्याख्या करनी होगी। अनुशीलनी में से प्राचीन कविता सम्बन्धी पूछे गये दो समीक्षात्मक प्रश्नों में से एक का उत्तर देना होगा। इसी प्रकार आधुनिक कविता सम्बन्धी पूछे गये दो समीक्षात्मक प्रश्नों में से एक का उत्तर देना होगा। प्राचीन तथा आधुनिक कवियों में से दिये गए तीन कवियों में से एक का साहित्यिक परिचय लिखना होगा। अंक विभाजन इस प्रकार होगा -

दो व्याख्या (प्राचीन-आधुनिक) (8+8) 16 अंक

समीक्षात्मक दो प्रश्न - (8+8) 16 अंक

कवि परिचय - 8 अंक

2. गद्य 25 अंक
व्याख्यार्थ दिए गए चार गद्यांशों में से किन्हीं दो की सप्रसंग व्याख्या लिखनी होगी। दिए गए तीन लेखकों में से किसी एक का साहित्यिक परिचय लिखना होगा। अनुशीलनी में से दो समीक्षात्मक प्रश्न दिए जाएंगे जिनमें से एक का उत्तर लिखना होगा। अंक विभाजन इस प्रकार होगा।

दो व्याख्या - (5+5) 10 अंक

लेखक परिचय - 7 अंक

समीक्षात्मक प्रश्न - 8 अंक

3. निबन्ध 15 अंक

दिए गए आठ सांस्कृतिक, साहित्यिक, सामाजिक, नैतिक, शिक्षा, मानवाधिकार, महिला-अधिकार, गाँधी-दर्शन, अमृता देवी एवं पर्यावरण, तथा विनोबा भावे : व्यक्ति और विचार से सम्बन्धित विषयों में से किसी एक पर लगभग चार पृष्ठों का एक निबन्ध लिखना होगा।

4. छन्द 10 अंक
पाठ्यक्रम में निर्धारित दस छन्दों से पूछे गए चार छन्दों में से दो के सोदाहरण लक्षण लिखने होंगे।

मात्रिक छन्द : दोहा, सोरठा, चौपाई, कुण्डलिया, छप्पय।

कार्षिक छन्द : मालिनी, चंदास्थ, मंदक्रान्ता, इन्द्रवज्र, उपेन्द्रवज्र।

5. अलंकार

10 अंक

पाठ्यक्रम में निर्धारित निम्नलिखित दस अलंकारों में से
पूछे गये चार अलंकारों में से दो के सोदाहरण लक्षण लिखने होंगे ।

अनुप्रास, यमक, श्लेष, वक्रोक्ति, उपमा

रूपक, उत्प्रेक्षा, अतिशयोक्ति, विभावना, अन्योक्ति

पाठ्य-ग्रन्थ

1. पद्य गंगा : कुरुक्षेत्र विश्वविद्यालय कुरुक्षेत्र प्रकाशन ।
2. गद्य गंगा : महर्षि दयानन्द विश्वविद्यालय रोहतक, प्रकाशन ।

सहायक पुस्तकें

1. प्रयोगात्मक निबन्ध संचय : डॉ. चमन लाल गुप्त,
मिनर्वा बुक हाउस, शिमला ।
2. निबन्ध सौरभ : तनसुख गुप्त,
सूर्य भारती प्रकाशन, दिल्ली ।
3. रस, छन्द अलंकार : विश्वम्भर मानव,
लोक भारती प्रकाशन, इलाहाबाद ।
4. काव्यांग कौमुदी : डॉ. कन्हैया लाल सिंह,
विश्वविद्यालय प्रकाशन, वाराणसी ।
5. काव्यांग दीपिका : डॉ. रामपाल यादव,
सरस्वती हाउस, चावड़ी बाजार, दिल्ली।
6. रस अलंकार पिंगल : डॉ. शम्भुनाथ पाण्डेय,
विनोद पुस्तक मन्दिर, आगरा ।
7. हिन्दी निबन्ध : डॉ. राम निरंजन परिमलेन्दु,
कवि सभा, दिल्ली ।

PUNJABI (Compulsory)**Outlines of Test**

One Paper	Max. Marks : 100 Time : 3 Hours
1. A Selection of Modern Punjabi Poetry	40 Marks
2. A Selection of Short Story	20 Marks
3. Letter Writing	10 Marks
4. Applied Grammar	30 Marks
(Idioms, Proverbs, Correction Spellings, Punctuation, distinction between the words)	

Syllabus and Courses of Reading

1. Kav Naad (Ed. Dr. S.S. Arshi and Dr. Ramesh Kumar) Kurukshetra University, Kurukshetra 1987.

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

Bhai Vir Singh, Mohan Singh, Pritam Singh Saffir, Hurbhajan Singh Sumer, Harbhajan Singh Komal, Ramesh Kumar.

2. Pairan-(Ed. Dalip Kaur Tiwana), Patiala, Punjabi University, 1991.

PUNJABI (Elective)

One Paper	Max. Marks : 100 Time : 3 Hours
1. A Selection of Modern Punjabi Poetry	20 Marks
2. Collections of Punjabi One-act plays	20 Marks
3. Punjabi Novel	20 Marks
4. Applied Grammar, Idioms, Proverbs, Correction Spellings, Punctuation.	20 Marks
5. Letter Writing	10 Marks
6. Official Terminology from English to Punjabi (200 Words)	10 Marks

Syllabus and Courses of Reading

1. Kav-Naad, Ed. Dr. S.S. Arshi and Dr. Ramesh Kumar, Kurukshetra University Kurukshetra, 1987.
2. Ekangi Bahorangs-Kurukshetra University, Kurukshetra.
3. Pavitar Papi, Nanak Singh, Amritsar, Nanak Singh Pushtakmala, 1982.

Official Termonology

1. Accountant	ਲੇਖਾਕਾਰ
2. Acknowledgement	ਪੰਹੂਚ ਰਸੀਦ
3. Action	ਕਾਰਵਾਹੀ
4. Administration	ਪ੍ਰਸ਼ਾਸਨ
5. Advance	ਪੇਸ਼ਗੀ
6. All concerned to note	ਸਮੂਹ ਸੰਬੰਧਿਤ ਨੋਟ ਕਰਨ
7. Agreement	ਸਮਝੌਤਾ
8. Allocation	ਮਿਲੀ ਰਕਮ
9. Allotment	ਵੰਡ
10. Allowance	ਭਤਾ
11. Amount	ਰਕਮ/ਰਾਸ਼ੀ
12. Annual	ਸਲਾਨਾ
13. Applicant	ਪ੍ਰਾਰਥਕ
14. Application	ਪ੍ਰਾਰਥਨਾ ਪਤਰ

15. Appointing authority	ਨਿਯੁਕਤੀ ਅਧਿਕਾਰੀ
16. Appointment	ਨਿਯੁਕਤੀ
17. Approval	ਪ੍ਰਵਾਨਗੀ
18. Approximate	ਲਗਭਗ
19. Arrears	ਬਕਾਇਆ
20. As desired	ਇਛਾ ਅਨੁਸਾਰ
21. As early as possible	ਜਿਤਨੀ ਜਲਦੀ ਹੋ ਸਕੇ
22. Assessment	ਮੁਲ ਨਿਰਧਾਰਨ
23. Assistant	ਸਹਾਇਕ
24. As the case may be	ਜਿਹੋ ਜਿਹੀ ਹਾਲਤ ਹੋਵੇ
25. Attached herewith	ਨਾਲ ਨਬੀ
26. Attendance	ਹਾਜਰੀ
27. Attention is invited	ਧਿਆਨ ਦਿਵਾਇਆ ਜਾਂਦਾ ਹੈ
28. Attested copy	ਤਸਦੀਕੀ ਨਕਲ
29. At your earliest convenience	ਜਿਤਨੀ ਜਲਦੀ ਹੋ ਸਕੇ
30. Audit	ਲੇਖਾ ਪੜਤਾਲ
31. Authorities	ਅਧਿਕਾਰੀ ਵਰਗ
32. Balance	ਬਾਕੀ
33. Based on facts	ਤਥਾ ਤੇ ਆਧਾਰਿਤ
34. Basic Pay	ਮੁਲ ਤਨਖਾਹ, ਮੁਲ ਵੇਤਨ
35. Bill	ਬਿਲ
36. Book-Post	ਬੁਕ ਪੋਸਟ
37. Both day inclusive	ਦੋਹਾਂ ਦਿਨਾ ਸਮੇਤ
38. Branch	ਸਾਖਾ, ਬ੍ਰਾਂਚ
39. Bring to notice	ਧਿਆਨ ਦਿਵਾਉਣਾ

40. Brought forward	ਪਿਛਲਾ ਜੋੜ ਅਗੇ ਲਿਆਂਦਾ
41. Calculation	ਹਿਸਾਬ, ਗਿਣਤੀ
42. Capital	ਪੂੰਜੀ, ਸਰਮਾਇਆ, ਰਾਜਧਾਨੀ
43. Carbon Copy	ਕਾਰਬਨ ਕਾਪੀ
44. Cash-Book	ਰੋਕੜ ਵਹੀ, ਕੈਸ ਬੁਕ
45. Cashier	ਖਜਾਨਚੀ
46. Cash memo	ਨਕ ਦ ਪੱਤਰ, ਕੈਸ ਮੈਮੋ
47. Casual leave	ਸਬਬੀ ਛੁਟੀ
48. Catalogue	ਸੂਚੀ ਪਤਰ
49. Category	ਸਰੇਨੀ, ਵਰਗ
50. Checked & found correct	ਪੜਤਾਲ ਕੀਤੀ ਅਤੇ ਠੀਕ ਨਿਕਲਿਆ
51. Cheque	ਚੈਕ
52. Circular	ਗਸਤੀ-ਚਿਠੀ,
53. Claim	ਦਾਵਾ, ਕਲੇਮ
54. Clerical Staff	ਕਲਰਕ ਅਮਲਾ
55. Come into force	ਲਾਗੂ ਹੋਣਾ
56. Come into operation	ਲਾਗੂ ਹੋਣਾ
57. Compensation	ਮੁਆਵਜ਼ਾ
58. Compensatory leave	ਇਵਜੀ ਛੁਟੀ
59. Competent authority	ਸਮਰੱਥ ਅਧਿਕਾਰੀ
60. Compliance	ਪਾਲਨਾ
61. Compulsory retirement	ਲਾਜਮੀ ਸੇਵਾ ਨਿਵਿਰਤੀ
62. Concurrence	ਸੰਮਤੀ
63. Conduct	ਆਚਰਨ,
64. Confidential	ਗੁਪਤ

65. Contingency	ਅਚਾਨਕੀ
66. Conveyance allowance	ਸਵਾਰੀ ਭੱਤਾ
67. Copy	ਨਕਲ/ਉਤਾਰਾ
68. Copy enclosed for ready reference	ਉਰੰਤ ਉਤਰ ਲਈ ਕਾਪੀ ਨਾਲ ਨਬੀ
69. Cost price	ਲਾਗਤ ਮੁਲ
70. Counterfoil	ਪ੍ਰਤਿਪੇਜ
71. Countersignature	ਪ੍ਰਤਿ ਹਸਤਾਖਰ
72. Daily Wages	ਦਿਹਾੜੀ
73. Damage	ਨੁਕਸਾਨ
74. Dated	ਮਿਤੀ
75. Day Book	ਰੋਜ਼ਨਾਮਚਾ
76. Dealing Assistant	ਕਾਰਜਕਾਰੀ ਸਹਾਇਕ
77. Dear Mr.	ਪਿਆਰੇ ਸ੍ਰੀ
78. Dearness Allowance	ਮਹਿੰਗਾਈ ਭੱਤਾ
79. Delay regretted	ਦੇਰੀ ਲਈ ਖਿਮਾ
80. Demi Official Letter(D.O.)	ਅਰਧ ਸਰਕਾਰੀ ਪੱਤਰ
81. Departmental action	ਵਿਭਾਗੀ ਕਾਰਵਾਈ
82. Deputational Allowance	ਪ੍ਰਤੀ ਨਿਯੁਕਤੀ ਭੱਤਾ
83. Despatch Clerk	ਡਿਸਪੈਚ ਕਲਰਕ
84. Discrepancies may be reconciled	ਫਰਕ ਦੂਰ ਕੀਤਾ ਜਾਵੇ
85. Document	ਦਸਤਾਵੇਜ਼
86. Documentary proof	ਦਸਤਾਵੇਜ਼ੀ ਸਬੂਤ
87. Draft for approval	ਪੱਵਾਨਗੀ ਲਈ ਖਰੜਾ
88. Early action will by highly appreciated	ਛੇਤੀ ਕਾਰਵਾਹੀ

89. Early orders are solicited	ਆਗਿਆ ਲਈ ਸੀਘਰ ਬੇਨਤੀ ਹੈ
90. Earned Leave	ਕਮਾਈ ਛੁਟੀ
91. Efficiency bar	ਨਿਪੁਨਤਾ ਰੋਕ
92. Eligible	ਪਾਤਰ, ਯੋਗ
93. Embezzlement	ਗਬਨ
94. Employee	ਕਰਮਚਾਰੀ
95. Enclosure	ਨੱਥੀ ਪੱਤਰ
96. Endorsement	ਪਿੱਠ ਅੰਕਨ
97 Entry	ਦਾਖਲਾ
98. Essential Qualifications	ਲਾਜਮੀ ਯੋਗਤਾਵਾਂ
99. Estimate	ਅਨੁਮਾਨ
100. Evaluation	ਮੁਲ ਅੰਕਨ
101. Exercise of Powers	ਅਧਿਕਾਰ ਵਰਤੋ
102. Ex-officio	ਪਦਵੀ ਕਾਰਨ, ਅਹੁਦੇ ਕਾਰਨ
103. Facts & Figures	ਤੱਥ ਤੇ ਆਂਕੜੇ
104. File	ਫਾਇਲ, ਮਿਸਲ
105 Financial year	ਵਿੱਤੀ ਸਾਲ
106. For comments	ਟਿਪਣੀ ਲਈ
107 For Disposal	ਨਿਪਟਾਰੇ ਲਈ
108. For Information	ਸੂਚਨਾ ਲਈ
109 Formal Approval	ਰਸਮੀ ਪਰਵਾਨਗੀ
110. For strict compliance	ਇੰਨ ਬਿਨ ਪਾਲਨਾ ਲਈ
111. Gazetted holiday	ਗਜਟਿਡ ਛੁਟੀ, ਰਾਜਪਤਰਿਤ ਛੁਟੀ
112. Grant-in-aid	ਮਾਲੀ ਸਹਾਇਤਾ
113. Have no comments to make	ਕਿਸੇ ਟਿਪਣੀ ਦੀ ਲੋੜ ਨਹੀਂ

114. Head Clerk	ਪ੍ਰਧਾਨ ਕਲਰਕ
115. Head of account	ਲੇਖੇ ਦੀ ਮੱਦ
116. Held in abeyance	ਰੋਕ ਰਖਿਆ ਹੈ
117. Herewith enclosed	ਨਾਲ ਨੱਧੀ ਹੈ
118. Honorarium	ਮਾਨ ਭੇਟ
119. I am directed	ਮੈਨੂੰ ਹਿਦਾਇਤ ਹੋਈ ਹੈ
120. Implement	ਰਸਮ ਵਿਚ ਲਿਆਓਣਾ
121. In accordance with	ਦੇ ਅਨੁਸਾਰ
122. In addition to	ਇਸ ਤੋਂ ਇਲਾਵਾ
123. In advance	ਅਗੇਤੀ, ਪਹਿਲਾਂ
124. Increment	ਸਲਾਨਾ ਤਰਕੀ
125. Initial pay	ਆਹੀਭਕ ਤਨਖਾਹ
126. Inland letter	ਅੰਤਰ-ਦੇਸੀ ਪੱਤਰ
127. In order of merit	ਯੋਗਤਾ ਕ੍ਰਮ ਅਨੁਸਾਰ
128. In respect of	ਦੇ ਵਿਸ਼ੇ ਵਿਚ
129. Interim reply	ਅੰਤਰਿਮ ਉਤੱਰ
130. Intimation	ਇਤਲਾਹ
131. In the light of	ਇਸਦੀ ਰੋਸ਼ਨੀ ਵਿਚ
132. Irregularity	ਬੇਨਿਯਮੀ
133. Joining date	ਸੇਵਾ ਅਰੰਭ ਮਿਤੀ
134. Joining report	ਹਾਜਰੀ ਇਤਲਾਹ
135. Joining time	ਹਾਜਰੀ ਸਮਾਂ
136. Kindly acknowledge receipt	ਕਿਰਪਾ ਪਹੁੰਚ ਭੇਜੀ ਜਾਵੇ
137. Leave not due	ਨਾ ਬਨਦੀ ਛੁਟੀ
138. Leave with pay	ਤਨਖਾਹ ਸਹਿਤ ਛੁਟੀ

Leave preparatory to retirement	ਨਿਵਰਤੀ ਪੂਰਵ ਛੁਟੀ
140. Length of Service	ਸੇਵਾ ਕਾਲ
141. Maintenance Allowance	ਨਿਰਬਾਹ ਭੱਤਾ
142. May be filed	ਫਾਈਲ ਕਰ ਦਿਤੀ ਜਾਵੇ
143. Medical Certificate of fitness	ਅਰੋਗਤਾ ਦਾ ਡਾਕਟਰੀ ਸਰਟੀਫਿਕੇਟ
144. Memorandum	ਯਾਦ ਪੱਤਰ
145. Minimum	ਘਣੋਘਟ ਅਲਪਤਮ
146. Ministerial Staff	ਦਫਤਰੀ ਅਮਲਾ
147. Misappropriation	ਖਿਆਨਤ
148. Miscellaneous	ਫੁਟਕਲ
149. Modification	ਤਰਮੀਮ
150. Necessary action	ਲੋੜੀਂਦਾ ਕਾਰਵਾਹੀ
151. Non-official	ਗੈਰ ਸਰਕਾਰੀ
152. Noted	ਨੋਟ ਕੀਤਾ
153. Notification	ਅਧਿਸੂਚਨਾ
154. Noting & Drafting	ਟਿਪਣ ਤੇ ਲੇਖਣ
155. Office order	ਦਫਤਰੀ ਹੁਕਮ
156. Official correspondence	ਸਰਕਾਰੀ ਪਤਰਵਿਭਾਗ
157. Officiating allowance	ਕਾਇਮ ਮੁਕਾਮੀ ਭਤਾ
158. Out to day	ਅਜ ਹੀ ਭੇਜੋ
159. Paper under consideration	ਵਿਚਾਰ ਅਧੀਨ ਪੱਤਰ
160. Pay bill	ਤਨਖਾਹ ਬਿਲ, ਵੇਤਨ ਬਿਲ
161. Pay scale	ਵੇਤਨਮਾਨ
162. Pending decision	ਫੈਸਲਾ ਹੋਣ ਤਕ

163. Personal file	ਠਿਜੀ ਮਿਸ਼ਲ
164. Please discuss	ਵਿਚਾਰ ਵਟਾਂਦਰੇ ਲਈ ਆਉ
165. Please expedite	ਸੀਘਰ ਨਿਪਟਾਯਾ ਜਾਵੇ
166. Please speak	ਗਲ ਕਰੋ
167. Prescribed form	ਨਿਯਤ ਫਾਰਮ
168. Probation	ਅਜਮਾਇਸ਼
169. Procedure	ਕਾਰਜ ਵਿਧੀ
170. Promotion	ਤਰੱਕੀ
171. Recurring	ਆਵਰਤੀ
172. Refund	ਧਨ ਵਾਪਸੀ
173. Reinstatement	ਬਹਾਲੀ
174. Reminder	ਚਿਤਾਵਨੀ ਪਤਰ
175. Resignation	ਤਿਆਗ ਪਤਰ
176. Retrenchment	ਛਾਂਟੀ
177. Returns	ਵਿਵਰਣ
178. Rough copy	ਕਚੀ ਨਕਲ
179. Rules & Regulations	ਨਿਯਮ ਤੇ ਵਿਨਿਯਮ
180. Sanction	ਮੰਜੂਰੀ, ਪਰਵਾਨਗੀ
181. Service Book	ਸੇਵਾ ਪਤਰੀ, ਸਰਵਿਸ ਬੁਕ
182. Stock-taking	ਮਾਲ ਦੀ ਪੜਤਾਲ
183. Submitted for information	ਸੂਚਨਾ ਲਈ ਪੇਸ਼ ਹੈ
184. Subordinate Staff	ਅਧੀਨ ਅਮਲਾ
185. Suspension	ਮੁਅਤਲੀ
186. Temporary appointment	ਅਰਜੀ ਨਿਯੁਕਤੀ
187. Through Proper Channel	ਯੋਗ ਪ੍ਰਣਾਲੀ ਦੁਆਰਾ

188. Time barred	ਮਿਆਦ ਪੁਰਿਆ
189. Top Priority	ਪਹਿਲ, ਅਗੇਤ
190. Top Secret	ਅਤੀ ਗੁਪਤ
191. True copy	ਅਸਲੀ ਕਾਪੀ
192. Urgent	ਤੁਰੰਤ ਜ਼ਰੂਰੀ
193. Voucher	ਵਾਉਚਰ
194. Waiting List	ਉਡੀਕ-ਸੂਚੀ
195. With effect from	ਮਿੱਤੀ ਤੋਂ
196. With reference to	ਦੇ ਹਵਾਲੇ ਨਾਲ
197. With retrorspective effect	ਪਹੇਲਾਂ ਤੋਂ, ਪਿਛੋਂ ਲਾਗੂ
198. Yours faithfully	ਵਿਸ਼ਵਾਸ ਪਾਤਰ
199. Yours sincerely	ਹਿੱਤੂ
200. Clerical Error	ਲਿਖਾਈ ਭੂਲ

URDU (Compulsory)**One Paper****Max. Marks : 100
Time : 3 Hours****Syllabus and Courses of Reading****Paper-I Text, Essay, Translation/Letter Writing and Idioms**

- | | |
|---|----------|
| (a) Text | 50 Marks |
| (b) Essay | 20 Marks |
| (c) Translation from English into Urdu
OR Letter Writing | 20 Marks |
| (d) Idioms | 10 Marks |

Books Prescribed

1. Khayaban-i-Adab (Poetry) Published by Educational Book House Aligarh.

Only the following prescribed.

Ghazalyat : Hasrat-Fani-Jigar-Ashgar-Shad-Firaq

Jadeed Shairi : Chakbast - Josh - Faiz Akhtar Sheerani

2. Khayaban i-Adab (Prose) Published by the Educational Book House Aligarh

Only the following prescribed :

Meer Amman - Ghalib-Sir Syed Farhatullah

Baig-Prem Chand - Rasid Ahmed Siddiqi

URDU (Elective)**One Paper****Max. Marks : 100
Time : 3 Hours****Syllabus and Courses of Reading**

Paper-I Text, Essay, Translation and Idioms

(a) Text	50 Marks
(i) Prose	25 Marks
(ii) Poetry	25 Marks
(b) Essay	25 Marks
(c) Translation from English into Urdu	15 Marks
(d) Idioms	10 Marks

Books Prescribed

Khayaban-i-Adab (Poetry) Published by Educational Book House, Aligarh.

Only the following prescribed :

Ghazalyat : Hasrat-Jigar Shad Firaq

Jadeed Shairi : Chakbast - Josh - Faiz Akhtar Sheerani

Khayaban-i-Adab (Prose) Published by the Educational Book House, Aligarh.

Only the following prescribed :

Meer Amman-Gualib-Sir Syed Farhatullah Baig-Prem Chand

N.B. No Books are prescribed for item (b), (c), (d).

Meer Amman-Ghalib-Sir Syed Farhatullah Baig-Prem Chand
N.B. : No books are prescribed for item (b), (c) and d).

प्रश्न-पत्र-१	संस्कृत अनिवार्य	कुल अंक १०० समय ३ घण्टे
क)	संस्कृत चयनिका, कुरुक्षेत्र विश्वविद्यालय प्रकाशन ।	५० अंक
ख)	व्याकरण	५० अंक
१	शब्द रूप—बालक, कवि, साधु, लता, नदी, छल, मातृ, पितृ, राजन, विद्वंस, सर्व, अस्मद्, युष्मद्, तद्, इदम्	१५ अंक
२	धातु रूप— लट्, लोट्, बड़, विधिलिङ तथा लृट् लकारों में— भू, अस, बद्, गम्, पठ्, स्था, लभ्, दा (यच्छ) कृ, ल, चूर	१५ अंक
३	सन्धि स्वर सन्धि, व्यंजन सन्धि, विसर्ग सन्धि— परिभाषा रहित प्रयोग मात्र	१० अंक
४	अनुवाद सरल दस हिन्दी वाक्यों का संस्कृत में अनुवाद संस्कृत ऐच्छिक	१० अंक

प्रश्न पत्र-१ कुल अंक : १००

समय : ३ घण्टे

१)	पद्य भाग	२० अंक
	क) ईशोपनिषद्-सम्पूर्ण ।	
	ख) श्रीमद्भगवद्गीता-द्वितीय अध्याय ।	
	ग) रघुवंश-द्वितीय सर्ग ।	
२)	गद्य भाग	३० अंक
	क) कादम्बरी-शुकनासोपदेश ।	
	ख) दशकुमारचरितम्-बिश्रुतचरितम् ।	

केवल निम्नलिखित छन्द :

अनुष्टुप, आयो, इन्द्रवज्रा, उपेन्द्रवज्रा, मालिनी, बंशस्थ, मन्दाक्रान्ता, शिखरिणी, वसन्ततिलका, शाङ्खलविक्रीडित ।

४) व्याकरण तथा अनुवाद

१२ अंक

१) क) व्याकरण

ख) शब्दरूप

राम, फल, रमा, कवि, बारि. मति, नदी, साधु, बधु, पितृ, मातृ, कर्तृ (नपु०), राजन्, दण्डन, चंद्रमस, पयस, एक, द्वि, त्रि, चतुर्, पंच, षट्, सप्त, अष्ट, नव, दश, इदम्, एतद्, तद्, अस्मद् युष्मद्, सर्व ।

२) धातुरूप—लट् लोट्, लृट्, लङ्. तथा

१२ अंक

विधिसिद्धि. लकारों में :

भ्वादिगण—भू, गम्, दृश्, लभ ।

भदादिगण—अस्, हन् ।

जुहोत्यादिगण—डा ।

दिवादिगण—गश्, जन् ।

स्वादिगण—भाप्, शुक्र ।

तुदादिगण - तुदा ।

रुधादिगण - रुध ।

तदादिगण—कृ ।

कृपादिगण—ज्ञा ।

चूरादिगण—चूर, कथ् ।

३) प्रत्यय

९ अंक

शतृ, शामच्, तुमुन, कत्वा, स्यप्, कत, क्तवतु, तभ्यत्, अनीयर् ।

ख) अनुवाद

१० अंक

“शराव से नर्तनाश” लेखक स्वागी श्रीमानन्द सरस्वती, प्रकाशन गुरुकुल अज्जर ।

FRENCH**Outlines of Test**

	M. M.	Time
Paper-I Theory	75	3 Hrs.
Paper-II (Practical) Dictation & Oral	25	

Syllabus and Courses of Reading

1.	Translation from French to English from prescribed Text Book.	20 Marks
2.	Question on text to be answered in French	20 Marks
3.	Questions on Grammar included in the text. Voice, use of subjunctive 'Passe' Simple 'Passe' Anterian, future anterian, Transformation	25 Marks
4.	Composition An Essay on topic of daily life of about 200 words in French	10 Marks
Viva-Voce		
	Dictation from Text	10 Marks
	Reading and Oral Text	15 Marks

Prescribed Text

Manager : Course la language et de civilization Francaise Tonie
H Text; 1 to 50 by Manager.

Grammar : The entire book.

Note : Internal choice may be given in each question.

HISTORY**Outlines of Test**

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

Syllabus and Courses of Reading

		Max. Marks	Time
Option-I	History of India (From earliest times to A.D. 1526).	100	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 note.)*
 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.*

Sources of Indian History, General background of the stone age Culture: The Indus Valley Civilization : salient features, time extent and causes of growth and decline of the Cities; The Vedic Age; geographical area, political organisations, Buddhism and Jainism; Mahabharata War, Urbanisation of the Ganges Valley political conditions during sixth century B.C. Alexander's invasion and its effect; The Mauryan Empires; salient features of administration and downfall : the Rule of the Indo-Greeks, the Sakas and the Kusunas, the Imperial Guptas : their administration and cultural developments in their times' Harshvardhana; the Chalukyas of Badami; the Pallavas of Kanchi; Northern India (650 to 1200 A.D.) : Political conditions; Growth of Feudalism; South India: Rise of the Cholas, their administration; The Turkish invasions; rise and expansion of the Delhi Sultanate; Economic experiments of Alauddin Khilji, Schemes of Muhammad Tughlaq; Administration of Firoz Tughlaq; the collapse of the Delhi Sultanate; The Vijayanagar Empire; polity and society; The Behmani kingdom; The Bhakti Movement.

Map

1. Important sites of the Indus Valley Civilization.
2. Extent of Ashoka's Empire, Pillars and Edicts.
3. Extent of Kanishka's Empire.
4. Extent of Samudragupta's Empire.
5. Extent of Harsha's Empire.
6. Extent of Alaudin Khilji's Empire.

Books Recommended

1. H.C. Ray, Chaudhary, R.C. Majumdar and K.K. Dutta. Advanced History of India Delhi, 1971 (Hindi also).
2. R.S. Tripathi Ancient India Delhi, 1977 (Hindi also).
3. H.C. Ray Chaudhary Political History of Ancient Indian Calcutta, 1963.
4. A.L. Basham The Wonder that was India Delhi 1981. (Hindi also).
5. R.C. Majumdar and A.S. Altekar The Vakata Gupta Age Delhi, 1981. (Hindi also).
6. G. Gazdani Decan Ka Prachin Itihas Delhi, 1977.
7. K.A.N. Shastri Chola Vansha, Delhi 1979.
8. Raj Bali Pandeya Prachin Bharat, Varanasi, 1976.
9. R.C. Majumdar Ancient India, Delhi 1977.
10. D.N. Jha Prachin Bharat, New Delhi, 1977
11. N.N. Ghosh Early History of India, Allahabad.

Option-(II) History of Haryana

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 10 marks, Section-II will have multiple choice question 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.*

Sources of the History of Haryana: The Indus Valley Civilization in Haryana; Socio-Religious Life of the Rigvedic people of the Saraswati-Drisavati Valley; Historicity of the Mahabharata War the Yaudheyas; the Pushpabhutis; the Pratihara Chahammuna Tomara rule, the Early Muslim invasions; Sultanate period; administration struggle of the people against the Sultan of Delhi; Socio-Political conditions of Haryana under the Mughals; Struggle for power in the 18th Century; the Marathas, the Jats and the Sikhs; George Thomas Haryana under the British East India Company. Administration revolts and resistances, social and economic conditions; the Revolt of 1857 in Haryana. Political Awakening and National consciousness upto 1919; Freedom Struggle from 1919 to 1947, Formation of the State (1966).

Maps

1. Important excavated and explored sites of the Indus Valley Civilization in Haryana.
2. Empire of Harsha (including Parts of India).
3. Towns of historical importance in Haryana (Ancient Times C.600 B.C. to A.D. 1000).
4. Towns of historical importance in Haryana (Medieval Times C.A.D. 1000 to C.A.D. 1700).
5. Important places connected with the Revolt of 1857.

Books Recommended

1. Budha Prakash Glimpses of Haryana, Kuruskshetra 1967.
2. Budha Prakash Haryana through the Ages Kurukshetra, 1968.
3. K.C. Yadav Haryana Ka Itihas : 3 Vols., Delhi, 1981.
4. K.C. Yadav The Revolt of 1857 in Haryana Delhi, 1977.
5. S.C. Mittal Haryana : A Historical Perspective, Delhi, 1986.
6. S.R. Phogat Inscription of Haryana, Kurukshetra, 1978.
7. S.P. Sen Sources of Indian History Vol. I Delhi, 1978.

ECONOMICS

Max. Marks : 100

Time : 3 Hours

Unit-I Micro-Economic Analysis :- Nature and scope of economics; subject matter, methods of analysis, nature of economic laws, Economics as Science and Art. Micro and Macro Economics, concept of Equilibrium.

Demand analysis : demand-individual and market; law of demand; change in demand; cardinal utility (Marshallian analysis) and indifference curve analysis and their comparison; Concept of consumers surplus; Elasticity of demand; meaning and measurement of price elasticity, income elasticity, crose elasticity.

Unit-II Product Pricing :- Theory of production : production function; Law of returns to scale; law of variable proportions, internal and external economics and diseconomies; elementary idea of isoquants.

Theory of cost: Explicit and implicit costs; concept of opportunity cost; short period and long period cost curves; market; market forms-concepts of total, average, and marginal revenue. Perfect competition, assumptions; price determination, importance of time element, equilibrium of firm and industry in market period, short period and long period, short period and long period supply curves.

Monopoly : Meaning equilibrium of the monopolist, relationship between average revenue, marginal revenue and price elasticity; comparison of perfect competition and monopoly.

Price discrimination: Meaning, conditions, equilibrium and effects of price discrimination.

Monopolistic competition meaning, product differentiation and demand curve; firm and group equilibrium : selling costs determination of equilibrium level, comparison with pure competition and monopoly.

Unit-III Factor Pricing : Factor pricing : marginal productivity theory, assumptions and limitations.

Wages : Nominal and real; theories of wage determination.

Rent : Ricardo's Rent Modern Theory of Rent, Quasi-Rent.

Interest : Theories of Interest, classical, neo-classical and liquidity preference.

Profit : Gross profit, net profit, alternative explanations of profit.

Note : In all eight questions will be set. Two questions (spread all over the syllabus) will be compulsory. These will be divided into five parts of 5 marks each of which four parts in each are to be attempted. Six optional questions, two from each unit will be set. Out of these one from each unit has to be attempted.

Books Recommended

1. Stonier & Hague A Text Book of Economic Theory.
2. Lipsey Introduction to positive Economics.
3. Leftwich, T.N. Price System and Resource Allocation.

- | | | |
|----|-----------------|-------------------------------------|
| 4. | Beaff, Allen J. | Micro Economics Analysis. |
| 5. | Watson, D.S. | Price, Theory and its Applications. |
| 6. | Awh, Robert | Micro Economics. |
| 7. | Samuelson | Economics. |

SOCIOLOGY

Max. Marks : 100

Time : 3 Hours

Paper- Basic Concepts in Sociology

- I. **Foundation of Sociology** : Positivism : Comte (Law of three stages), Durkheim (Social Fact), Structuralism : Marx (Historical Materialism : Interpretative : Weber (Social Action).
- II. **Types of Society** : Present Society Tribal Society and Industrial Society-their nature, characteristics and dynamics, Post Industrial Society-its nature characteristics.
- III. **Social Group and Culture** : Groups-its definition, characteristics and classification, primary and secondary group, reference group; Culture; cultural complex, patterns of culture; culture and civilization, culture and personality.
- IV. **Socialization and Social Control** : Socialization as a process of learning, stages of learning, agencies of socialization; Social control-its meaning and types formal and informal mechanism of social control.
- V. **Social Stratifications** : Concept, form of social stratification caste and class; social mobility and its types.

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

References

- | | |
|------------------------------|---|
| Berger, Peter | Invitation to Sociology, Penguin Books Harmonds Worth, England 1971. |
| Bottomore, T.B. | Sociology : A Guide to problems and Literature, George Allen Unwin Ltd. London, 1961. |
| Gurvitoh, G. & W. More (eds) | Twentieth Century Sociology, Philosophical Library New York, 1967. |

- Johnson, H.M. Sociology, Hercourt, New York 1960.
- Nisbet, Robert The Sociological Tradition, Hainemann Educational books Ltd., London, 1968.
- Osipov, G. Sociology, Progress Publishers, Moscow, 1968.
- Worsley, Peter Modern Sociology, Penguin Books, England 1978.
- Beteille, A. Six Essays in Comparative Sociology, Oxford University Press, Delhi 1974.
- Haralamoons, M. Sociology; Themes and Perspectives, Oxford University Press, Delhi 1981.
- Firth, Raymond Human Types; Thomas Nelson, London, 1956.
- Aron Raymond Main Currents in Sociological Thought, Vol.I & II, Penguin Books, London.
- Giddens Anthony Capitalism and Modern Social Theory Analysis of the Writing of Marx.
- Durkheim and Weber Cambridge University Press, 1971.
- Dube, S.C. Sanskrit Ek Parchyc (in Hindi) NCERT, New Delhi, 1971.
- Parson, T. Societies Evolutionary and comparative perspectives, Prentice Hall, Englewood New Jersey, 1966.
- Dube S.M. Samajshastra Ki Mool Avadharnayen (in Hindi, NCERT, New Delhi, 1989).

POLITICAL SCIENCE

Syllabus and Courses of Reading

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

Option-(I) Government and Politics in Japan, China and India

Max. Marks : 100

Time : 3 Hours

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

Syllabus and Courses of Reading

Comparative study of the Constitutions with major emphasis on the following aspects :-

1. Socio-Historical dimensions of Political Culture, Historical development of constitutions, Legacies, fundamental values and commitment of the new systems.
2. Constitutional and Government Structure-I: Basic Features Legislature, Executive and Judiciary.
3. Constitutional and governmental structure-II; Federal/Unitary system : Bi-cameral/unicameral, Amendment Process, Judicial Review, Rule of Law.
4. Political Processes : Political Parties, Pressure groups, Public Opinion, Voting Behaviour and Electoral Process, Ethnicity.
5. Socio-economic and Political development, Contemporary Political Trends.

Books Recommended

1. Ward and Mc. Cridis, ed., Modern Political Systems in Asia and Europe.
2. S. Blondel Comparative Government.
3. James Townsend Politics in China.
4. C.Enloe. ed. Ethnicity and Political Development.
5. K.R. Bombwal Major Contemporary Constitutional Systems.
6. J.C. Johari Comparative Government and Politics.
7. P. Sharan Comparative Politics.
8. O.P. Goyal Comparative Governments.
9. P.D. Sharma Comparative Political Institutions (in Hindi).
10. J.C. Johari Major Political Systems.

**Option-(II) Government and Politics in U.S.A.,
England and France**

Max. Marks : 100

Time : 3 Hours

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

Syllabus and Courses of Reading

Comparative study of the Constitutions with major emphasis on the following aspects :-

1. Socio-Historical dimensions of Political Culture, Historical development of constitutions, Legacies, fundamental values and commitment of the new systems.
2. Constitutional and Government Structure-I: Basic Features Legislative, Executive and Judiciary.
3. Constitutional and Governmental Structure-II; Federal/Unitary system : Bi-Cameralism, Amendment Process, Judicial Review, Rule of Law.
4. Political Processes : Political Parties, Pressure Groups Public Opinion Voting Behaviour and Electoral Process, Ethnicity.
5. Socio-economic and Political development, Contemporary Political Trends.

Books Recommended

- | | | |
|----|-------------------------|--|
| 1. | Henry Ehrman | Politics in France. |
| 2. | C.Enloe, ed. | Ethnicity and Political Development |
| 3. | K.R. Bombwal | Major contemporary Constitutional Systems. |
| 4. | J.C. Johari | Comparative Government and Politics |
| 5. | P. Sharan | Comparative Politics |
| 6. | O.P. Goyal | Comparative Governments |
| 7. | P.D. Sharma | Comparative Political Institutions (in Hindi). |
| 8. | Ward and Mc Cridis, ed. | Modern Political Systems in Asia and Europe |
| 9. | J.C. Johari | Major Political Systems. |

PUBLIC ADMINISTRATION

One Paper

Outlines of Test

Max. Marks : 100

Time : 3 Hours

Syllabus & Courses of Reading

ELEMENTS OF PUBLIC ADMINISTRATION

NOTE : There shall be one objective type (multiple choice question)

Meaning, Nature, Scope and Significance of Public Administration, its relation with Political Science, Economics, History, Psychology, Sociology and Law, Public and Private Administration, Chief Executive, role and functions.

Organisation, meaning and basis, Principles of organization, Hierarchy, Span of Control, Coordination, Decentralization Supervision and Control and Communications.

Forms of administrative organisation; Department, Public Corporation, Independent Regulatory Commissions, Staff and Line Agencies.

Public Relations :- Meaning, Methods and Significance.

Personnel Administration, Recruitment, Training, Promotion, Public Service Commission, Morale, Joint Consultative Machinery (Whitley Councils).

Financial Administration : Principles of budget making, preparation and passing of the Budget. Audit and its significance, Parliamentary control over Public Finance.

Delegated Legislation, Administrative Tribunals.

Books Recommended

1. Lok Prashashan by Avasthi & Maheshwari (Hindi & English).
2. Lok Prashashan (Theory & Practice) by Dr. M.P. Sharma (Hindi & English).
3. Lok Prashashan Ke Naye Kshitij by Dr. P.D. Sharma & H.C. Sharma.
4. Lok Prashashan (Theory & Practice) by R.L. Singh.
5. Lok Prashashan Ke Tatva by Dr. K.K. Puri and G.S. Brar.
6. Public Administration-(Principles & Practice) by Dr. A.R. Tyagi.
7. Public Administration-(Theory & Practice) by Dr. C.P. Bhambri.
8. Public Administration : Concepts and Application by Dr. D.R. Sachdeva and Meena Sogani, Vol. I.
9. Public Administration by Dr. Mohit Bhattacharya.
10. Public Administration by Dr. Vidya Bhushan and Dr. Vishnoo Bhagwan (English & Hindi).

Note : 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.

PHILOSOPHY**Outlines of Test**

Either of the following two options	Max. Marks	Time
Option-I Logic	100	3 Hrs.
Option: II Social Philosophy	100	3 Hrs.

Syllabus and Courses of Reading

Option-I Logic M.M. 100 Time 3 Hrs.

- Note :*
- (i) Ten questions in all are to be set.
 - (ii) Out of the ten, only five questions are to be attempted by the examinees.
 - (iii) One question will be of objective type in the strict sense of the term.
 - (iv) Questions will be equitably distributed over all the units of the syllabus.
 - (v) All questions will be of equal marks.

Unit-I	Nature, Scope and Importance of Logic, Induction and Deduction Law of Thought.
Unit-II	Denotation and Connotation of Terms. Propositions: Nature and Traditional and Modern Classification. Traditional Source of Opposition of propositions.
Unit-III	Categorical Syllogism: Moods and Figures. Rules of Validity and Fallacies.
Unit-IV	Truth Functional Compound propositions: Truth Functional Operations and Their Symbols and Truth Table Definitions.
Unit-V	Construction of Truth Tables; Tautology, Contingency and Contradictions. Testing Validity and Invalidity by Truth Table.
Unit-VI	Induction : Simple Enumeration, Scientific Induction and Analogy.
Unit-VII	Hypothesis : Nature and Conditions of Valid Hypothesis. Types of Hypothesis. Importance of Hypothesis in Science.
Unit-VIII	Types of Explanation : Popular and Scientific. Nature & Limits of Scientific Explanation.

Books Recommended

1. I.M. Copi Introduction to Logic
2. Cohen and Nagel Introduction to Logic and Scientific Method
3. B.N. Kaul A Course in Deductive Logic

4. B.L. Sharma Tarka Shastra Pravesh.
5. S.N. Gupta Tarka Shastra Ki Ruprekha

Option: II : Social Philosophy

Max. Marks. : 100

Time : 3 hours

- Note :* (i) Ten questions in all are to be set.
(ii) Out of the ten, five questions are to be attempted by the examinees.
(iii) One question will be of objective type in the strict sense of the term.
(iv) Questions will be equitably distributed over all the units of the syllabus.
(v) All questions will be of equal marks.

- Unit-I The Nature, Scope and Problems of Social Philosophy.
Unit-II Theories of Society: Individualistic, Idealistic and organic.
Unit-III Justice and Democracy. Right and Duties.
Unit-IV Mahatma Gandhi's Concepts of Sarvodaya and Swaraj.
Unit-V Dialectical & Historical Materialism of Marx.
Unit-VI Social Institutions: Nature and Ethical Significance. Family: Basis and Functions. Varnasrama-System.
Unit-VII Causes of War. Difference between War and Cold War. Establishment of Peace.
Unit-VIII Nature and Criteria of Social Progress.

Books Recommended :

1. Machenzic, J.S. An outline of Social Philosophy (Hindi and English Versions)
2. Pandey, S.L. Samaj Darshan Ki Ek Pranali.
3. Shrivastava, J.S. Samaj Darshan Ki Bhumika.
4. Sharma, R.N. Social Philosophy (Hindi & English Versions)
5. Dr. Hari Singh Samaj Darshan Ki Rooprekha.

DEFENCE STUDIES**Outlines of Test**

	Max. Marks	Time
Paper-I (Theory) World Military History (Earliest times to 1789 A.D.)	70	3 Hrs.
Paper-II(Practical)	30	3 Hrs.

Syllabus and Courses of Reading

- Note : 1. There will be one theory paper of 70 marks and one paper of practical having 30 marks.*
2. *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.*
3. *The candidates are required to pass separately both theory and Practical papers.*

Paper-I **World Military History (Earliest Times to 1789 A.D.)** M.M. : 70
Time : 3 Hrs.

1. Influence of Armament on the History of World.
 - (a) Inter-Relationship of weapons and tactics.
 - (b) Winteringham's theory and Fuller's Classification.
 - (c) Constant Tactical Factor.
2. The Age of Valour :
 - (a) Comparative study of Greek Phalanx and Roman Legion with special reference to the Battle of Pydna (168 B.C.).
 - (b) Detailed study of the Battle of Arbella (331 B.C.)
 - (c) Battle of Cannae (216 B.C.)
 - (d) Reforms made by Alexander the Great in the art of warfare.
3. The Age of Chivalry :
 - (a) Decline of Infantry and emergence of cavalry with special reference to the Battle of Adrianople (378 A.D.).
 - (b) Study of Battle of Hastings (1068 A.D.).
 - (c) Study of Battle of Crecy (1346 A.D.).

- (d) Causes of the Decline of Cavalry.
- (e) Influence of Feudalism, Church and Chivalry, Medieval Warfare.
- 4. The Age of Gun-Powder :
 - (a) Advent of Fire Arms and re-emergence of Infantry.
 - (b) Impact of Science and Technology on Warfare.
 - (c) Military reforms and contributions of Gustavus Adolphus and Frederick the Great.
- 5. The Age of Steam:
 - (a) Revolution in Tactics.
 - (b) French Revolution 1789 A.D.
 - (c) Napolionic Art of War
 - (d) Batte of Waterloo 1815 A.D.
- 6. Contemporary Military Thinkers :
 - (a) Suntzu
 - (b) Kautilya
 - (c) Machiavelli
 - (d) Clausewitz
 - (e) Jomini

Books Recommended :

1. Armament and History-J.F.C. Fuller.
2. Weapons and Tactics-Tome Wintringham.
3. Makers of Modern Strategy-E.M. Earle.
4. Conduct of War-J.F.C.Fuller
5. A Hundred Years of War-Cyril Falls.
6. An Introduction to the Art of War-S.T.Das
7. Sainya Vigyan-B.N.Maliwal.

Paper-II (Practical) Map Reading

M.M. : 30
Time : 3 Hrs.

Practical Test	20 Marks
Practical Record	5 Marks
Viva-Voce	5 Marks

1. MAP, its definition, characteristics, classification, Marginal informations of a Topo-sheet and its utility for Military.

2. CONVENTIONAL SIGNS : Military and Geographical.
3. GRID SYSTEM : Four figure and six figure Map References.
4. SHEET NUMBER : Million Sheets 'Quarter inch Sheets' 'Half inch Sheets' 'One inch Sheet' and index to Sheets.
5. SCALE : Definition, Three methods of representing scale, inter-conversion of Statement' into R.F. construction of simple scale line and the comparative scale lines.
6. NORTH : "Types of North" and finding out True North Direction by equal Altitude Method, Watch Method, Compass Method, etc.
7. Bearing and Inter-conversions of Bearings in detail.
8. Liquid Prismatic Compass functions of its various parts, and the following exercises on the Prismatic Compass.
 - (a) To determine magnetic North by Compass.
 - (b) Setting the MAP by Compass.
 - (c) To find out the bearing of a point from other point situated on the ground.
 - (d) To determine own's and enemy's position on the map by Re-section and Inter-section method with the help of compass.
 - (e) To set the compass in a particular direction for night march.
9. Determination of Individual Compass Error(ICE).
10. Service Protractor : its types and uses.

Note : Practical exercise should be carried out on TOPO-SHEETS.

Books Recommended :

1. Military Map Reading by Gale and Polden.
2. 'Samrik Manchitra Pathan' (Hindi) Professor-Hazari Lal.
3. 'Prakriyatmak Sanya Vigyan' (Hindi) : Vol. I & II by B.N. Maliwal.
4. 'Sainik Manchitra Vigyan' M.P. Verma.

PSYCHOLOGY
Outlines of Test

		Max. Marks	Time
Paper-I	(i) Social Psychology or (ii) Physiological Psychology	70	3 Hours
Paper-II	Practicals	30	3 Hours

Syllabus and Courses of Reading

Paper-I (i) Social Psychology M.M. : 70
Time : 3 Hours

- Note :*
1. *In total ten questions including one objective type would be set in such a way that there are two questions each from Unit-I and Unit-II and three questions each from Unit-III & IV.*
 2. *Total Number of question to be attempted=5 (at least one question from each unit)*
 3. *One objective 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, Subject Matter.
Relationship with Sociology, Anthropology.
Methods of Study : Experimental, Observational and Sociometric Method.

Unit-II Personality : Self, Nature, Development of self, culture and personality.
Socialization : Nature, Agencies and factors.
Social Norms : Social Roles and Social Status.
Social Norms : meaning, characteristics and formation.
Meaning and determinates of social roles.
Meaning and types of social status.

Unit-III Group : Nature, types and functions, Crowd, Mob and Audience.
Leadership : Nature, types, functions.
Theory of Leadership; Trait Theory, Complex Trait Theory, Interactional Theory.

Unit-IV Attitudes : Definition of attitudes, characteristics and development of social attitudes.
Social Perception : Meaning Stereotypes : Nature and Importance,
Prejudice : Nature and Development.
Propaganda : Nature, tools factors and theories.
Social Change : Nature and teachings.

Books Recommended :

1. Baron, R.A. and Byrne D.(1981) : Social Psychology: Understanding Human Interaction, London Allyn and Bacon.
2. Kuppaswami, B. : An Introduction to Social Psychology M.P.P. (1980)
3. Rastogi, G.D. (1986) : Adhunik Samaj Manovigyan, Agra; Bhargava.
4. Srivastava, D.N. : Adhunik Samaj Manovigyan, Singh R. and Pandey, J. (1991)
5. Tripathi, L.B. (1992) : Adhunik Samaj Manovigyan, Agra; Bhargava.

Paper-II : Practicals

M.M. : 30
Time : 3 Hours

List of Experiments for Students in Social Psychology

Note : 1. Any ten to be performed in the classroom.

2. One practical to be performed by the students at the time of Examination.

1. *Assessment of attitudes.*
2. *Intergroup competition and cooperation.*
3. *The formation of norms in judgement of autokinetic movement.*
4. *Sociometry.*
5. *To demonstrate the phenomenon of social facilitation*
6. *Effect of group opinion on the individual's judgement.*
7. *Conformity*
8. *Stereotypes.*
9. *Observation (Accuracy of observation).*
10. *Any personality inventory, HSPW/EPQ*
11. *Any test of self concept.*
12. *Intelligence test : Kon's Block/Alexander's Pass along test.*

References

1. Ward, C.D. (1970) : Experimental Social Psychology, New York : Holt, Rinehart and Winston.
2. Parameshwaran A.G. : Experimental Psychology, Delhi and Ravichandra, K. Secma Publications. 1983.

Paper-I (ii) Physiological Psychology

M.M. : 70

Time : 3 Hours

- Note :*
1. In Total ten questions including one objective type would be set in such a way that there are atleast two questions from each of the units.
 2. Total number of questions to be attempted = 5 (atleast 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: Problems and contribution of Physiological Psychology.

Neuron, Structure and functions, types : Unipolar, Bipolar and Multipolar Synapse, Transmission of neural impulse. All or none principle, and absolute refractory period.

Sensory Processes : Structure and functions of human eye and ear.

Unit-II Nervous System : CNS : Structure and functions of spinal cord and human brain, Localization of functions in human cortex.

Peripheral Nervous System : Somatic and Autonomic Nervous System reflex action.

Basic muscles and motor system ; Pyramidal and extra Pyramidal Systems.

Unit-III Genetic influences on Behaviour : Basic Principles of genetics, Chromosomes and genes, Chromosomal abnormalities.

Endocrine System : Difference between exocrine and endocrine glands, Pituitary, Adrenal, Thyroid, Parathyroid and Gonads-their functions and impact on behaviour.

Unit-IV Motivation : Instincts, Needs and Drives, Physiological basis of Hunger, Thirst, Sex and Maternal behaviour.

Emotion : Physiological changes, theories : James-Lange, Canon Bard, Cognitive-Physiological theory of Schachter.

Sleep and Arousal : Characteristics of Sleep, Neural Mechanisms in sleep, Orienting reflex, Arousal Theory of Lindsley, Role of reticular activating system, stages of sleep.

Books Recommended :

1. Atkinson, R.L., : Introduction of Psychology. New
Atkinson, R.C. Smith, York.
E.E. Hilgard, E.R.
(1987)
2. Bennett, T.L. (1977) : Brain and Behaviour California
Brooks/cole.
3. Graham, R.B. (1990) : Physiological Psychology,
California Wordsworth.
4. Morgam, C.T. and : Physiological Psychology, New
Stellar, E. (1965) York; Mc Graw Hill.
5. Leukel F. (1963) : Physiological Psychology, Saint
Louis; C.V. Mosbey.
6. Ojha, R.K. and : Sharirik Manovigyan Agra,
Bhargava, M. (1989) Bhargava.

**Paper-II Practicals (for Physiological
Psychology Students)**

M.M. : 30
Time : 3 Hours

- Note :*
1. Any ten to be performed in the classroom.
 2. The candidates shall perform one practical at the time of
Examination.
 1. Study of After Image.
 2. Set and Reaction Time.
 3. Habit Interference.
 4. Muscular Fatigue.
 5. Division of Attention
 6. Mapping of Retinal colour zones.
 7. Colour Mixture.
 8. Mapping of blind spot
 9. Sound localization
 10. Visual acuity
 11. Pneumograph
 12. Mapping of touch spots

Books Recommended :

- Mohsin, S.M. (1985) Experiments in Psychology, New Delhi,
Motilal Banarsi Das.

MUSIC (VOCAL)
Outlines of Test

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

Note (i) The question paper will be divided into three sections. Section-A will have two compulsory questions i.e. first question in the form of 16 objective type questions (1/2 mark 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 at least one question from each Section. All questions will carry equal marks.

Syllabus and Courses of Reading

Paper-I Theory	M.M. : 40
	Time : 3 Hours

SECTION-A

- (a) Sixteen objective type questions covering the entire syllabus.
- (b) Notation of slow and fast khayals in the Ragas prescribed in the syllabus.

Ragas : (1) Yaman (2) Alhaiya Bilawal
(3) Hamir (4) Vrindavani Sarang (5) Kafi

SECTION-B

- (a) Definitions of the followings :-
Sangeet, Swara, Saptak, Nad, Shruti, Raga & That, Vadi, Samvadi, Anuvadi, Vivadi, Khayal, Tarana, Tali, Khali, Avartan, Alankar, Varna, Vagecyakar, Parmelpraveshak Raga, Major Tone Minor tone.
- (b) Difference between Margi and Deshi.
- (c) Methods of Ancient and present Alap gan.
- (d) Origin of Music according to Hindu Mythology.

SECTION-C

- (a) Description of the prescribed Ragas and Talas (Ektal, Chautal, Sultal, Jhaptal, Rupak).
- (b) The role of Music in National integration.

(c) Contribution towards Music by the following :-

- (1) Pt. Vishnu Digamber Paluskar
- (2) Pt. V.N. Bhatkhande
- (3) Pt. Onkarnath Thakur
- (4) Pt. Narayan Rao Vyas
- (5) Ud. Abdul Karim Khan

Paper-II Practical

M.M. : 60

Time : 20 to 30 Minutes

- (a) One Drut Khayal with Alaps and Tanas in each of the following Ragas :-
Yaman, Alhaiya Bilawal, Hamir, Vrindavani Sarang, Kafi.
- (b) Two slow Khayals in primary style of gayaki in any of the prescribed Ragas.
- (c) One Dhrupad or Dhamar with Dugun. One Sargam Geet and one Lakshan Geet in any prescribed Ragas, and one Tarana in any prescribed Ragas.
- (d) National Anthem on Harmonium.
- (e) Ability to demonstrate Ektal, Chautal, Suttal, Jhaptal and Rupak with reciting bols by hand in Thaḥ and Dugun Layakaris and ability to play Teental and dadra on Tabla.

MUSIC (INSTRUMENTAL)

Outlines of Test

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

Syllabus & Courses of Reading

Paper-I Theory

M.M. : 40

Time : 3 Hours

SECTION-A

- (a) Sixteen objective type questions covering the entire syllabus.
- (b) Notation of Maseet Khani and Raga Khani gats in the following Ragas.
 - (1) Bihag (2) Bhupali (3) Yaman (4) Vrindavani Sarang
 - (5) Khamaj (6) Asavari

SECTION-B

- (a) Definitions of the followings :
Nad, Shruti, Soot, Meend, Ghasect, Gat, Jhala, Toda, Zamzam, Nayak-Nayaki, Raga and That, Vadi-Samvadi, Anuvadi, Vivadi, Sam, Khali.
- (b) Classification of Indian Instruments
- (c) Formation of 72 Melakartas of Pt. Vynkat Mukhi.
- (d) Comparison of Uttari and Dakshini Systems.

SECTION-C

- (a) Description of the prescribed Ragas and Talas (Rupak, Jhaptal, Ektal, Tilwada)
- (b) Contribution towards Music by the following :-
(1) Pt. Ravi Shankar (2) Ustad Vilayat Khan
(3) Ustad Allaudin Khan.
- (c) Role of media in the development of Indian Classical Music.
- (d) Vadkon Ke Gun aur Dosh.

Paper-II**Practical**

M.M. : 60

Time : 20 to 30 Minutes

- (a) One Drut Gat with Alaps, Toras and Jhala in each of the prescribed Ragas :
(1) Bihag (2) Bhupali (3) Yaman
(4) Vrindavani Sarang (5) Khamaj (6) Asavari
- (b) Two slow Gats with extempore presentation.
- (c) One Gat in Rupak Tal with Tora in any Raga prescribed in the course.
- (d) Playing of National Anthem and capability to play atleast three Alankars in all the Ragas of the Syllabus.
- (e) Ability to demonstrate Rupak, Jhaptal, Ektal and Tilwada with reciting bols by hand in Thah and Dugun Layakaris and ability to play Teental and Dadra on Tabla.

MUSIC (TABLA)
Outlines of Test

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

Syllabus & Courses of Reading

Paper-I (Theory)	M.M. : 40 Time : 3 Hours
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- a) Definition of the following technical terms :
Uthan, Pilta, Kayada, Rela, Mohara, Tigun, Sangeet, Nad Shruti, Svar, Saptak Peshkar, Tihai.
- b) The knowledge of Bhatkhande and Vishnu Digamber Tal lipi.
- c) Ability to write the prescribed in various difficult Layakarities just as Digun and Aarhlya.
- d) Ability to write the following Essays :-
Importance of Music in Life, Rules of Solo, Performance of Tabla. The Rules of accompaniment in Tabla.
- e) Following Life Sketches :
Krishan Maharaj, Kanthe Maharaja Ahamad Jan Thirkava.

Paper-II (Practical)	M.M. : 60 Time : 20 Minutes
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- a) Knowledge of showing by hand Dugun, Tigun, Chougun Talas,
- b) Ability to play on Tabla the following Talas with their varieties :
Tukras, Two Peshkas, Four Kayadas and Paltas a few Tihais and Relas.
- c) Rupak, Ektal, Dipchandi Sultal, Tivra.
- d) Ability to play with Lahara.

Books Recommended

1. Tal Parichaya, Parts-I and II : Girish Chander Srivastava 88, South Malaka, 27 Mahajani Tola Allahabad.
2. Sangeet Nibandh Mala : J.N. Pathak, 27 Mahajani Tola Allahabad.

3. Sulabh Sangeet Shastra : R.N. Talegaonkar, 33/148
Part-II
Rajamandi, Agra.
4. Shastra Rag Parichaya : Parkash Narain, Munshi Ram,
Parts-I & II. Partap Bagh Muthi Gang,
Allahabad.
5. Rag Parichya, Parts-I & II : G.C. Srivastava, 88, South
Malaka, 27 Mahajani Tola,
Allahabad.
6. Tabla Shastra : M.G. Godbole, 27, Mahajani
Tola, Allahabad.
7. Tal Deepika : M.G. Godbole, 27, Mahajani
Tola, Allahabad.

INDIAN CLASSICAL DANCE (KATHAK) Outlines of Test

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

Syllabus & Courses of Reading

		Max. Marks	Time
Paper-I	Theory	40	3 Hours
1.	Knowledge of <ol style="list-style-type: none"> i) Four neck movements. ii) Eight eye glances. iii) Six eyebrow movements. iv) Eight Head movements. 		
2.	Knowledge of all the Samyukta and Asamyukta Hasta Murdas based on Abhinava darpan.		
3.	Detailed knowledge of costumes used in Kathak in different periods of its growth.		
4.	A brief history of other classical styles of dance other than the one offered for study.		
5.	Knowledge of NATWARI; its origin and its role in the formulation of Kathak in present form.		
6.	Importance of Ras-Bhav in Dance.		
7.	Definition of Kaviti, Kasak, Musak, Kataksh.		

8. Detailed knowledge of the folk dances in the region.
9. Ability to notate all the Bols of Tora, Tukra, Paran etc. alongwith its basis Tal.

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

2. One question on notation will be compulsory.

Paper-II Practical

Max. Marks : 60

Time : 20 Minutes

1. (a) Ability to Dance in Teen Taal, varieties of Tatkar in different Layankari (b) Ahmad (c) Vandana (d) Thhath (e) Fast Amad (f) Paran (g) Chakardar-Paran (h) Kavit (i) Gat nikas (j) Gat Bhav.I.
2. Ability to demonstrate in following Taals
i) Jhap Taal ii) Ek Taal
3. a) Four advanced Tukras b) Amad c) Paran (d) Tatkar with Tihaias (e) Ability to demonstrate the Thhekas of Dardra. Kehrwa on Tabla.
4. Ability to play Nagma on Harmonium
5. Practical knowledge of Neck, Head & Eye movements
6. Padhant of all the Bols learnt in different taals
7. Knowledge of any important Folk dance of the region

Note :- Distribution of Marks in practical will be as under :-

- | | |
|-----------------------|----------|
| a) Choice of Students | 15 marks |
| b) Choice of Examiner | 20 marks |
| c) THEEKA on TABLA | 5 marks |
| d) Playing Nagma | 5 marks |
| e) Padhant | 10 marks |
| f) Viva | 5 marks |

ANCIENT INDIAN HISTORY, CULTURE & ARCHAEOLOGY

Outlines of Test

One Paper

Max. Marks : 100

Time : 3 hours

Note : 1 There would be a compulsory question on map, set from the prescribed maps listed in the syllabus. While teaching the map, a clear idea of the surrounding states / countries

/ continents, oceans, physical features, rivers, mountains, lakes and historical places etc. also be given to the students.

i)Map Work 12 Marks

ii)Explanatory notes 8 Marks

- 2. Blind candidates may not attempt the map question which is compulsory for all other candidates and in lieu of the same they may attempt any other question asked in the question paper. However, in case they wish to attempt the map question the part relating to the explanatory aspect will carry full marks.*
- 3. Atleast 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 including the compulsory question on map. All questions shall carry equal marks.*
- 4. There shall be one objective type question in the paper. This question will be divided into three sections.*

Section-I will have snap short type questions of 10 marks.

Section-II will have multiple type questions of 5 marks.

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

Syllabus and Courses of Reading

History of India (from earliest times to A.D. 1206) Max. Marks. :100
Time : 3 Hours

Sources of Indian History, Salient features of the Indus Valley Civilization; Vedic Civilization : Original Home of the Aryans, Political life and administration. The age of the Mahajanapada : Rise and growth of the Magadhan Empire (from Bimbisara to the Nandas : the invasion of Alexander and its effects; The Mauryas : Chandragupta, Ashoka; the Satavahanas; The Indo-greeks, the Sakas and the Kusanas; The Gupta Empire : Achievements of Samundragupta, Chandragupta-II, Vikramaditya and Skandgupta Administration and causes of downfall; The Pushyabhutis and the Chalukyas of Badami : Harsa and Pulakesin-II. The Tripartite struggle the pratiharas, the Palas and the Rastrakutas : The Chahamanas, the

Gahadavalas and the Pramaras. Dynasties of the South : The Pallavas and the Cholas; The Araba and the Turk invasions : Muhammad-bin-Kasim, Mahmud Ghaznavi and Mohammad Ghori.

The followings are prescribed for map question :-

1. Extent of the Indus Civilization.
2. India during the sixth century B.C.
3. Find sports of Ashokan inscriptions and pillars.
4. Knishka's Empire
5. Samundragupta's conquests.
6. India as described by Hiuent Tsang.
7. India on the Eve of Turkish invasions : Mahmud Ghaznavi
Mohammad Ghori.

Books Recommended

- | | | |
|-------------------------------|---|--|
| Majumdar, Ray Chaudhary Datta | : | An Advanced History of India. |
| Tripathi, R.S. | : | Ancient India. |
| Basham, A.L. | : | The Wonder that was India, London 1954. |
| Ray Chaudhary, H.C. | : | Political History of Ancient India 1963. |
| Majumdar Altckar | : | The Vakataka-Gupta age, Delhi 1953. |
| Yazdani | : | Early History of Deccan, Oxford, 1960. |
| Shastri, N.K. | : | |
| Pandey, R.B. | : | |
| Majumdar R.C. | : | Ancient India : Delhi 1977. |
| Ghosh, N.N. | : | Early History of India, Allahabad. |
| Jha D.N. | : | |

MATHEMATICS Outlines of test

Paper-I	Statics, Differential Equations and Analytical Geometry	Max. Marks		Time
		B.A.	B.Sc.	
		50	75	3 Hours
Paper-II	Algebra & Number Theory	50	75	3 Hours

Syllabus and Courses of Reading

Paper-I Statics, Differential Equations and Analytical Geometry

Max. Marks : B.Sc. : 75

B.A. : 50

Time : 3 Hours

- Unit-I** Resultant of two forces acting a point. Resolved parts. Triangle and polygon laws of forces. Resultant of force represented by OA and OB. Lami's theorem. Resultant of any number of Coplaner forces acting at a point. Resultant of two parallel forces. Three parallel forces in equilibrium. Moment of a force about a line. Varignon's theorem on moments about a line.
- Unit-II** Centre of a system of parallel forces. Moment of a couple. Equilibrium of two couples. Equivalence of two couples in parallel planes Resultant of a number of Co-planner couples. Resultant of forces represented by the sides of a plane polygon. Resultant of a force and couple resolution of a force into a force and a couple. Conditions of equilibrium for coplanner forces : analytical method, solutions of problems, Friction.
- Unit-III** Formation of differential equations, geometrical approach to the existence of solutions of the quation $dv/dx=f(x,y)$. Ordinary differential equations of the first order and degree. Exact equations.
- Unit-IV** Linear equations of higher order with constant coefficients. Homogeneous linear equations.
- Unit-V** Straight lines represented by second degree equations, coaxial system of circles. Equations of parabola, ellipse and hyperbola in standard forms and parametric forms. Elementary properties of these curves.

Unit-VI Classification of curves of second degree. Tangents and normals, pole and polars, pair of tangents from a point, director circle diameter and conjugate axes, with reference to parabola, ellipse and hyperbola.

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 at least one question from each unit.

Paper-II Algebra and Number Theory M. M. : B.Sc. : 75
B.A. : 50
Time : 3 Hours

Unit-1 Algebraic system of real numbers, Complex numbers introduced as a system of ordered pairs of real numbers. De-Moiver's Theorem and its simple applications. Relations between roots and coefficients of an equation.

Unit-2 Transformations of equations, simple symmetric functions of roots of an equation, Cardon's solution of the cubic. Solutions of bi-quadratic by resolution into quadratic factors by Descartes and Farrares method.

Unit-3 Notions of groups, subgroups, normal subgroups with examples. Definitions of ring, subring, ideal and field with examples. Definitions of a vector space. Peano's postulates, divisibility in the set of integers. Primes, Divisor algorithm. Greatest common division and least common multiple. Fundamental Theorem of arithmetic. Number of primes is infinite. Numbers of divisors and sum of all divisors of a positive integer.

Unit-4 Congruences and their simple properties, solution of congruences. Linear congruences. The equation $ax + by = C$ (a, b, c are integers). Chinese Remainder Theorem. Fermat's Theorem and Wilson's Theorem.

Unit-5 Algebra of matrices, adjoint and inverse of a matrix, Rank of a matrix. Elementary transformations and matrices. Normal form of a matrix. Rank of the product of two matrices. Equivalent matrices. Row rank and column rank of a matrix. Solutions of systems of linear equations.

Unit-6 Characteristic polynomial and characteristic equation of square matrix. Characteristic roots and characteristic vectors, Cayley Hamilton Theorem, Minimal polynomial and minimal equation of a square matrix. (Relationship

between characteristic polynomial and minimal polynomial of a square matrix). Characteristic roots and characteristic vectors of some special matrices i.e. symmetric, skew roots and symmetric Hermitian and Skew Hermitian, orthogonal and Unitary matrices.

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 one from each unit.

STATISTICS Outlines of Test

	Max. Marks		Time
	B.A.	B.Sc.	
PaperI : Elementary Statistics and Numerical Methods.	35	50	3 Hours
PaperII: Probability and Discrete Distributions	35	50	3 Hours
PaperIII:Practicals	30	50	3 Hours

Syllabus and Courses of Reading

Paper-I ELEMENTARY STATISTICS AND NUMERICAL METHODS

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

Descriptive Statistics

Unit-1 Introduction-Origin and development, Definition, Scope, uses and limitations. Collection, classification and Tabulation of Primary and Secondary data. Frequency distribution, Graphical Representation of data, Histogram, Frequency Polygen, Frequency curve, Ogive, Diagrametic Representation, Bars rectangles, squares, circles and pie diagrams.

Measure of Central Tendency, Mean, Median, Mode, Quartiles, deciles, Percentiles, Geometric mean, Harmonic Mean.

Unit-2 Measure of Dispersion, Range, Mean deviation. Quartile deviation, Standard deviation and coefficients of dispersion.

Moments and their relation, μ^1 and μ^2 coefficients, Charlier's Checks and Sheppard's correction for grouping (without proof) Measures of skewness and Kurtosis.

Theory of Attributes :

Unit-3 Symbolic Notation, Dichotomy of data, class frequencies, order of class frequencies, ultimate class frequencies, consistency of data. Independence and association of attributes, Yule's coefficients, contingency Table, coefficient of contingency.

Unit-4 Finite difference Operators, Forward, Backward and shift operators, Interpolation with equal intervals, Newton's formulae for forward and backward interpolation, Central Differences, Central differences interpolation formulae due to Gauss, Stirling, Bessel and Everett.

Unit-5 Divided differences, Newton's divided difference formula, Lagrange's interpolation formula. Numerical Quadrature, Trapezoidal rule, Simpson's One-third and three eighth rules.

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

Paper II : Probability and Discrete Distributions

M.M. : B.A./B.Sc.(35/50)

Time : 3 Hours

Probability

Unit-1 Random Experiment, Discrete sample space, Events, their union, intersection etc. Probability, Classical relative frequency and axiomatic approaches, Addition Law of Probability.

Unit-2 Conditional Probability and Multiplication Theorem Independence of events, Bayes' Theorem, Boole's Inequality.

Unit-3 Random variables, Distribution function, Probability mass and density function. Joint Marginal and conditional distribution and density functions, Independent Random Variables.

Unit-4 Mathematical Expectation, Expectation of sum of random variables, Expectation of product of independent random variables, Variance, Co-variance, Moment-Generating and Cumulant Generating Functions.

Discrete Distributions

Unit-5 Binomial Distribution, Poisson distribution as a limiting form of Binomial Distribution, Negative Binomial Distribution, Geometric distribution, Hypergeometric distributions. Properties of these distributions.

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-III PRACTICALS

M.M. : B.A./B.Sc.(30/50)

Time : 3 Hours

It will consists of three experiments and the record of practical work and oral test.

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 :
Diagrams and graphs;

Measures of Central tendencies and dispersion : Moments (use of Charliers checks and Sheppard's corrections) : Measures of skewness and Kurtosis : Association of Attributes : Interpolation using Newton's forward, backward, Gauss, Stirling formula; Newton's divided difference formula, Lagrange's interpolation formula, Quadrature by trapezoidal and Simpson's rules, fitting of Discrete distributions.

*The students are allowed to use calculators in Examination.

ART**Outlines of Test**

			Max. Marks	Time
Paper-I	(Theory)	History and Appreciation of Art	30	3 Hours
	A.	History of Art	18 Marks	
	B.	Appreciation of Art	12 Marks	
Paper-II	(Practical)	Still Life Painting	20 Marks	6 Hours
Paper-III	(Practical)	Design	20 Marks	6 Hours
Paper-IV	(Practical)	Landscape Painting	20 Marks	6 Hours
		Sessional Work	10 Marks	6 Hours

Syllabus and Courses Reading

Paper-I (Theory) History and Appreciation of Art M.M. : 30
Time : 3 Hours

A. History of Art 18 Marks

Mohenjodaro and Harappa Sculpture Mauryan sculpture-Pre-Gupta Buddhist narrative, sculpture of Gandhara & Mathura classical Indian sculpture with special reference to Sarnath Post-Gupta sculpture of the Pallavas, palas, Rashtrakutas and the Cholas.

B. Appreciation of Art 12 Marks

Definition of Sculpture in the round, relief sculpture, seals, modelling, moulding, Plasticity contour-Important mudras (abhaya, varada, bhumisparsha, jnana, dharmachakrayartans, dhyana, vitarka, vyakhyana, anjali), asanas (Padmasana, Lalitasana, vajrasana or vajrapayankhyana, anjali), asanas (padmasana, Lalitasana, vajrasana or vajrapayankasana, maharajalilasana bandrasana) and bhangas (samabhanga, dvibhanga, tribhanga, atibhanga) their symbolisms and application in Indian Art.

Paper-II (Practical) Still Life Painting Marks : 20
Time : 6 Hours

Still Life Painting : Drawing and painting of not more than five objects, including the drapery in the background to study proportion, space, light and shape.

Medium : Oil colours or water colours, Size : Half-sheet

Paper-III (Practical) Design**Marks : 20****Time : 6 Hours**

Design : Decorative design suitable for application to objects in a specified craft e.g. Block printing, pottery, handkerchief wood-cuts, the design must be based on some Indian Motif.

Medium : Water/Poster colours. Size : 10"X15"

Paper-IV (Practical) Landscape Painting**Marks : 20****Time : 6 Hours**

Landscape should be painted on-the-spot. Spot may be selected in the college or near it and painted as observed. Size : 1/2 sheet.

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

Session Work**10 Marks**

(i) Sketches	50 (From nature/object)
(ii) Still Life	4
(iii) Design	5
(iv) Landscape	4

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

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

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

HISTORY OF ART**Outlines of Test****(One Paper)****Max. Marks : 100****Time : 3 Hours****Syllabus and Courses of Reading****History of Indian Sculpture and Painting***(From the earliest time to the classical period)*

Part-A Indus Valley Sculpture-Mauryan Sculpture Post Mauryan Sculpture from Bharbhut : Sanchi, Mathura-Bhoja, Amaravati, Nagarjunikonda Saka Kaushna Sculptures from Mathura, Gandhara, Classical Indian Sculpture with particular reference to Mathura, Sarnath and the Madhyadesa.

Part-B Pre-historic paintings from Jogimara, Keimur, Raigarh etc. classical Paintings of Ajanta Bagh Badami Sittan vasal Sigiria-Western Indian Paintings, Pala Painting.

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.

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 Hours
	A. History of Art	18 Marks}	
	B. Appreciation of Art	12 Marks}	
Paper-II	(Practical) Visual Study	30	6 Hours
Paper-III	(Practical) Imaginative Study	30	6 Hours
	Sessional Work	10	6 Hours

Syllabus and Courses of Reading

Max. Marks : 30

Paper-I **History and Appreciation of Art** Time : 3 Hours

A. History of Art 18 Marks

Mohenjodaro and Harappa Sculpture Mauryan sculpture-Pre-Gupta Buddhist narrative, sculpture-sculpture of Gandhara & Mathura classical Indian sculpture with special reference to Sarnath Post-Gupta sculpture of the Pallavas, palas, Rashtrakutas and the Cholas.

B. Appreciation of Art 12 Marks

Definition of Sculpture in the round, relief sculpture, seals, modelling, moulding, Plasticity contour-Important mudras (abhaya, varada, bhumisparsha, jnana, dharmachakrayavirtana, dhyana, vitarka, vyakhyana, anjali), asanas (Padmasana, Lalitasana, Vajrasana or vajrapayankasana, maharajalilasana bandrasana) and bhangas (samabhanga, dvibhanga, tribhanga, atibanga) their symbolisms and application in Indian Art.

Paper-II (Practical) Visual Study M.M. : 30

Time : 6 Hours

Clay modelling on the basis of study of Visual objects like human limbs (eyes, ears, nose and hands).

Paper-III (Practical) Imaginative Study M.M. : 30

Time : 6 Hours

Clay modelling in round as medium of imaginative presentation of :

- a) Animal forms like bull, elephant, horse, camel, buffalo, etc.
- b) Simple human, subjects, poses and situation like mother and child, peasant woman going to the field, on well, village woman in action like bathing, washing, drawing water etc.

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

Sessional Work 10 Marks

Three each specific model related with practical paper II and III.

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

- Note :** 1. *Each theory paper shall be divided into two sections A & B. Section A will carry six questions out of which the candidate shall be required to attempt any three. Section B will contain four questions out of which the candidate will be required to attempt any two questions. All the questions shall carry equal marks.*
2. *Questions are to be set so as to test the broad survey of the topics and not minute details.*

HOME SCIENCE

Subject	No. of Periods	Time	Max. Marks B.A. / B.Sc.	
Paper-I Home Management	4 per week	2 Hrs.	30	45
Paper-II Hygiene & Applied Science	4 per week	2 Hrs.	30	45
Paper-III Practical	6 per week	3 Hrs.	40	60

Instructions for the examiners :

The examiner will set six questions in all two questions from each unit.

Instructions for the candidates :

The candidates will attempt three questions in all; selecting one question from each unit.

Paper-I HOME MANAGEMENT M.M: B.A./B.Sc.(30/45)
Time : 2 Hours

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

Unit-I Housing

- (a) Functions of a house.
- (b) Selection of site for an ideal house-soil, locality, orientation and sanitation facilities.
- (c) Planning of rooms for meeting different family needs.

Kitchen garden Utility of a kitchen garden. Planning and raising of a kitchen garden for self-sufficiency in Home with special reference to potato, onion, tomato spinach and lady-finger.

Unit-II Interior Decoration

- (a) Elements of Art: Line, form, texture size, shape and colour.
- (b) Principles of Art : Harmony, Balance, Rhythm, Proportion and Emphasis in relation to colour and flower arrangement.
consumer Protection : Definition of consumer choice, buying problems of consumers, Frauds and faulty weights and measures, Adulteration and Consumer Education.

Unit-III Management of Family Resources :

- (a) Meaning of Home Management, steps in the process of Home Management.
- (b) Classification of resources : Human and Material resources. Similarities of different resources.
- (c) Money management : Meaning and types of income, process of money management, (a) Budgeting, (b) controlling-keeping of records and (c) Evaluation.
- (d) Time Management : Process, steps in making time plans, tools in time plans, peak loads and rest periods.
- (e) Energy Management : Energy requirements in different stages of the family life cycle; classification of household work as light and heavy according to their energy costs; Fatigue, role of rest periods. Process of Energy Management Planning, control in carrying out, evaluation.
- (f) Work simplification: Meaning and methods of work simplification.
- (g) Care and maintenance of house hold equipments.
(Mixi, Refrigerator, cooking range and vacuum cleaner).

Paper-II HYGIENE AND APPLIED SCIENCE

Max. Marks
B.A./B.Sc.(30/45)
Time : 2 Hours

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

Unit-I Personal Hygiene : Definition of Hygiene.

Factors relating to Health :

- (a) Food : Good habits of eating and drinking.
- (b) Cleanliness : cleanliness of the body, clothing and house.
- (c) Posture
- (d) Exercise & Games
- (e) Rest & sleep

Water : Importance, types and sources of contamination of water, method of purification of water-natural and domestic methods.

Ventilation : Principles of ventilation, natural and artificial ventilation.

Unit-II

Immunity : Definition and types of immunity.

Infection : Meaning, sources methods of transmission of infections disease, prevention and control of these diseases.

Infection diseases : Causes, incubation period mode of spread, symptoms, prevention and control of the following diseases.

- (a) Diseases spread by insects-Malaria.
- (b) Diseases spread by ingestion Enteric fever, Dysentery and cholera.
- (c) Diseases spread by droplet infections: Measles, Mumps Diphtheria and Tuberculosis.
- (d) Diseases spread by contact Leprosy, Tetanus.

Unit-III Applied Science

Transmission of heat : Elementary ideas about transmission of heat & their applications in daily life-clothes, utensils, fire place, thermas flasks.

Thermametes and scales of measurement. Simple conversions Centigrade, to Fahreneit.

Evaporation, Factors affecting, Refrigeration.

Elementary knowledge of the following :-

- (a) Wiring of the home.
- (b) Use of Safety devices-fuse and circuit breaker.
- (c) Electric shocks.

Paper-III PRACTICAL HOME MANAGEMENT Max. Marks
B.A./B.Sc. (40/60)
Time : 3 Hours

1. Cleaning and polishing of household metals :-
Brass, copper, Silver, Stainless steel, alluminium.
2. Cleaning of glass and looking mirror.
3. a) Preparation of two polishes for wooden furniture.
b) Cleaning and polishing of wooden furniture
4. Flower arrangement for a corner, centre and mass arrangement.
(Modern and traditional methods of flower arrangement).
5. Floor decoration (Rangoli and Alpana).
6. Pottery painting and decoration (atleast one pot each).
7. Potting and raising of an ornamental/flowering plant.
8. Table setting and table manners.
9. Repair of a fuse and plug.
10. Cleaning and care of household equipments :-
Mixi, Refrigerator, cooking range and vacum cleaner.

One Paper**ENGLISH
(for B.Sc. Part-I)**

M. Marks : 50

Time : 3 Hours

Part-A Text

30 Marks

- (i) A Book of English Poems Ed. by Sh. V.N. Awasthy, Vaish College, Rohtak Published by M.D. University, Rohtak.

The following Poems only :

- | | |
|------------------------------------|-------------------------------|
| 1. Solitude | A. Pope |
| 2. The Daffodils | W. Wordsworth |
| 3. Leisure | W.H. Davies |
| 4. If Thou Love Me | Elizabeth Barrett
Browning |
| 5. The Village School Master | Oliver Goldsmith |
| 6. The Highway Man | Alfred Noyes |
| 7. Ozymandias | P.B. Shelley |
| 8. The Quality of Mercy | Shakespeare |
| 9. He Fell Among Thieves | Sir Henry New-Bolt |
| 10. Lochinvar | Scott |
| 11. The Brook | Tennyson |
| 12. All the World's Stage | W. Shakespeare |
| 13. Cargoes | John Masefield |
| 14. Where the Mind is without Fear | R. N. Tagore |
| 15. On His Blindness | John Milton |
- (ii) Prose Selection-Ten Mighty Men's Ed by Sh. K.A. Kalia, former Reader, Deptt. of English M.D. University, Rohtak Published by M.D. University, Rohtak.

The following are prescribed

- | | |
|--|---------------|
| 1. The Modle Millionaire
Oscar Will de (1854-1900) | Short Stories |
| 2. The Gift of Magi
O. Henry (1862-1910) | |
| 3. The Judgement Seat of Vikramaditya
Sister Nivedita (1867-1911) | |

4. Fur
Saki (1870-1916)
5. A Marriage Proposal One Act plays
6. Chandlika
Rabindernath Tagore (1861-1941)
7. A Bachelor's Complaint of the
Behaviour of Married People
Charles Lamb (1775-1834)
8. El Dorado
R.L. Stevenson (1850-1894)
9. Borces Essays
E.V. Lucas (1868-1938)
10. The Art of the Essayist
A.C. Benson (1862-1925)

Part-B General English 20 Marks

1. Translation from Hindi to English 5 Marks
2. Essay 8 Marks
3. Precis 7 Marks

The question paper will have 6 questions as per details given here under :

- Q.I The candidates will be asked to explain with reference to the context two passage-one each from each of the two prescribed text books. There will be interal choice in both the cases. 5x2=10
- Q.II & III There will essay type questions (may have parts also) on the two prescribed text books. 10x2=20
- Q.IV Translation of a passage of about 10 sentences 5
- Q.V Essay (The candidates will be required to write about 400 words on any of the five given topics) 8
- Q.VI Precis : The candidates will be required to summarise a given passage in contemporary English of about 250 words to one third of its length and also given it a suitable heading. 7

Books Prescribed

1. Composition & Translation Ed. by Sh. C.L. Narang, Reader in English; Kurukshetra University Published by Publication Bureau, Kurukshetra University Kurukshetra.

PHYSICS
Outlines of Test

		M.M.	Time
Paper-I	(Theory) Mechanics and Thermal Physics	55	3 Hours
Paper-II	(Theory) Electricity and Magnetism	55	3 Hours
Paper-III	(Practical) (on two days)	40	3+3 Hours

Note : (Theory)

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

Practicals

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

2. Distribution of marks

Experiments	12+12=24 Marks
Lab. Record	6 Marks
Viva-Voce	5+5=10 Marks
	40 Marks

3. *The laboratory note book will be assessed by the External Examiner, Marks for each experiments, Lab record and viva-voce oral examination concerning the experiments in an syllabus for each session are indicated above.*

Special Notes

1. *Instructions should be imparted using SI system of units but GGS 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% numerical problems are to be set.*

Paper-I (Theory) Mechanics & Thermal Physics Max. Marks : 55
Time : 3 Hours

- Unit-I Theory of Relativity : Galilean transformation and Galilean invariance, Newtonian relativity principle, concept of inertial and non-inertial frames of reference. Michelson Morley experiment, Lorentz transformations, length contraction and time dilation, composition of velocities, variation of mass with velocity equivalence.
- Unit-II Dynamics of Rigid Bodies K.E. of rotation and moment of inertia, M.I. of a solid sphere, spherical shell, solid cylinder and solid bar of rectangular cross-section, Acceleration of a body rolling down on inclined plane.
Elasticity : Elastic constants and their relationship, concept of Poisson's ratio, Torson of cylinder and the twisting couple. Bending of a beam (Longitudinal strain in filaments, bending moment and its magnitude, Cantilivers).
- Unit-III Kinetic Theory of Gases; Degrees of freedom, Law of equipartition of energy and its applications for specific heats of gases, Maxwell's distribution of speeds Conceptual explanation of the expression, Experimental verification of Maxwell's law of speed distribution. Most probable speed, average and r.m.s. speeds, mean free path (definition and derivation of its expression), transport of energy and momentum, diffusion of gases, Brownian motion (qualitative) Deviation from the ideal gas behaviour, Real gases, Vander-waal's equation.
- Unit-IV Thermodynamics-I : Carnot theorem and second law of thermodynamics, Entropy, temperature entropy diagram, entropy of a perfect gas, thermodynamical scale of temperature; unattainability of absolute zero. Porus plug experiment and Joule Thomson effect for perfect and Vander waal gases.
- Unit-V Thermodynamics-II : thermodynamic function-Internal energy, enthalpy, Helmholtz function, Gibbs free energy function and their physical significance, Maxwell's relations, Applications of Maxwell's relations (a) change of state and claussius clapeyron equation. (b) change of internal energy with volume (c) Expression for C_p-C_v .

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

- Unit-I** Electrostatic Field : Gradient, divergence and curl of a vector (cartesian coordinates) and their physical significances, Gauss's theorem, Stokes theorem, derivation of field from potential as gradient, derivation of Laplace and Poisson equations, Electric flux density, Gauss's Law and its applications to a spherical shell, uniformly charged infinite plane and uniformly charged infinite straight wire mechanical force on the surface of a charged conductor, Energy per unit volume.
- Unit-II** Electric field in Dielectric : Three electric vectors Polarization vector \vec{P} Displacement vector \vec{D} and electric intensity vector \vec{E} and their relation $\vec{D} = \epsilon_0 \vec{E} + \vec{P}$ electrical susceptibility and the relation $\epsilon = 1 + \chi$ Gauss's law for dielectric Energy stored in dielectrics.
- Steady current : Electric current density, Equation of continuity $\text{Div } \vec{J} + \frac{d\rho}{dt} = 0$, Microscopic form of ohm's law $\vec{J} = \sigma \vec{E}$. Resistivity and electrical conductivity Magnetic induction, Magnetic flux, solenoidal nature of vector field of induction. Properties of \vec{B} (i) $\text{div } \vec{B} = 0$ (ii) $\text{curl } \vec{B} = \mu_0 \vec{J}$.
- Unit-III** Magnetic Properties of Matter : Behaviour of various substance in magnet field Magnetic permeability (susceptibility χ) Intensity of magnetisation (I) and their relations, electronic theory of dia and para magnetisation curve. Hysteresis loss. Magnetic shell, its strength, potential of a Magnetic shell (infinite plane, spherical) at a point, Magnetic circuits, comparison of magnetic and electrical circuits.
- Unit-IV** Electromagnetic Induction : Calculation of self inductance of a long solenoid, calculation of mutual inductance of two solenoids, Energy stored in the magnetic field of and inductance, Growth and decay of current in a circuit with (a) capacitance and resistance (b) resistance and inductance (c) Capacitance and inductance (d) Capacitance, resistance and inductance.
- Unit-V** Electromagnetic Theory : Maxwell equations, Displacement current vector and scalar potentials, boundary conditions at interface between different media, wave equation, plane wave in dielectric media, Poynting Theorem and Poynting vector.

Paper-III (Practicals)

Max. Marks : 40
Time : 3+3 Hours
(on two days)

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 permissible errors, standard deviation etc.).

Section-A

1. Moment of Inertia of a fly-wheel.
2. Moment of Inertia of an irregular body using a torsion Pendulum.
3. Surface Tension by Jeager Method.
4. Young's Modulus by bending of beam.
5. Modulus of rigidity by Maxwell's Needle.
6. Elastic constants by Searles method.
7. Viscosity of Water by its flow through a uniform capillary tube.
8. Thermal conductivity of a good conductor by Searle's method.
9. Mechanical equivalent of Heat by Callendar and Barne's method.
10. 'g' by Bar Pendulum.
11. E.C.E. of hydrogen using an Ammeter.
12. Calibration of a thermo couple by Potentiometer.
13. Low resistance by Carey Foster's Bridge with calibration.
14. Determination of Impedance of an A.C. circuit and its verification.
15. Frequency of A.C. mains and capacity by electrical vibrator.
16. Frequency of A.C. main by Sonometer using an electromagnet.
17. Measurement of angle of dip by earth inductor.
18. High resistance by substitution method.
19. Comparison of capacities by Ballistic galvanometer.
20. Inductance (L) by Auderson Bridge (A.C. Method).

CHEMISTRY Outlines of Test

	M.M.	Time
Paper-I (Theory) Inorganic Chemistry	37	3 Hrs.
Paper-II (Theory) Physical Chemistry	37	3 Hrs.
Paper-III (Theory) Organic Chemistry	36	3 Hrs.
Paper-IV (Practicals)	40	6 Hrs.

150

N.B. :- 20% marks are reserved for laboratory and viva-voce in Paper-IV.

Paper-I (Theory) Inorganic 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, question will be short answer type and not essay type.

Section-I

Atomic Structure

Qualitative treatment of Schrodinger wave equation and its applications to hydrogen atom. Physical significance of wave functions, Quantum numbers, normal and orthogonal wave functions. Sign of wave functions, Radial and angular wave functions, Radial and angular distribution curves, probability distribution curves of S and P orbitals, shapes of s.p. and d orbital. Multielectron system-Pauli's exclusion principle. Hund's rule of maximum multiplicity, stability of half filled and fully-filled orbitals, Aufbau principle and its limitation, energy levels of hydrogen like atoms and ions (also for poly-electronic atomic system).

(8 Hrs.)

Section-II

Chemical Bonding-I

Ionic Bond : General characteristics, size effects, radius rules and its limitations, (Calculation of radius ratios excluded), lattice energy, Born equation and its application, Madelung constant, Born Haber cycle, application of lattice energy, Polarizing power and polarizability, Fajan's rules. Hydration energy. Crystal structures of AX₂ type (Fluorite, rutile, B-cristobalite, cadmium iodide) of ionic compounds.

Covalent Bond : General characteristics, detailed description of valence bond approach (H₂ molecule), resonance and resonance energy, multiple bonding sigma and pi-bonds, three electron bonds, bond length, bond order, bond energy, criteria of bond strength. Hydrogen bond (theories of Hydrogen bonding-valence bond treatment), Vander Waals forces. (8 Hrs.)

Section-III

Chemical Bonding II

Various types of hybridizations with examples from representative elements : Examples : BeF₂, BF₃, CH₄, H₂O, NH₃, PCl₅, SF₆.

IF₇, NC₂, Co₃⁻², ClO₃, Valence shell electron pair repulsion (VSEPER) Model, shapes of simple molecules and ions.

Detailed description of L.C.A.O. in M.O. theory, bonding, anti-bonding orbitals, M.O. configurations of homo-and heteronuclear diatomic molecules, (N₂, O₂, B₂, F₂, CO, NO, HCl and their ions).

Comparison of VB and MO theories, Bonding in electron deficient compounds with reference to alkyls of beryllium and aluminium and diborane. (8 hrs.)

Section-IV

Periodicity of elements, s p and block elements.

(a) Atomic radii, Bragg-Slater (Vander waals atomic radii), (b) Ionic radii and crystal radii (c) Ionization potential, successive ionization potentials and factors influencing ionization potential (d) Electron affinity (e) Electronegativity concept, (Pauling, Mulliken, Alfred-Rochow and Mulliken-Jaffe's electronegativity scales),

variation of electronegativity with bond order, partial charge and hybridization, (f) Effective nuclear charge shielding or screening effect, Slater rules.

Section-V

Acids and Bases :

Lewis, Solvent and Usanovich definitions, Hard and soft classifications, strength of acids (pka values in aqueous solutions), effect of substituents and solvents on strength of acids, levelling and differentiating solvents.

Indicators : Acid base, Redox and precipitation (absorption) theory, useful range and factors affecting their usefulness. (8 Hours)

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

Gaseous State

Equation of state for real gases (Vander Waals equation), critical phenomenon and critical constants, isotherms of carbon dioxide, continuity of gaseous and liquid states, expression for critical constants in terms of Vander Waals constants, law of corresponding states, principles and methods of liquefactions of gases, derivation of kinetic gas equation, Maxwell's distribution law of velocities (derivation excluded) and energies, calculation of the most probable velocity, root mean square velocity and average velocity of molecules from Maxwell distribution law of velocities, degrees of freedom of motion, principle of equipartition of energy. (8 Hrs.)

Section-II

Liquid State

Physical properties of liquids including their methods of determination : vapour pressure, surface tension, viscosity and refractive index.

Solutions

Raoult's law and Henry's law, Duhem-Margules equations of liquids, in liquids, Konowaloff's law its deduction from Duhem-Margules equation, fractional distillation, steam distillation, study of partially miscible liquids (UCST, UCSTLCST) immiscible liquids. (8 Hrs.)

Section-III**Chemical Kinetics :**

Study of the reaction of zero order, first order, second order and third order, methods for determining order of reactions, surface reactions, chain reactions, Arrhenius law, theories of reaction rates, Kinetics of reactions involving ions in solution, primary salt effect.

(8 Hrs.)

Section-IV**Surface Chemistry :**

Type of adsorption isotherms and their general explanation, Langmuir adsorption isotherm (theory of adsorption), BET equation (derivation excluded) and its use in the determination of surface area of adsorbents, adsorption at surfaces of solutions, Acid-base catalysis, enzyme catalysis and catalytic poisoning. (8 Hrs.)

Section-V**Chemical Thermodynamics**

Recapitulation of terms used in thermodynamics, Zeroth law of thermodynamics, first law of thermodynamics, heat capacity, relationship between C_p and C_v molecular interpretation of E_H C_p and C_v Joulethomson effect, isothermal reversible and irreversible expansion of an ideal gas and real gas, adiabatic reversible and irreversible expansion of an ideal gas and real gas, Kirchoff's equation. (8 Hrs.)

Paper-III (Theory)

Organic Chemistry

Max. Marks : 36

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.

Section-I

Systematic nomenclature : The concept of word root, primary and secondary prefixes and suffixes, the IUPAC nomenclature of complex alkanes and compounds containing polyfunctional groups.

(2 Hrs.)

General principles of organic reaction mechanism : Inductive : hyperconjugation, electrometric and resonance effects. Classification of organic reactions and reagents, homolytic and hetrolytic bond fission, electrophile and nucleophile. Carbocations, carbanions free radicals and carbenes-their structure and stability. Formal charge-method for assigning charges on itermiedate and other ionic species with examples.

(6 Hrs.)

Section-II

Chromatography : Basic principles and applications of thin-layer and column chromatography.

(2 Hrs.)

Stereochemistry : The concept of isomerism, types of structural isomerism, concept of optical isomerism-chirality and symetry, Optical isomerism in compounds containing one and two chiral carbon atoms-enantiomerism, diastromerism and meso compounds, internal and external compensation, recemization and resolution, methods used for resolution of racemic mixtures, Walde inversion and asymmetric synthesis. Relative and absolute configuration in terms of D & L notations, Sequence rules an R & S notations for compounds containing one or more chiral centres. Geometrical isomerism with examples of maleric acid and fumaric acid. Physical properties (melting point, boiling point and solubility) of geometrical isomers E and Z designation of geometrical isomers containing one or more double bonds.

(6 Hrs.)

Section III

Alkanes : Methods of preparation involving wurtz reaction Corey-House reaction, Kolbe reaction and decarboxylation of carboxylic acids Physical properties-solubility, gradation in melting points and boiling points. Free radical mechanism (including evidence for halogenation of alkanes. Relative rates of halogenation of alkanes in terms of bond dissociation energy, heat of reaction, energy of activation, progress of reaction and rate of reaction. Orientation of halogenation, transition state for halogenation, activity and selectity (chlorination versus bromination).

(4 Hrs.)

Alkanes : Methods of formation using dehydration of alcohols and dehydrohalogenation of alkyl halides. Mechanism of dehydration rearrangements during dehydration. Mechanism of E_1 and E_2 reactions. Mechanism and stereochemical consequences of electrophilic addition to carbon-carbon double bond. Mechanism of Markownikov's addition and anti Markownikov's addition (free radical mechanism), Ozonolysis and its applications in determining the position of double bond, reactions of carbenes with alkanes, epoxidation, Hydroxylation of double bond with $KMnO_4$ and OsO_4 .

(4 Hrs.)

Section-IV

Alkynes : Reasons for low reactivity of alkynes towards electrophilic addition reactions, mechanism of electrophilic and nucleophilic addition reactions, comparison of reduction of alkynes with Lindlar's catalyst and with Alkali metals in liquid ammonia, hydroboration-oxidation of alkynes and acidity of terminal alkynes.

(2 Hrs.)

Dienes : Conjugated dienes-structure and stability, electrophilic and free radical 1,2 and 1,4 additions to butadiene. Diels-Alder reaction-Endo and Alder rules.

Arenes : Huckel's rule, aromaticity, aromatic ions, annulenes upto 10 carbon atoms, anti-aromatic and non-aromatic compounds. Mechanism of electrophilic aromatic substitution reactions (halogenation, nitration, sulphonation, Friedel-Crafts alkylation and acylation), concept of π and complexes. Directive influence of groups in electrophilic substitution reactions and its electronic interpretation.

(4 Hrs.)

Section-V

Alkyl Halides : Mechanism and stereochemistry of SN^1 and SN_2 reactions, elementary concept of nucleophilicity. Substitution versus elimination, relative reactivity of allyl and vinyl halides w.r.t. alkyl halides.

(2 Hrs.)

Aryl Halides : Low reactivity of aryl halides, comparison of reactivity of nuclear and side chain halogen compounds, Aromatic nucleophilic substitution bimolecular and addition benzyne mechanism.

(3 Hrs.)

Organometallic compounds : Preparation and synthetic applications of Grignard reagents. Preparation and reaction of n-butyl

lithium and phenyl lithium, comparison of the reactivity of Grignard reagents and alkyl & phenyl lithium toward α, β unsaturated carbonyl compounds. (3 hrs.)

Paper-IV (Practicals)

Max. Marks : 40

Time : 6 Hrs.

(spread over two days)

Section-I (Inorganic)

A. Volumetric Analysis

- (i) **Pot. Permanganate Titrations** : Titrations : Standardisation of Pot. Permanganate with Oxalic acid (students to prepare standard oxalic acid solution). Titrations with standard pot. permanganate solution.
 - (ii) **Potassium dichromate Titrations** : (students to prepare by weighing standard potassium dichromate solution) titrations with standard potassium dichromate solution.
 - (iii) **Iodometry Titrations** : Standardisation of sodium thiosulphate by standard Pot. Dichromate (students to prepare, by weighing standard Pot. Dichromate solution). Titration of copper sulphate against standard sodium thiosulphate solution.
- B. Qualitative analysis of any one of the following Inorganic cations and anions by paper chromatography (Pb^{++} , Cu^{++} , Ca^{++} , Ni^{++} , Cl^- , Br^- , I^- and PO_4^{3-} & NO_3^-).

Section-II (Physical)

1. To study the kinetics of hydrolysis of ethyl acetate by HCl at room temperature.
2. To determine the heat of neutralisation of strong acids/strong base & weak acid/strong base.
3. To determine the heat of solution of a given salt.
4. To determine the CST of phenol-water system.
5. To determine the surface tension of a given liquid by stalagmometer (drop number and drop weight method).
6. To determine the viscosity of a liquid by Ostwald's viscometer.

Section-III (Organic)

1. To determine the number of components in a given organic mixture by TLC.

2. Preparation and purification of the following compound and uncertainty their purity through m.p. or TLC (i) Acetanilide (ii) Aspirin (iii) m-Dinitrobenzene (iv) p-Bromoacetanilide (v) Iodoform (vi) m-Nitroaniline (vii) S-Benzylisothiuronium chloride.

Distribution of Marks

1. Section-I	(6+3)	9 marks
2. Section-II one experiment only)		9 marks
3. Section-III	(3+6)	9 marks
4. Viva-voce		5 marks
5. Lab. record		8 marks

BOTANY Outlines of Test

		Max. Marks	Time
Paper-I (Theory)	Algae, Bacteria, Viruses, and Fungi	55	3 Hrs.
Paper-II (Theory)	Cytology and Genetics	55	3 Hrs.
Paper-III	(Practicals)	40	6 Hrs. (in two session of 3 hrs. each)

Syllabus & Courses of Reading

Paper-I (Theory) Algae, Bacteria, Viruses, and Fungi Max. Marks : 55
Time : 3 Hrs.

Note : Two questions will be set from each unit. Candidates have to answer five (5) questions selecting one question from each unit.

Unit-I

1. Definition and importance of different disciplines of Botany.
2. Importance of Plants and their role in the evolution of human civilization.
3. Plant diversity, salient features of Eichler's classification.

Unit-II

1. Introduction, General characters and economic importance of algae.

2. Outlines of Fritsch's classification upto classes.
3. Important features of vegetative and reproductive structures with reference to the life cycles of NOSTOC, VOLVOX, ULOTHRI, ECTOCARPUS and BATRACHOSPERMUM.

Unit-III

1. **Bacteria** : Introduction, habitat and habit, modes of nutrition, structure, modes of reproduction, Role of bacteria in agriculture, industry and medicine.
2. **Viruses** : Introduction, nature, structure of TMV and bacteriophages. General Symotoms and control of plant diseases caused by viruses.

Unit-IV

1. General Character and economic importance of fungi.
2. Outlines of Alexopoulos and Mims (1979) classification of fungi upto classes.
3. Important features of vegetative and reproductive structures with referrence to the life cycles of Phytophthora, Penicillium, Agaricus, Puccinia and Colletorichum.
4. General account of Lichens.

Unit-V

1. Classification of plant diseases on the basis of causal organisms and symptoms.
2. Prevention and control of plant diseases Physical, Chemical and Biological control methods, resistant varieties, plant quarantines and seed certification.
3. Causal organism, symptoms, disease cycle and control of the following diseases.
 - (i) Late blight of potato.
 - (ii) black stem rust of wheat.
 - (iii) Red rot of Sugarcane.
 - (iv) Citrus canker
 - (v) Bhindi Mosaic virus

List of Text Books

1. Baver (1980) : Plant and Man, IBH Publication.
2. Fritsch F.E. (1965), Structure and Reproduction of Algae Vol. I and Vol. II, University Press Cambridge.

3. Kumar H.D. & Singh H.N., Text book on Algae 1990, Reprint, Affiliated East West Press Pvt. Ltd.
4. Sinha U. and Srivastava S., Introduction to Bacteria, Vikas Publishing House, New Delhi.
5. Biswas, S.B. and Biswas, A (1984), An Introduction to Viruses Vikas Publishing House Pvt. Ltd. 3rd Revised Ed.)
6. Alexopoulos, C.J. and Mims, C.W., Introductory Mycology, Wiley Eastern Ltd., New Delhi.
7. Mehrotra, R.S. and Aneja, K.R. (1990) An Introduction to Mycology, Wiley Eastern Ltd., New Delhi.
8. Mehrotra, R.S. (1980) Plant pathology, Tata McGraw Hill, New Delhi.

Paper-II (Theory) **CYTOLOGY AND GENETICS**

Max. Marks :55

Time : 3 Hrs.

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. Difference between prokaryotic and eukaryotic cells; structure of nucleus; chromosomes - physical and chemical structures.
2. Elements of heredity and variations : Mandel and his experiments, Principles of segregation and independent assortment; Test Cross; Back Cross.
3. Gene Interactions and modified dihybrid ratios, complementary gene, Supplementary gene, Inhibitory gene, Duplicate Genes.

Unit-II

4. Linkage and recombination; Sex linked inheritance; experiment with Drosophila; crossing over and recombination, two point test cross.
5. Chromosomes determination of sex, Multiple alleles, Classification and inheritance pattern and application of Male sterility.
6. Extra Chromosomal inheritance; Plastid and Mitochondrial inheritance.

Unit-III

7. Chromosomal Abberation : delction, duplications, inversions and translocations and their significance.
8. Mutation : Spontaneous and induced; Role of induced mutations in crop improvements.
9. Variation in chromosomal number : haploids, Polyploidy auto and allo-polyploidy and aneuploidy. Role of Polyploidy in evolution.

Unit-IV

10. Nucleic Acids : RNA, DNA, DNA as genetic material Experimental evidence; DNA replication.
11. Transcription in brief, Genetic Code.

Unit-V

12. Modern concept of gene; gene regulation (Lac-Operon Model, Tryptophan operon).
13. Concept of Mean, Median and Mode. Standard deviation and standard error, t-test; chi-square test.

List of Text Books

1. Burns, G.W. and Bettino, P.J. (1989). The Science of Genetics. MacMillan Publishing Co. New York.
2. Gardner, E.J. (1991) Principles of Genetics. John Wiley, New York.
3. Gupta, P.K. (1994). Genetics, Rastogi Publications, Meerut.
4. Panse V.G. & Sukhatne, V. (1985). Statistical Methods for Agricultural Workers. Publication Bureau, ICAR, Delhi.
5. Rastogi, V.B. (1992). A Text Book of Genetics, Kedar Nath, Ram Nath, Meerut.
6. Singh, B.D. (1986) Plant Breeding, Kalyani Publishers, Delhi.
7. Swanson, C.P. ; Mertz, T. and Young, W.J. (1981) Cytogenetics Prentice-Hall, India.
8. Swanson, C.P. 1971. the Cell (IIIrd Edn.) Prentice-Hall, New Delhi.

Paper-III(Practicals) ALGAE,FUNGI,CYTOLOGY GENETICS

Max. Marks : 40

Time : 6 Hours (in
two sessions of
3 Hrs. each)

1. Identify, classify and write short morphological notes giving well labelled relevant diagrams on the given specimens A,B and C. (one each from Algae, Fungi, Lichen, Plant pathology). 9 Marks
2. Prepare the root smear and find out two different stages of mitosis. Identify and show it to the examiner. Also give characters of identification. 6 Marks
3. Numerical regarding genetics (Mendelian inheritance or gene interaction) as per syllabus. 5 Marks
4. Identify giving two important characters of identification on spots, 1,2,3 and 4. (one slide or material each from algae, Fungi, Lichen/plant Pathology and show any stages of meiosis as per syllabus. 8 Marks
5. Note book, collection and collection report 8 Marks
6. Viva-Voce 4 Marks

Paper-III (Practicals)

1. Study of chromosome - karyotypes from copies of microphotographs etc.
2. Stages of mitosis from material (onion-root tips) and meiosis from slides.
3. Special chromosomes - polyteny from slide.
4. Experiments on monohybrid and dihybrid ratios.
5. Gene interaction and modified dihybrid ratios.
6. Problems of gene mapping, interference and coefficient of coincidence.
7. Demonstration of Emasculation from wheat/Rice/Pea.
8. Demonstration of application of following : mean, mode, median, standard deviation, standard error.
9. Chi-square analysis.
10. t-test problem.

Zoology
Outlines of Test

	Max. Marks	Time
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Paper-I	Invertebrates	55	3 Hrs.
(Theory)			
Paper-II	Cell Biology & Genetics	55	3 Hrs.
(Theory)			
Paper-III	(Practicals)	40	3 Hrs.
		150	

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

Section-A (Protozoa to Aschelminthes)

- (a) Classification upto orders, with characteristic features and examples from Protozoa to Aschelminthes.
- (b) Protozoa : Detailed study of *Paramecium*, *Euglena*, and *Plasmodium vivax* (alongwith comparison of life cycles of other species of Plasmodium); Parasitic adaptations in Protozoa; Brief account of life history, mode of infection and pathogenicity of the following pathogens of man (prophylaxis and treatment) : *Entamoeba*, *Trypanosoma*, *Leishmania*, *Giardia*, *Trichomonas*.
- (c) Porifera : *Sycon* as type example; Skeleton and canal systems in sponges.
- (d) Coelenterata : *Obelia* and *Aurellia* as type examples; Polymorphism in Coelenterata and coral reefs.
- (e) Platyhelminthes : *Fasciola hepatica* as type examples; Larval forms of *Fasciola hepatica* : Parasitic adaptations in helminths; Brief account of life history, mode of infection and pathogenicity of the following pathogens of man:
Fasciolopsis, *Schistosoma*, *Ancylostoma*, *Trichinella*, *Wuchereria*, *Dracunculus* and *Oxyuris*.
- (f) Aschelminthes : *Ascaris* as type example.

Section-B (Annelida to Echinodermata)

- (a) Classification upto orders with characteristics and examples from annelida to Echinodermata.

- (b) Annelida : *Pheretima* as type example; morphology, and evolutionary significance of trochophore larva, coelom in Annelida.
- (c) Arthropoda : *Periplaneta* as type example; morphology and evolutionary significance of *Peripatus*; an account of crustacean larvae, metamorphosis among insects.
- (d) Mollusca: *Pila* as type example; torsion and detorsion.
- (e) Echinodermata : *Asterias* as type example; an account of echinoderm larvae; affinities of Echinodermata.

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.*

Theory Paper-II

Cell Biology & Genetics

Max. Marks : 55

Time : 3 Hours

Section-A (Cell Biology)

Ultrastructure and functions of the following cell organelles :

- (a) **Plasma Membrane** : fluid mosaic model, various modes of transport across the membrane, mechanism of active and passive transport, endocytosis and exocytosis.
- (b) **Endoplasmic reticulum** : types, role in protein synthesis and transportation.
- (c) **Mitochondria** : Mitochondrial DNA as semiautonomous body biogenesis mitochondrial enzymes (only names), role of mitochondria in brief.
- (d) **Golgi complex** : Associated enzymes and role of Golgi complex.
- (e) **Ribosomes** : Types, biogenesis, role in protein synthesis.
- (f) **Lysosomes** : Enzymes and their role; polymorphism.
- (g) Microtubules and microfilaments, Centriole and Basal body.

- (h) **Nucleus** : Nuclear membrane, nuclear lamina, Nucleolus, fine structure of chromosomes, nucleosome concept, and role of histones Euchromatin and Heterochromatin. Lamp-brush chromosomes and polytene chromosomes.
- (i) Protein synthesis.
- (j) Theory of fixation and staining.

Section-B (Genetics)

- (a) Chromosomal theory of inheritance.
- (b) Linkage and recombination: Coupling and repulsion hypothesis; crossing-over and chiasma formation; gene mapping.
- (c) Sex determination and its mechanisms; male and female heterozygous systems, genetic balance system; role of Y-chromosome, male haploidy, cytoplasmic and environmental factors, role of hormones determination.
- (d) Sex-linked inheritance : Haemophilia and colour blindness in man, eye colour in *Drosophila*, Non-disjunction of sex chromosomes in *Drosophila*; Sex limited and Sex-influenced inheritance.
- (e) Extrachromosomal and cytoplasmic inheritance :
 - (i) Kappa particles in Paramecium.
 - (ii) Shell coiling in snails.
 - (iii) Sex factors in *E.Coli*.
- (f) Multiple allelism; Eye colour in *Drosophila*, A,B,O Blood groups in man.
- (g) **Human Genetics** : Human karyotype, chromosomal abnormalities involving autosomes and sex chromosomes, monozygotic and dizygotic twins.
- (h) Inborn errors of metabolism in man (alcaptonuria, phenylketonuria albinism, tyrosinosis, sickle-cell anaemia, genetical goitrous cretinism).
- (i) Eugenics, Euthenics and Euphanics, spontaneous and induced (Chemical and radiation) mutations; gene mutation; chemical basis of mutation transition, transversion. Structural chromosomal aberrations (deletion, duplication, inversion and translocation); numerical aberrations (autopolyploidy, euploidy and polyploidy in animals).
- (j) Transgenic animals.

Paper-III

Practicals

Max. Marks : 40

Time : 3 Hours

A) Classification upto orders with ecological notes and economic importance of the following animals :

1. Protozoa
Lamination of cultures of *Amoeba*, *Euglena* and *Paramecium*; Permanent prepared slides : *Amoeba*, *Euglena*, *Trypanosoma*, *Noctiluca*, *Eimeria*, *Paramecium* (binary fission and conjugation), *Opalina*, *Vorticella*, *Balanidium*, *Nyctotharus*, radiolarian and forminiferan ooze.
2. Parazoa (Porifera)
Specimens : *Sycon*, *Grantia*, *Euplectella*, *Hyalonema*, *Spongilla*, *Euspongia*.
3. Coelenterata
Specimens : *Porpita*, *Varella*, *Physalia*, *Aurelia*, *Rhyzostoma*, *Metridium*, *Millipora*, *Alcyonium*, *Tubipora*, *Zoanthus*, *Madrepora*, *Favia*, *Fungia*, and *Astrea*, Permanent prepared slides : *Hydra* (W.M.), *Hydra* with buds, *Obelia* (colony) and medusa, *Serularia*, *Plumularia*, *Tubularia*, *Bougainvillea*, *Aurelia* (sense organs and stages of life history).
4. Platyhelminthes
Specimens : *Dugesia*, *Fasciola*, *Taenia*, *Echinococcus*, miracidium, sporocyst, radia, cercaria, scolex and proglottids of *Taenia* (mature and gravid).
5. Aschelminthes
Ascaris (male and female), *Trichinella*, *Ancylostoma*, *Meloidogyne*.
6. Annelida
Specimens : *Pheretima*, *Heteronereis*, *Polynoe*, *Eunic*, *Aphrodite*, *Chaetopterus*, *Arenicola*, *Tubifex*, and *Pontobdella*.
7. Arthropoda
Specimens : *Peripatus*, *Palaemon*, (prawn), *Lobster*, *Cancer* (crab), *Sacculine*, *Eupagurus* (hermit crab), *Lepas*, *Balanus*, *Cyclops*, *Daphnia*, *Lepisma*, *Periplaneta*, (cockroach), *Schistocerca* (locust), *Pocillocerus* (ak

hopper, *Gryllus* (cricket) *Mantis* (praying mantid). Cicada, Forficula (earwing), dragon fly, termite queen, bug moth, beetle. *Polistes* (Wasp) *Apis* (honey bee), *Bombyx* (silk moth), *Cimex* (beg bug), *mediculus* (body louse), millipedes, Scolopendra (centipedes), Palamnaeus (scorpion), Aranea (spider), Limulus (king crab).

8. Mollusca Specimens : *Mytilus*, *Ostrea*, *Chrdium*, *Pholas*, *Solen* (razor fish), *Pecten*, *Holiptis*, *Patella*, *Aplysis*, *Doris*, *Limark*, *Loligo*, *Sepia*, *Octopus* *Nautilus* (complete and T.S.). *Chiton* and *Dentalium*.
9. Echinodermata Specimens : *Asterias*, *Echinus* *Cucumara*, *Ophiothrix*, *Antedon* and *Asterophyton*.

B) Study of the following permanent stained preparations :

1. L.S. and T.S. *Sycon*; gemmules, spiculus and spongin fibres of *Sycon*, Canal system of sponges.
2. T.S. *Hydra* (testis and Ovary region).
3. T.S. *Fasciola* (different regions)
4. T.S. *Ascaris* (male and female)
5. T.S. *Pheretima* (Pharyngeal and typhlosolar regions); setae, Septal nephridia and spermathecae of *Pheretima*.
6. Trachea & mouthparts of Cockroach.
7. Statocyst of *Palaemon*.
8. Glochidium larva of *Anodonta*; radula and osphredium of *Pila*.
9. T.S. Star Fish (arm).

C) Preparation of the following slides :

1. Temporary preparation of *Volvox*, *Paramecium*, gemmules and spicules of *Sycon*; mouth parts and trachea of *Periplaneta* (cockroach), radula of *Pila*; pedicillarae of *Asterias*.
2. Preparation of permanent stained whole mounts of *Hydra*, *Obelia*, *Sertularia*, *Plumularia* and *Bougainvillea*.

D) Dissections of the following animal :

1. *Pheretima* (earthworm) : digestive, reproductive and nervous systems.
2. *Periplaneta* (cockroach) : digestive, reproductive and nervous systems.
3. *Pila* : Pallial complex, digestive and nervous system.

E) Cell biology and Genetics :

1. Cell division : Prepared slides of stages of mitosis and meiosis and polytene chromosomes of *Drosophila chironomus*.
2. Temporary squash preparations of onion root tip/grasshopper for the study of mitosis using acetocarmine stain.
3. Preparation of permanent stained histological slides of mammalian tissues. Ten slides stained, ten slides (with strached ribbons) and five blocks are to be submitted for the practical examinations by each student.

GEOLOGY

Outline of Test

		Max. Marks	Time
Paper-I (Theory)	General and Physical Geology	45	3 Hrs.
Paper-II (Theory)	Crystallography and Mineralogy	45	3 Hrs.
Paper-III (Practical)		60	3 Hrs.

Syllabus and Courses of Reading

Note :Nine questions may be set. The candidate should be required to answer five questions in all.

Paper-I (Theory) General and Physical Geology Max. Marks : 45
Time : 3 Hours

Earth, in relation to the solar system and its development, its origin, age and interior Physiographic features of India Action of geological agents. Weathering and erosion atmosphere rivers, snow and glaciers, wind, lakes and oceans, volcanoes, earthquake mountain building, elementary ideas about strike, dip fold, fault unconformity.

Reference Books

1. Arthur Holmes Physical Geology, Thomas Nelson and Sons Ltd., London.
2. Wates, W.W. Geology and Beginners.
3. Restall, R.H. Physico-chemical Geology.
4. Dutta, A.K. Introduction to Physical Geology.

Paper-II (Theory) Crystallography and Mineralogy

Max. Marks : 45
Time : 3 Hours.

Crystallography Introduction to various Projections, various system of notations, Normal classes of symmetry of all the systems and Hemimorphic classes; Prismatic, tetrahedral Rhombohedral. Trapezohedral and Rhombohedral. Twinning elements of crystal chemistry.

Mineralogy; Study of Physical and Chemical properties of Important common rock-forming and ores.

Text

H.H. Read Rutley's Elements of Mineralogy

Paper-III (Practicals)

Max. Marks : 60
Time : 3½ Hours
Field Work : 10
Lab Record : 5
Experiment : 45

Study of Physiographic models and their interpretation. Use of clinometer-compass. Drawing of clinographic projections of the crystal models referred to theory paper identification of minerals and ores in hand specimen.

GEOGRAPHY**Outlines of Test**

	Marks	Time
Paper-I Physical Basis of Geography	B.A. B.Sc.	3 Hours.
	60 90	

Paper-II Map Work and Practical	40	60	
Section-I Map Work (Written Paper)	20	30	3 Hours
Section-II Field Work and Surey	20	30	3 Hours
(a) Surveying	10	15	
(b) Practical record	5	7½	
(c) Viva-Voce	5	7½	

Syllabus and Courses of Reading

	Marks	Time
Paper-I Physical Basis of Geography	B.A. B.Sc.	
	60 90	3 Hours.

Important Note :The question-paper shall contain Ten questions; Two in each unit and the candidates are required to attempt Five questions selecting One from each unit. All the questions will carry equal marks.

Unit-I

- i) Interior of the Earth-The seismological evidence.
- ii) The distribution of land and water on the Earth surface. Tetrahedral theory and the theory of Continental Drift.
- iii) The theory of isostasy; the theory of geosynclines and the origin of mountains.

Unit-II

- i) The Normal Cycle of Erosion, and the role of structure, process and stage in landform transformation.
- ii) Landforms associated with winds, glaciers, under-ground water and ocean waves.

Unit-III

- (i) Vertical layers of the atmosphere : Their nature and characteristics.
- (ii) Insolation, Air Temperature and precipitation- a detailed study.
- (iii) Air Pressure and winds.

Unit-IV

- (i) Air Masses and Fronts- the origin and nature of temperate and tropical cyclones; the modern theories regarding the origin of South Asian Monsoon.
- (ii) atmospheric pollution-its causes and control.

Unit-V

- (i) Relief of the ocean floors.
- (ii) Ocean deposits; their nature, classification and world distribution.
- (iii) The nature and origin of coral reefs and atolls.

	Max. Marks		Time
Paper-II Map Work and Practical	B.A.	B.Sc.	
	40	60	
Section-I Map Work (Written)	20	30	3 Hours

Important Note : There will be six questions in all. Two questions in each unit. The candidates are required to attempt three questions selecting one from each unit.

Unit-I

Representation of topographical data; Drawing of contours from given data; interpolation of contours; intervisibility; gradient and Drawing of profiles.

Unit-II

Representation of population, economic and climatic data; Use of dot method graduation circle, isometric lines (isotherm, isobar, isohyet), use of isopleth lines, and choropleth method for showing density of population, relative merits and demerits of each method.

Unit-III

Statistical diagrams; Line graph; bar graph; compound line and bar graphs; pie diagrams; rectangular diagram; climograph; hythergraph; construction and significance of these diagrams.

Section-II Field Work and Surveying (Practical/Laboratory work)	Max. Mark		Time
	B.A.	B.Sc.	
	20	30	3 Hours
(i) Surveying	10	15	
(ii) Practical record	5	7½	
(iii) Viva-voce	5	7½	

Surveying with the help of chain and tape.

- (i) Significance of surveying and relevance of surveying in geographic studies.
- (ii) Surveying with the help of chain and tape (open and closed traverses and sketch by triangulation) six exercises.

- Note :*
- i) *The practical work done by the candidates during the course of study, duly signed by the teacher, will be evaluated at the time of practical examination.*
 - ii) *Accuracy and neatness in drafting in practical work will be emphasized, irrespective of whether it is done in ink or pencil.*

HEALTH & PHYSICAL EDUCATION

Max. Marks : 100

Theory : 60 Practical : 40

Note : Ten question are to be set, five questions in Part-A and five questions in Part-B. Students are required to attempt five questions, at least two questions from each Part. All questions carry equal marks. The part of the questions should be clearly indicated alongwith its marks. The question-paper will be set both in English as well as set in Hindi language.

Theory (Part-A)

Max. Marks : 60

Time : 3 Hours.

1. Leadership in Physical Education and Importance.
2. Qualities and qualifications of a Physical Education Teacher.
3. History of Ancient and Modern Olympic Games with special reference to India.
4. Basic Methods-Types of teaching, in value and preparation of lesson plan.
5. Structure, function and growth, Movement (Exercise) basis of growth.
6. Organisation and concept of tournaments:
 - a) Knock out
 - b) League
7. Yoga, is brief history and its importance in daily life.

(Part-B)

8. Health Instruction for daily living.

9. Nutritional L. constituent of foods and their sources Balanced diet.
10. Communicable diseases : Modes of transmission, control, and preventions:
 a) Malaria b) Influenza c) Dysentery d) Typhoid
11. Importance of Rest, Sleep and relaxation in Healthful living, factors influencing physical fitness.

Practical

Max. Marks : 40

Group-A Each student shall opt for three athletic events-one out of the three group (Track, Jump and Throw) :

Each students shall opt for one game each out of the following groups (B,C) :

Group-A	Group-B	Group-C
1. One Track Event	1. Hockey	1. Badminton
2. One Jump Event	2. Football	2. Table Tennis
3. One Throw Event	3. Cricket	3. Lawn-Tennis
	4. Gymnastics	4. Yoga*
	5. Swimming	5. Kabbadi
	6. Boxing	6. Kho-Kho
	7. Basket-Ball	7. Wrestling
	8. Volley-ball	

Offer will be assessed

Group-A	Group-B	Group-C
1. Track Event	1. Hockey	1. Badminton
2. Field Event	1. Football	2. Table Tennis
3. (Jump & Throw)	3. Cricket	3. Lawn-Tennis
	4. Volley-ball	4. Yoga*
	5. Basket-ball	5. Kabbadi
	6. Gymnastic	6. Kho-Kho
	7. Swimming	7. Wrestling
	8. Boxing	

*In Yoga, the performance of two asanas and one Kriya will be assessed.

Books Recommended

1. Kandelsh, M.L. & Sangal, M.S. : Principles and Hisotry of Physical Education (Parkash Brothers, 1978).
2. Charles, A.Bacher : Foundations of Physical Education (The C.V. Mosby company, 1960).
3. Luj Ahmed Khan : History of Physical Education (Bhargava Press, Varanasi).
4. Williams : The Principles of Physical Education (W.B. Saunders Company, Philadelphia and London).
5. Harold, M.Barrow : Man and His Movement Principles of Hisotry of Physical Education (Lea & Febiger) Philadelphia, 1971).
6. Kavalynand : Asanas Kavelya Dhan, Lonavola.

OFFICE MANAGEMENT**Office Administration**

Max. Marks : 100
Time : 3 Hours

- I **Introduction** : The relation of the office to the general business. The modern concept of office management, Objectives and functions of office, Organisation of a Modern Office.
- II **Office Manager** : Qualifications and qualities of office manager. The authorities and responsibilities of an office manager. The status of office manager in the total organisation.
- III **Office Accommodation** : Selection of the site, Office layout, Environment and working condition.
- IV **Office Communication** : Various means of office communication, their merits and demerits, selection of the means of communication.

- V **Paper Work and Office Record** : The design and control of office forms, flow of paper work filing, indexing, Retention and Weeding out.
- VI **Supervision and Motivation** : Office Supervision, duties and responsibilities of the supervisory staff, Financial and non-financial incentives to the subordinates.
- VII **Office and Machine** : Use of labour saving appliances.
- VIII **Planning and Scheduling Office Works** : Office routine and office manual.
- IX **Control over stationery, forms and office supplies**

ARCHAEOLOGY, MUSEUM AND TOURISM

Paper-I Archaeology

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

Part-I (Theory Paper)

Max. Marks : 75

Time : 3 Hours

Note : In all ten questions shall be set in this paper with at least three from each section. The candidates shall be required to attempt in all five questions with at least one from each section. All questions shall carry equal marks.

Syllabus and Courses of Reading

- (a) Archaeology and its importance, Archaeological Data and Dating.
- (b) Exploration of Ancient Sites, Excavation.
- (c) Culture of the Prehistoric man, Beginning of Settled Life, Dawn of Civilization.

Books Recommended

1. Puri, B.N. Puratattva Vijana (Parkshan Kendra, Lucknow, 1980).
2. Singh, M.M. Puratattva Ki Roop Rekha (Purajyoty Parkashan, Patna, 1973).
3. Majumdar, D.N. & Sharan, Gopal Pragaitihasa (Asia Publishing House, Bombay, 1962).

3. Majumdar, D.N. & Sharan, Gopal Pragaitihasa (Asia Publishing House, Bombay, 1962).
4. Sankalia, H.D. Introduction to Archaeology (Deccan College, Pune, 1965).
5. Childe Gordon Short Introduction to Archaeology (Collier, New York, 1982).

Paper-II (Practical Work) 25 Marks

(In the Archaeological Excavations)

COMMERCIAL ART, DESIGNING AND PAINTING

Outlines of Test

		Max. Marks	Time
Paper-I	Theory	25	3 Hours
Paper-II	(Practical) Simple Sketching	20	6 Hours
Paper-III	(Practical) Graphic Designing	20	6 Hours
Paper-IV	(Practical) Lay-out	20	6 Hours
	Sessional Work	15	

Syllabus and Courses of Reading

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

Note : In all ten questions shall be set in this paper out of which the candidates shall be required to attempt any five. All questions carry equal marks. The questions are to be set so as to test the broad survey of the topics and not minute details.

Theory of Design, Essentials of Design, kinds of design. Theory of Colour, Type and Lettering terminology, Elements of layout.

Paper-II (Practical) Simple Sketching Max. Marks : 20
Time : 6 Hours

(i) Drawing from Nature : Landscape with figures.

(ii) Drawing from still objects : four subjects with drapery.

Size : 10"X15"

Paper-III (Practical) Graphic Design Max. Marks : 20
Time : 6 Hours

Design of Logo Monogram and letter head block and white and coloured.

Paper-IV (Practical) Layout Max. Marks : 20
Time : 6 Hours

Drawing of Simple Black & White layout without any slogan.

Size : Not more than 10"X15"

Optional Subject (Any one of the following)

i) Photography ii) Batik iii) Screen Printing

Note : No examination, only submission of work.

Sessional Work 15 Marks

(i) Sketches 100

(ii) Graphic Design 5

(iii) Layout 4

(iv) Optional Subject, any One (Submission of two works)

Note : All sessional works to be assigned by the concerned teacher and maintained by the students duly assigned by the concerned teacher and also private candidates are required sessional work duly attested by the teacher concerned.

RURAL INDUSTRIALIZATION

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

Note : The students are required to attempt five questions in all selecting atleast one question from each part.

Rural industrialization nature, scope and significance.

Section-I

Occupational structure in India with special reference to rural economy in Haryana. Industrialization and Economic Development, complementary between and Agricultural sectors.

Criteria for distinguishing between Large, Medium, Small and Tiny industrial units in India. Demarcation of Rural, Semi-Urban, Urban and Metropolitan areas in India.

Classification of small scale and cottage industries in India, different types of rural Industries-Need based. Raw material based and skill-based. Tradition and trends of rural industrialization in India.

Section-II

Role of Rural Industrialization in India with special reference to Haryana, Requisites for Rural Industrialization, Performance of Rural Industries under Five Year Plans. Structure of Rural Society small and marginal farmers, landless labourers, rural artisans and other weaker sections.

Section-III

Rural Industrialization in China and Japan, lessons for India.

Practical : Students are expected to visit tiny cottage industrial units in rural areas. The development staff from banks and Industries Department should be invited in the college to address the students about the latest developments in the subject.

LOCAL SELF GOVERNMENT

Urban Local Government in India

Max. Marks : 100

Time : 3 Hours

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

1. Meaning of Local Government, distinction between local government and local self government and importance of local government in modern democratic states.
2. Evolution of urban government in India.
3. The structure of urban local government. Municipal Corporations, Municipalities.
4. The organisation of deliberative and executive wing and problem of their relationship.
5. Power and functions of urban local government units.
6. Personnel management : the problems of their recruitment, training and promotion.

7. Finance : source of income, financial administration and the problems of their augmentation.
8. State control over urban local government institutions.
9. Problems of urban local government.
10. Future of urban local government in India.

MARKETING

Principles of Marketing

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** **Introduction** : Modern Marketing concept; approaches to the study of marketing; Functions of marketing managerial and General Concept of Marketing Mix and Market Segmentation; Bases of Market segmentation.
- Unit-II** **Product Decision** : Concept of product; consumer goods Vs Industrial goods and their marketing characteristics. Product line and product mix, Branding Packaging Product Life Cycle.
- Unit-III** **Price Decisions** : Importance of price decision; Pricing objectives; Factors influencing pricing decisions; nature of competition and pricing; Different pricing policies.
- Unit-IV** **Distribution Decision** : Concept of distribution Physical distribution; elements of Physical distribution, channels of distribution; marketing institutions their role in Marketing.
Functions of merchant and agent middlemen; factors affecting the choice of the channels of distribution.
- Unit-V** **Promotion Decisions** : Concept of promotion, objectives of promotion; importance of promotion; communication and promotions; promotional tools and promotion mix.

LABOUR WELFARE**Principles and Practice of Personnel Management**

Max. Marks : 100

Time : 3 Hours

- I **Introduction to Personnel function** : nature and functions of personnel functions, functions for personnels, the position of the personnel administration in the organisation, personnel philosophy and personnel Policies.
- II **Employment Function** : Man power planning Recruitment, Selection and placement of workers, promotion transfers demotions and discharge, training and development.
- III **Wages and Salary administration** : Wage levels and relative worth of the job-analysis and job-evaluation time and motion studies, fatigue studies, incentive methods of wages payment and their modes of employee remuneration, fringe benefits, individual and group incentive non-financial incentives.
- IV **Supervision of Personnel** : Motivation communication morale and discipline, the worker's job-satisfaction, group dynamics management of change employee counselling.
- V Development of personnel management in India, personal management practices in Indian industries.
- VI **Elements of Industrial Psychology** : Foundation of Industrial Psychology, individual difference, Human relation in Industry.
- VII. Personnel Audit and Research.

**FRUIT AND VEGETABLE PRESERVATION APPLIED
NUTRITION, BAKERY, TAILORING & HOISERY****Paper-I Food and Vegetable Preservation**

M.M. B.A./B.Sc. (30/45)

Time : 3 Hours.

Syllabus and Courses of Reading

- (a) Commercially important fruit and vegetable; climate and geography of the zones of commercially important Fruit and vegetable nutritional significance of fruits and vegetable.

- (b) Post harvest changes in fruit and vegetable. Micro organism and their role in fruit and vegetable decay. Classification of micro organism and their general characteristics.
- (c) Important physico chemical principles used for fruits and vegetables preservation. Soft and hardwater and methods of softening and purification of water. Nutritional losses during processing and storage of fruits and vegetables and their products.

Paper-II Food & Vegetable Processing & Storage

M.M. B.A./B.Sc. (30/45)

Time : 3 Hours.

Syllabus and Courses of Reading

- (a) Distinction between processing and preservation. Scope of processing preserving and storage of fruits and Vegetables in the country. Properties of pure processed fruits and vegetables.
- (b) Principles and techniques of frying or dehydration. Freezing of fruits and vegetables; irradiation techniques for preservation.
- (c) Principles of gel formation. Preparation of jams, jellies, marmalades and preserve; candies and crystalized fruits, Manufacture of sauce, chutney, tomato, puree, tomato paste etc. Non-alcoholic fruit and synthetic beverages. Preparation of wine and vinegar.
- (d) Techniques of canning and bottling and marketing of canned and bottled products. Utilization of fruits and vegetable waste.
- (e) Plant Sanitation and hygiene. Standardization and quality control. Detection of common adulteration in fruits and vegetables products. Prevention of food adulteration-legislative control.
- (f) Plant Sanitation and hygiene. Standardization and quality control. Detection of common adulteration in fruits and vegetables products. Prevention of food adulteration-legislative control.

Paper-III Food & Vegetable Preservation

M.M. : B.A./B.Sc. (40/60)

(Duration : 4 Hours)

(Four hours per week distribution over two days)

Practicals

1. Operation of Scanner and its various parts.

2. Handling of Microscope, refractrometer, vacuum guaze, pH meter etc. Determination of pH, microbial count etc.
3. Preparation and method of canning of various fruits and vegetables grown in India.
4. Preparation and preservation of various 'fruit beverages' juices, nectors and acrated drinks.
5. Preparation and preservation of squashes, crush, syrup, barley water, cordials etc.
6. Preparation of jams, jellies, marmalades from different fruits.
7. Preparation of tomato juice, puree, paste and ketchup.
8. Preparation of pickles, chutinies and sauces.
9. Dehydration and drying of fruits and vegetables.
10. Preparation of wine and vinegars.

INSURANCE AND ACTURIAL SCIENCE

Elements of Insurance

Max. Marks : 100

Time : 3 Hours

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

Unit-I Elements of Modern Commerce : Scope of commerce-Home Trades and Foreign Trade. Bank and Instrument of Credit. Insurance and Role of Insurance in Economic Activities.

Unit-II Theory of Insurance : Selection of Risk, Factors affecting Risks, Type of Risk. Risk control-scope and functions of Insurance in covering Risks, Principles of Insurance, Insurable Interest, Origin, History and Development of Insurance.

Unit-III Life Assurance : Principles and practice of life assurance Life assurance contracts their nature and characteristics. Parties to the contract-their rights and duties, conditions and terms of policy and effects of non-compliance thereof Re-assurance, assignments claims. Practice connection with collection of premiums, revivals

loans, surrenders, Claims bonuses and annuity payments, Mortality tables their general nature premium Rates, life assurance Fund.

Unit-IV Fire Insurance : The function of fire insurance. The basic principles of insurance contracts. Parties to the contracts. Fire policy-conditions and their meaning, Assignment of Policy, Subrogation, contribution, Average Claims Proximate causes. Onus of proof Abandonment and reinstatement Average clause and loss portionment Emergency risk, Insurance Re-insurance, Fire prevention.

Unit-V Marine Insurance : General Principles, Insurance interest and value disclosure, Marine insurance policy and its conditions, Premium Double insurance. Assignment of policy Warranties. Abandonment, partial loss and particular charges salvage. Total losses and measures of indemnity. Subrogation General Average Leoyd's Organisation. An elementary knowledge of crop accident and motor insurance.

ELECTRONICS

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

Paper-I Theory

Set 10 questions, 6 to be attempted.

Section-A

At least two to be attempted out of 4 questions. (7 Marks each)

Section-B

At least three to be attempted out of 5 questions. (7 Marks each)

Section-C

Compulsory conceptual question on section A & B (10 Marks)
B consisting of 5-10 short parts where answer should not be in Yes/No.

Paper-II Theory

Set 10 questions, 6 to be attempted.

Section-A

At least one to be attempted out of 3 questions. (7 Marks each)

Section-B

At least two to be attempted out of 3 questions. (7 Marks each)

Section-C

At least two to be attempted out of 3 questions. (7 Marks each)

Section-D

Compulsory conceptual question on section A,B (10 Marks)
& C consisting of 5-10 short parts where answer
should not be in Yes/No.

Paper-III Practicals

Marks	Time
60	(3+3 hours on two days)
Experiments : Two	20+20=40 marks
Laboratory Records	=8 marks
Viva-Voce	6+6=12 marks

Syllabus and Courses of Reading**Paper-I Theory**

Max. Marks : 45

Time : 3 Hours

A. Various types of resistors, capacitors, inductors and transformers used in electronic circuits, printed circuits boards, Ideal diode, Vacuum diodes. V-I characteristics, Simple diode circuit, incremental resistance semiconductors, doped semi conductors, current in semi conductors, junction, diode, circuit, models, for a junction diode, rectifier circuits, full wave rectifier bridge rectifier filter circuits, voltage multiplier circuit, clipping circuits, shunt clipper, clamping circuits, Log antilog circuits, Zener diode.

B. Active Devices and Circuits :

Triodes, R.C. coupled triode amplifier, Pentode, Junction Transistor, basic, transistor, amplifier transistor, amplifier configurations, transistors models, specification of amplifiers, type of amplifiers, current gain, input resistance, voltage gain, out resistance.

Biassing and coupling networks, single battery bias arrangements two stage RC coupled amplifiers, low frequency response of RC coupled amplifiers, transformers coupling, class B push amplifier.

Distortion, frequency response, phase response, noise in amplifiers.

Junction Field Effect transistor, Metal-oxide semiconductor field effect transistor.

Cathode-ray oscillograph, Electronic-Volt Ohm meter.

Paper-II Theory

Max. Marks : 45

Time : 3 Hours

- A.** Analysis of networks with-d-c and, time varying sources, ideal voltage source, open circuit voltage. Short-circuit current Thevenin's and Norton's theorems and equivalents network analysis by Kirchhoff's law node method and loop method.

Sinusoidal voltage applied across a combination of circuit elements, low-pass high-pass and band pass filter, step, impulse and ramp, functions differentiating and integrating circuits, maximum power transfer decibel.

B. Two-port networks :

Characterisation of two-ports impedance, admittance and hybrid parameters, transformation of parameters, dependent sources voltage and current amplifiers, ideal transformer, reciprocity, impedance convertor.

C. Elements of Digital Electronics :

Binary numbers, decimal to binary conversion, binary addition subtraction, multiplication and division, binary coded decimal numbers, weighted codes.

Basic logic gates AND OR and NOT operation.

References :

1. Electronics For Scientists And Engineers By Vishwanathan, Mehta and Rajaraman (Prentice-Hall India).
2. Electronic Fundamentals and Applications (5 edition by John, D.Ryder (Prentice-Hall, India).
3. Introduction to electronics by L.K. Brauson (Prentice-Hall, India).
4. Digital Principles and Application by Malvino and Leach (Tata-McGraw Hill).
5. Electronic Devices and Circuits by Motershed.

6. Electronic Devices and circuits-Discrete and Integrated by Y.N. Bapat.

PRACTICALS

Section-A

1. Cathode-ray oscillograph and its uses. Measurements of :
(i) Voltage (ii) time period of a Sinusoidal signal and (iii) phase-shift.
2. Electronic volt-ohm meter. Measurement of peak, average and r.m.s. values of a given signal, effect of wave form and signal frequency.
3. Solid State rectifier, Study of characteristic under forward and reverse bias conditions.
4. Junction transistor characteristics for common-base configuration ($V_c I_c$ and $V_e I_e$) and to calculate transistor parameter from graph.
5. Junction transistor parameters. To measure common-emitter h-parameters using various circuit arrangements.
6. Grounded emitter transistor amplifier. To plot voltage gain Current gain and power gain as a function of load resistance.
7. Transistor amplifier configuration. Comparison of a common base, common emitter and common collector configuration of a given transistor.
8. Transistor bias stabilisation, familiarization with methods for stabilisation of a transistor.
9. Study of half wave and full wave rectifier, Mesurement of ripple factor.
10. Measurement of resistance, using a multimeter. Fabrication of potential divider circuit.

Section-B

1. Characteristics of a diode, for various filament voltages.
2. Characteristics of a triode, measurements of parameters from graph.
3. Junction filed effect transition characteristic. To plot I_D - V_D and I_D characteristics of JEET.
4. Class B Transistor push pull amplifier. Study of conduction leading to maximum output with acceptable distortion.

5. R.C. transients. To study the effect of R.C. time constant when various driving voltages (square, triangular and rectified sine wave) are applied across a series R.C. circuit.
6. Clamping circuits. To study the performance of a diode clipper under various operation.
7. Clamping circuits. To study the various types of clamping circuits and sketch the output wave forms using a calibrated oscilloscope.
8. To design a basic logic gate and verify its truth table.
9. To design a battery eliminator having the given specification.
10. To design a transistor voltage amplifier having the given specifications.

Note: 1. Student should perform atleast five experiments from each section.

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

3. 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. Events (Prentice-Hall, India)
2. Methods of experimental Physics Vol. 2 Electronic Methods (Academic Press).

B.Sc. 1st Year (Computer Science)

B.A. 1st Year (Computer Applications)

		Max. Marks	Time
Paper-I	'Introduction to Programming'	45	3 Hrs.
Paper-II	Introduction to Computer Organisation	45	3 Hrs.
Paper-III	Practical & Viva-Voce	60	6 Hrs.
			(Two sittings)
Paper-I	Introduction to Programming	Max. Marks : 45	Time : 3 Hours

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

Objective of the Course

- i) To systematically analyse a given problem and formulate an algorithm for solving it on a computer.
- ii) To write Programs in good style, debug and document them. The programming languages FORTRAN & PASCAL will be taught concurrently with algorithm development.

Course Contents

Unit-I Introduction to Computers : an overview of functioning of computer system, Stored-program execution, components of computer system, Input/Output & Auxiliary Storage devices, machine, assembly & High-level language, Assembler, compiler & Interpreter. Times sharing real time and batch processing, off-line and on-line processing. Basic concept of Simulation.

Unit-II Algorithm Development : Problem analysis, Flow charts, Decision tables, Stepwise refinement with illustration. Fields, Records & Files.

Unit-III Programming in FORTRAN : Representation of integers, reals, characters. Constants and variables, arithmetic expressions and their evaluation using rules of heirarchy. Assignment statement logical constants, variables and expressions.

Unit-IV Control Structures : Sequencing, alternation iteration, Arrays, manipulating vectors and matrices. Subroutines and linkage. Data management. Simple I/O statements. Documentation, debugging. Storage and execution.

Unit-V Programming in PASCAL : Introduction to Pascal History of PASCAL : Structure of a Pascal program; Desirable program characteristics; Pascal Fundamentals; Pascal character set Reserved words, Identifiers, Standard identifier, Numbers, Strings, Data Types, constants, Variables, Expressions, Statements, Procedures & Functions.

Simple-Type : Data-integer type data, real-type data, character-type data, Boolean-type Data : Standard constants, Standard functions, Evaluation of expressions using rules of hierarcy : Assignment Statement.

Data Input and Output : Input & Output Files, Read Statement, Read in Statement, Eoln and Eof Functions, Write Statement, Written Statement, Formatted Output.

Planning a Pascal program, writing a pascal program, entering the program into the computer, compiling and executing the program, Error Diagnostics, Logical debugging.

Unit-VI Control Structures : WHILE-DO, REPEAT-UNTIL FOR DO, Nested Control, IF, CASE Structures, GO TO Statement.

Procedures & Functions : Procedures, Scope of Identifiers, parameters, Functions, Recursion.

User-defined Simple-data-type : Enumerated - type-data, subrange-type-data, declaration, utilizing user-defined data.

Arrays : One Dimensional Arrays, multidimensional Arrays, Operations with Entire Arrays, Packed arrays, "Strings & String, Variables, Variable-Length Array parameters.

Records : Defining a Records, Processing a record, WITH structure, Variant Records.

Suggested Books :

1. Bayer, B.B. Flowcharting, Programming, Software Designing and Computer problem Solving (John Wiley)
2. Wirth, N. Systematic Programming An Introduction (Prentice Hall).
3. Knuth, D.E. Art of computer programming (Addition Wesley).
4. Deo, N. System Simulation With Digital Computer (PHI).
5. Rajaraman, V. Fundamental of Computer (PHI)
6. Rajaraman, V. Computer Programming in FORTRAN 77 (PHI).
7. Dhaliwal, R.S., Kumar, S. and Gupta, S.K. Programming with FORTRAN 77 (Wiley Eastern Ltd.)
8. Gottfried, Byron, S. Programming with PASCAL (Mc Graw Hill Book Company).

9. Grover, P.S. PASCAL Programming Fundamentals
(Allied Publishing).

Paper-II Introduction to Computer Organisation

Max. Marks : 45

Time : 3 Hours

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

Objectives of the Course

- (i) To understand the detailed working of computer's sub-units at a logical level and the mechanism of transfer of information between the units of a computer.
- (ii) To understand the impact of programming requirement on logic design of computers.

Course Contents

Unit-I Number Systems : 1's and 2's complements, Binary Arithmetic, conversion from one number system to another number system.

Representation of Information : Codes Hollerith, weighted, self complementing, cyclic code ASCII (7 and 8 bits), EBCDIC, redundant coding for error detection and correction.

Unit-II Basic Logic Design : Truth Tables, Boolean Algebra, Combinatorial circuit design with AND, OR, NOT, NAND, NOR, XOR, gates and multiplexers, Encoders, decoders, demultiplexers, Flip Flops; SR JK. Master Slave. D Type, and T-Type, shift registers and counter's simple arithmetics and logic circuits (Half adder, full adder, Subtractor & comparator), Sequential circuits.

Unit-III Memory Devices : Random access : Magnetic core RAM, Semiconductor RAM Sequential access : Magnetic tap and Direct access : Magnetic disk, Magnetic drum, floppy disk.

Unit-IV CPU Architecture : Instruction formate, addressing modes : direct indirect, immediate, relative, indexed, Addressing formats : Zero, single double, register etc. Instruction set selection. Software hardware, trade offs.

Instruction execution. Fetch and execution cycles. Microprogramming concept. Speed mismatch between CPU and Memory and methods of alleviating it.

Unit-V I/O architecture : Properties of Simple I/O devices and their controllers. Transfer of information between I/O devices and CPU Memory. Program controlled and interrupt controlled information transfer. DMA control, I/O channels and peripheral processors.

Unit-VI Case Study of Mini/Micro computer, FORTRAN simulator of a hypothetical computer system.

Suggested Books

1. Mano, M : Digital and computer Design (Prentice Hall)
2. Rajaraman, V. and Radhakrishanan, T. An Introduction to Digital Computer Design (PHI).
3. Leventhal, L.A. : Introduction to microprocessors : Software, Hardware, Programming (PHI).
4. Malvino, A.P. Digital Computer Electronics (Tata Mc Graw Hill).

Paper-III Practical and Viva-voce Max. Marks : 60

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

First Sitting : Programs in FORTRAN

Second Sitting : Programs in PASCAL

Distribution of Marks

PASCAL Program : 20 Marks

FORTRAN Program : 20 Marks

Viva-Voce Program : 15 Marks

Practical Record : 05 Marks

Note : Each student must write at least 15 programs in FORTRAN & 15 programs in PASCAL during the academic session.

ANTHROPOLOGY

Outlines of Test

	Max. Marks	Time
Paper-I (Theory) Physical Anthropology	50	3 Hrs.
Paper-II (Theory) Pre-historic Archaeology	50	3 Hrs.
Paper-III(Practical)	50	3 Hrs.

N.B. : 20% marks are reserved for laboratory records and viva-voce in Paper-III.

Syllabus and Courses of Reading

Paper-I Theory

Max. Marks : 50

Time : 3 Hours

PHYSICAL ANTHROPOLOGY

1. Definition, aims and scope of Anthropology and its various branches.
 - a) History and scope of Physical Anthropology
 - b) Relation with other disciplines
 - c) Major areas of Physical Anthropology
 - d) Organic evolution evidence, theories and mechanism.
2. Taxonomy
 - a) Primates : Definition and relationship with other mammals.
 - b) Classification, distribution and evolutionary trends in Primates.
 - c) Man's place in animal kingdom.
3. Comparison of salient features in man and higher Primates.
4. Primate locomotion, arboreal and terrestrial adaptation.

Books Recommended :

1. B.M. Dass Outlines of Physical Anthropology, Kitab Mahal, Allahabad.
2. G.A. Harrison et. al. Human Biology, Oxford University Press.
3. John Buettner Junisch, Origins of Man, Wiley Eastern Pvt. Ltd.
4. Hayland : Human Evolution.
5. G.W. Lasker : Physical Anthropology.

PRE-HISTORIC ARCHAEOLOGY

Paper-II Theory

Max. Marks : 50

Time : 3 Hours

1. Introduction of Pre-historic Archaeology : aims and objectives
2. Principles of Pre-historic Archaeology.
3. Dating methods (Relative and absolute) and their importance.
4. Significance of pleistocene period.
5. Tool making techniques.
6. Old stonages (Lower, Middle and Upper Paleolithic) Mesolithic and neolithic culture of Europe and India.

Books Recommended :

1. D.K. Bhattacharya : Emergence of Culture in Europe, B.R. publishing Corp.
2. D.K. Bhattacharya : Pre-historic Archaeology, Hindustan Publishing Co.
3. M.C. Burkitt : The Old Stonage, Rupa & Co. New Delhi.
4. H.D. Sankalia : Pre-history of India, Munshi Ram and Manohar Lal Publishing Pvt. Ltd.
5. H.D. Sankalia : Pre-history and Proto-history of India and Pakistan, Deccan College, Poona.

Paper-III (Practical)

Max. Marks : 50

Time : 3 Hours

(Osteology and Comparative Anatomy)

1. Identification and description of bones of the Human skelton.
2. Determination of age and sex from Human Skull.
3. Comparative anatomy of Man, Ape and Monkeys.
4. Students may be taken for field training as and when possible for identification of various Archaeological/Palaeontological sites, and to muscans for identification on stone tools and foosils.

Books Recommended :

1. Gray's Anatomy : P.L. Williams
2. Human Astecology : B.D. Chaurasia

COMMERCE**Paper-I Element of Commerce**

Max. Marks : 100

Time : 3 Hours

1. Concept of Trade, Industry, Profession and Commerce.
2. Home and Foreign Trade.
3. Banking transactions and Negotiable Instruments.
4. Elements of Life, Fire and Marine Instruments.
5. Business Organisation : Principles and Forms of organisation ; sole Trader, Partnership Firms, Joint Stock Companies, Co-operative Societies, Government Companies, Public Enterprise, Joint Sectors.
6. Channels of Distribution : Wholesalers and Retailers, Public Distribution System.
7. Elements of Salesmanship and Advertising.
8. Modes of Transport : Brief outlines of Rail, Road, Air and Water Transport in India.

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 of 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 Part-I, II & III B.A. Examination 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.
	C.A. II Operating System 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	
<hr/>			
B.A. (Part-II)	C.A.III. Data Base-Management Systems.	35	3 hrs.
	C.A. 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	The-Job Training of 4 weeks duration during autumn & winter breaks	15	
<hr/>			
B.A. (Part-III)	C.A.V Computer Aided Drafting & Advanced topics in Computer.	35	3 hrs.
Practical Examination	C.A.VI Project Report	15 50	4 hrs.

(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 question paper will contain questions, test-data, if required format in which results are to be produced by the students and the documents the examiners are expected to submit.

An answer-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 Application) Part-I
Vocational Course

Computer Fundamentals & Introduction to IBM PC.

Paper CA-I

Max. Marks Time :

B.Com :70 3 hrs.

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 atleast two questions from each unit.

Section-A

What is a computer an introduction. Uses of computers in modern society e.g. weather forecasting, census, oil exploration, speech recognition, banking, publishing, accounting, research etc.

Information concepts and processing evolution of information processing-data, information, language and communication.

Computer arithmetic and number systems ASCII & EBCDIC character sets.

Elements of a computer processing system-hardware software-computer capabilities and limitations. Concept of files and directories.

Hardware features and use-CPU/I/O devices. Storage devices and media.

Introduction to networking, multiprocessing, time sharing, multitasking real time computing.

Variety of hardware systems and features. Various types of computers available in market, Micro, Mini and main frames, Supercomputers.

Section-B

Evolution of personal computers. Commodore, Atari, Apple, IBM PC Base block diagram of computer. Difference between personal computer and main frames-Simple operating system, Easy to use, Less memory, Dedicated, normally single user.

Introduction to microprocessors and associated components. Timers, display controllers, DMA controllers.

Block diagram of IBM PC Introduction to 8086 and 8088. Functional description of various modules and cards.

Boot process in IBM PC. System files, Self test.

Various types of displays and other peripherals used in IBM PCs. Disk Operating System-introduction, Batch files, Config files. COM, EXE, SYS, BIN and TXT files. Introduction to programming in BASIC. Development of Programs in GBASIC. Use of graphics facilities using Basic.

Diagnostics for IBM PC. Use of Norton Utilities and other packages for undeleting a file and other system maintenance jobs.

Advanced version of IBM PCs and compatibles.

Paper CA-II Operating System & Business Data Processing

Max. Marks	Time :
B.Com : 70	3 Hrs.
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 atleast two questions from each unit.

Section-A

Introduction to various categories of softwares Operating system and its functions. Interaction of operating system with hardware and user programs.

Various components of operating system with reference to DOS. Single USER operating system. Task loader. Memory management.

File management. Directory structure in DOS. Moving renaming, copying, deleting and undeleting files under DOS.

Device Management. Control of various devices. Device drivers. Interrupt driven and poll driven data transfers. Need of software and hardware protocols.

BIOS, DOS, DOS internal and external commands. Use of DOS commands, Taking and restoring backups. BIOS and DOS interrupts.

Multifuser, Multitasking, multiprocessing and real time operating systems. Introduction to Memory management techniques.

File systems, File management. Process management and scheduling.

Special requirements and facilities for multiprocessing environment.

Examples of multiprocessing operating systems. Introduction to UNIX. USER Management in UNIX. UNIX commands.

Section-B

Introduction to data processing, records and file data collection, preparation, verification, editing and checking.

Overview of business functions. Use of Computer system for business applications.

Spread sheets. Macros. Use of spread sheets in Business.

Business files. Introduction to data structures. Elements Fields and records. Classification of files. Master files. Transection files.

Distributed processing. Various facilities for business computing. Introduction to database.

Practical Examination

Ist Sitting :

Max. Marks.

B.Com. : 15

B.A. : 7.5

Time : 4 Hours.

Based on WINDOES/MS-DOS commands/NORTRAN Utilities, creating batch files, Modifying configuration system files creating RAM disk, preparation and printing of simple documentation using word processing software MS WORD.

Ist Sitting :

Max. Marks.

B.Com. : 15

B.A. : 7.5

Time : 4 Hours.

Based on : (i) Q BASIC Programming Language and its graphic facilities.

(ii) Use of Spread-sheet Package for payroll, balance sheet and other business applications. Design of packages using spread-sheet macros.

On-The-Job Training Report

Max. Marks.

B.Com. : 30

B.A. : 15

Time : 4 weeks duration

Based on PC Office-Automation software (MS-OFFICE), QBASIC Programming Language, Business System like Production/Inventory Control/Purchase and Sales Order Processing/Financial Accounting/Examination Processing/Library Automation etc.

Notes : (i) The candidate will be required to prosecute Job Training in an Industrial environment or software development house or any other suitable place approved by the Principal of the concerned college on the recommendation of the teacher concerned in Computer Science & Applications of the concerned College. On the Job Training Report of First year must be submitted to the Controller of Examinations through the Principal of the College concerned atleast one month before the commencement of first year annual examination.

On-the-job training should be organised during Autumn and Winter Breaks when the students are free from regular classes and can concentrate on the training.

(ii) Practical work by the students will start by a visit to their computer lab. Various components of a computer and printer alongwith their usage should be explained to the students by the teacher during this visit.

Internal cards of an IBM compatible PC should be shown physically to the students and their purpose should be explained to them. Nomenclature Com. 1, Com. 2 etc. should be introduced. Diagnostics on IBM PC may be explained and used.

Controlling PC hardware using Basic programs should be covered.

Practical work will also include : Development of a batch file to install a software from floppy to disk. Development of a batch file to manage various packages on the disk. Detection of viruses and protection on IBM PC. Using shell scripts for elementary data processing.

Analysis of a business system on paper. Using spread sheet for pay roll, balance sheet and other business applications, design of packages using spread-sheet macros.

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 Paper	Time	Max. Marks
Theory Paper-I	Tourism Business (Group discussion and assignment)	3 hrs.	35 }
			15 }
			50
Theory Paper-II	Tourism Products (Group discussion and assignment)	3 hrs.	35 }
			15 }
			50
B.A. II			
Theory Paper-III	Tourism Marketing	3 hrs	35
Theory Paper-IV	Travel Agency Tour Business and Accommodation (Field Trips Report)	3 hrs.	35
			30
B.A. III			
Theory Paper-V	Emerging concepts for Effective Tourism Development	3 hrs	35
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 atleast one month before the commencement of B.A. II and B.A. III examination respectively. Field Trips and Training/Project Reports shall be evaluated by both Internal and External examiners appointed by Under graduate Board of Studies.

The students opting for this Course will be awarded B.A. degree with Tourism & Travel Management and they are eligible to seek admission in Post graduate classes just like other Arts graduates.

Note : The paper setter should set 10 questions. The examinee should be required to attempt any five questions.

Paper-I **TOURISM BUSINESS** Max. Marks : 35
Time : 3 Hrs.

Introduction

This paper cover the history of Tourism both International and Domestic, its development with Organizational and regulatory methodology. The concept dimension in trends world over and its futuristic study.

Definition nature, Importance and components of Tourism are also included in the study. This paper is designed to cover in Prospects of Tourism, Insultational organization both National and International in world in Promotion & Development WTO, IATA, UPTAA, AI, IATO, etc.

1. Definition, Nature, Importance, Components and Typology of Tourism.
2. Concepts of Domestic and International Tourism recent trends.
3. Tourism as an Industry, Vinitor, Tourist, Excursionist.
4. Growth and Development of Tourism in India.
5. Impacts of Tourism-Economics, Social Physical and Environmental.

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

Suggested Readings

1. Christopher J.Holloway The Business of Tourism :
Macconald and Evans, 1983.
2. A.K. Bhatia Tourism Development,
Principles and practices :
Sterling Publishers (P) Ltd; New
Delhi.

3. Anand M.M. Tourism and Hotel Industry in India : Sterling Publishers (P) Ltd. N.Delhi.
4. Kaul, R.H. Dynamics of Tourism : A Terilogy Sterling Publishers (P) Ltd. N.Delhi.
5. IITTM Growth of Modern Tourism Manograph : IITM, New Delhi, 1989.
6. IITTM Tourism as an Industry-Manograph : IITTM, New Delhi, 1989.
7. Burhat & Madlik Tourism-Past, Present and Future Heinemann, London.
8. Wahab, S.E. Tourism Management : Tourism International Press, London, 1986.
9. Brymer, Robert A. Introduction to Hotel and Restaurant Management : HUB Publication Co. Iowa, 1984.
10. Riccline J.R. Brent Travel and Tourism Hospitality Research, London, 1982.
11. Surinder Aggarwal Travel Agency Management : Communication India, 1983.

Paper-II **TOURISM PRODUCT**

Max. Marks : 35

Time : 3 Hours.

Introduction

This paper is for the study of the Product-India covering the resources both nature and Man-made. Historical and Geographical background. The people, the heritage, ancillary activities like Arts, Crafts, Flora Fauna Environmental Ecology and a study of the suitable. Development of Tourism connected with planning area Development.

Tourist Resources-Definition and Differentiation.

Tourist resources of India Types and Typologies, cultural resource-Art and Architecture, Historical Monument, Religious and Spiritual Centres, Fairs and Festivals, Craftsmanship, Folk Customs, Costumes and Lenses, Museum Monument and Art Galleries etc. Natural Tourist Resources Rich Diversity in Landform and Landscape Outstanding Geographic Features, Climate Waterbodies and Flora and Fauna.

Socio-Cultural Resources-I

Architectural Heritage of India: Glimpses of Indians Architectural Styles adopted over the ages. Historical Monuments of Touristic Significance-Ancient, Medieval and Modern-their Spatial and Regional Dimensions. Important Historical/Archaeobiological sites. Important Historical/Archaeobiological sites Museum, Art Galleries and Libraries their location, assets and Characteristics.

Popular Religious Shrines/Centres-Hindu Buddhist, Jain, Sikh, Muslim, Christian and others. Yoga, Meditation and other Centres.

Socio-Cultural Resources-II

Performing Arts of India, Classical Dances and Dance Styles. Centre of Learning and Performance, Indian Folk Dances.

Music and Musical Instruments : Different Schools of Indian Music: Status of Vocal and Instrumental Music; New Experiments. Handicrafts of India as a Potential Tourist Resources. Fairs and Festival Social, Religious and Commerical Fairs: Festivals: Promotional (Tourism) Fairs, Viz : Kite Festival, White Water Festival, Snake Best Race etc.

Indian Folk Culture, Folk Custom and Costumes, Settlement Patterns, Religious Observations, Folk-Lore and Legends.

Created Tourist Destinations; Academic, Scientific and Industrial Institutions.

Natural Tourist Resources-I

Tourist Resource Potential in Mountain with special reference to Himalaya : Resources and use Patterns in the Past, Present and Future Perceptive.

India's Main Desert Areas their Geological formation. Development as Desert Tourism Existing Trends and prospects. Available : Desert Safaris and Desert Festival.

Coastal Areas, beaches and islands : Resources and Potential Unpattern. Resources in Islands with special reference to Andaman and Nicobar Islands. Overview on Tourism Development Strategies.

Note : The Paper Setter should set ten questions. The examinee should be required to attempt any five questions.

Suggested Readings

1. Percy Brawn Indian Architecture-Hindu and Buddhist period.
2. Harle J.C. The Art and Architecture of Indian Sub-continent.
3. Bhartiya Vidya Bhawan Imperial Unity.
4. -do- Classical Age.
5. Acharya Ram Tourism & Cultural Heritage of India : Rosa Publication (Jaipur, 1986).
6. Bashaw A.L. The Wonder that was India : Rupa and Co. Delhi, 1988.
7. -do- The Gazette of India : History and Culture, Vol. 2 Publication Division, Ministry of Information and Broadcasting, Government of India, 1988.
8. Hussian, A.A. The National Culture of India National Book Trust, New Delhi, 1987.
9. Mukerjee, R.R. The Culture and Art of India : George Allen Unwin Ltd. London, 1959.
10. The Treasure of Indian Museum Marg Publication, Bombay.

B.Sc.-I (INDUSTRIAL CHEMISTRY)

(Vocational Course)

Note : The Paper Setter should set ten questions. The examinee should be required to attempt any five questions.

Scheme of Examination

The students of B.Sc. I 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.

Ind. Chemicals Derived from them, Alcohol and Alcohol Based Chemicals, Oxalic Acid, Furfural.

BOOKS

1. Coal Conversion, E.J. Hoffmann, The Energon Co., Laramie, Wyoming, U.S.A.
2. Introduction to Petroleum Chemicals, H. Steiner, Pergamon Press.
3. From Agrocabons to Petrochemicals, L.F. Hatch and S. Matam, Gulf Publishing Co., Houston.
4. Cotton-Cellulose : Its Chemistry and Technology : Hall, A.G.
5. Methods in Carbohydrate Chemistry, Vol. 3 Cellulose, Whistler, R.L.
6. Chemistry of Cellulose, Heuser, E.
7. Chemistry and Industry of Starch, Kerr, R.W.
8. Modified Starches : Properties and uses, Wurzburg O.B.

Unit-2

Industrial Aspects of Inorganic Chemistry

- | | | |
|--------|---|-----|
| IC 105 | Basic Metallurgical Operations-Pulverisation, Calcination, Roasting, Refining | 5L |
| IC 106 | Physiochemical Principles of Exuration of Iron, Copper, Lead Silver, Sodium, Aluminium, Magnesium, Zinc, Chromium. | 12L |
| IC 107 | Inorganic Materials of Industrial Importance - Their Availability, Forms, Structure and Modification Alumina, Silica, Silicates, Clays, Mica, Carbon, Zeolites. | 13L |

BOOKS

1. Principle of Extractive Metallurgy, Herbas in Vol. 1,2.
2. Theory of Metallurgical Processes, Volsky A and Sergievskaya.
3. Handbook of Metallurgy, Baiky A.P.
4. Clays, H.Ries, John Wileys and Sons.
5. Theory of Metallurgical Processes, Phillipov, Mir Publication.

6. Unit Processes of Extractive Metallurgy, Pehlke, Elsevier Publication.
7. Industrial Chemistry, Riegel, Reinhold Publication.

Unit-3 **Industrial Aspects of Physical Chemistry**

- | | | |
|--------|---|-----|
| IC 108 | Surface Chemistry and Interfacial Phenomena : Adsorption, Isotherm, Sols, Gels, Emulsions, Microemulsions, Micelles, Aerosols, Effects of Surfactants, Hydrotropes. | 16L |
| IC 109 | Catalysis : Introduction. Types-Homogenous and Heterogeneous, basic Principles, Mechanisms, Factors Affecting the Performance, Introduction to Phase Transfer Catalysis, Enzyme Catalysed Reactions-Pate Model, Industrially Important Reactions. | 14L |

BOOKS

1. Aerosol Science & Technology, Shepherd, H.R.
2. Catalysis : Heterogeneous and Homogeneous, Delmon, B. and Janner, G.
3. Catalysis : Science & Technology, Anderson J.
4. Catalysis in Micellar and Macromolecular Systems Fendler J. and Fendler E.
5. Catalysis in Theory and Practice, Rideal, E.X. and Taylor, H.S.
6. Phase Transfer Catalysis, Principles and Techniques, Starles, C.
7. Surface Chemistry, J.J. Bikermann, Academic Press.
8. Physical Chemistry of Surface, A.W. Adamson.
9. Catalysis : Heterogeneous and Homogeneous, Delmon, Elsevier Science Publisher.

Paper-II

Max. Marks : 40

Time : 3 hrs.

Note : Nine questions are to be set by the paper setter, three from Unit-I, three from Unit-II, and three from Unit-III. The candidates are required to attempt five questions in all, selecting atleast one question from each unit.

Unit-1 **Material and Energy Balance**

- | | | |
|--------|---|----|
| IC 110 | Dimensions and Units : Basic Chemical Calculations-Atomic Weight, Molecular | 3L |
|--------|---|----|

Weight, Equivalent-Weight, Mole, Composition of (i) Liquid Mixtures and (ii) Gaseous Mixtures.

IC 111	Material Balance without Chemical Reactions Flow Diagram for Material Balance, Simple Material Balance with or without Recycle or By-pass Distillation, Absorption, Crystallisation, Evaporation, Extraction, Etc.	9L
IC 112	Material Balance Involving Chemical Reaction concept of Limiting Reactant, Conversion, Yield, Liquid Phase Reaction, Gas Phase Reactions, with/without Recycle or By-Pass.	9L
IC 113	Energy Balance-Heat Capacity of Pure Gases and Gaseous Mixtures at Constant Pressures. Sensible Heat Changes in Liquids, Enthalpy Changes.	9L

BOOKS

1. Stoichiometry, B.I. Bhatt and S.M. Vora Tat Mcgraw-Hill Publishing company Ltd. New Delhi.
2. Chemical Process Principles-Part one, O.A. Hougen K.M. Watson, B.A. Ragatz Asia Publishing House, Bombay.

Unit-2 **Operations in Chemical Industry**

IC 114	Distillation-Introduction : Batch and Continuous Distillation, Separation of Azcotropes, Plate columns and Packed Columns.	5L
	Absorption-Introduction : Equipments-Packed Columns, Spray Columns, Bubble Columns, Packed Bubble Columns, Mechanically Agitated Contactops.	4L
IC 115	Evaporation-Introduction : Equipments-Short Tube (Standard) Evaporator. Forced Circulation Evaporators, Falling Film Evaporators, Climaing Film (Upward Flow) Evaporators, Wiped (Agitated) Film Evaporator. Filtration-Introduction : Filter Media and Filter Aids, Equipments-Plate and Frame Filter Press, Nutch Filter Rotary Drum Filter, Sparkler, Filter, Candle Filter, Pag Filter Centrifuge.	4L

	Drying-Introduction; Free Moisture, bound Moisture, Drying Curve : Equipments-Tray Dryer, F Rotary Dryer, Flash Dryer, Fluid Bed Dryer, Drum Dryer, Spray Dryer.	4L
IC 116	Crystallization-Introduction : Solubility, Supersaturation, Nucleation, Crystal, Growth; Equipment-Tank Crystallizer, Agitated Crystallizer, Evaporator Crystallizer, Draft Tube Crystallizer.	9L
IC 117	Extraction-Introduction : Selection of Solvents : Equipments; Spray column, Packed Column, Rotating Disc Column, Mixer-Settler.	3L
	Mixing-Introduction; Mixing of Liquid-Liquid, Solid-Solid, Liquid-Solid Systems.	2L

BOOKS

1. Introduction to Chemical Engineering, W.L. Badger and J.T. Banchero McGraw-Hill Book company, USA.
2. Unit Operations-I and II D.D. Kale Pune Vidyarthi Griha Prakashan Pune.
3. Unit operations in Chemical Engineers, W.L. McCabe and J.C. Smith.
Mc Graw-Hill Book Company New York.
4. Chemical Engineer's Handbook, J.M. Perry Mc Graw-Hill book Co., New York.

Unit-3 Utilities and Fluid Flow and Heat Transport in Industry
Utilities in Chemical Industry

IC Fuel-types of Fuels-Advantages and Disadvantages
118 Consumption of Fuels, Calorific Value, Specifications for Fuel Oil.

Boilers-Types of Boilers and their Functioning

Water-Specifications for Industrial Use, Various Water Treatments.

Steam-Generation and Use.

Air-specifications for industrial Use Processing of Air.

IC 119 Fluid Flow : Fans, Blowers, Compressors, Vacuum Pumps, Ejector 4L

Pumps: Reciprocating Pumps, Gear Pumps, 4L
Centrifugal Pumps

Heat Transfer : Heat Exchangers-Shell and 7L
Tube Type Finned Tube Heat Exchangers,
Plate Heat Exchangers, Refrigeration Cycles.

BOOKS

1. Introduction to Chemical Engineering, W.L. Badger and J.T. Banchero McGraw-Hill Book Co., U.S.A.
2. Unit Operations in chemical Engineering W.L. McCabe and J.C. Smith A Mc Graw-Hill Book company, New York .
3. Chemical Engineers, Handbook
J.R. Perry, McGraw-Hill Book Co., New York.
4. Unit Operations-I and II D.D. Kale.
Pune Vidyarthi Ghriha Prakashan, Pune.
5. Standard handbook of Plant Engineering-Editors;
R.C. Rosaler and J.C. Rice McGraw Hill Book Co., New York.

Practicals Total Marks : 40 Time 6 hrs.

1. Simple Laboratory Techniques - Crystallization 10 Expt.
Fractional Crystallization, Disillation, Fraction
Distillation, rolling Point Diagram
2. Extraction Processes-Phase Diagram, Partition 4 Expt.
coefficient
3. Preparation of Standard Solutions-Primary and 8 Expt.
Secondary Standards, Determination of H_2CO_4 and
 H_3PO_4 in a Mixture.
4. Calibration of Thermometers 2 Expt.
5. Acquaintance with safely measure in a Laboratory 4 Expt.
Hazard; of Chemicals
6. Depression and Elevation in B.P./M.P. of Solids
and Liquids
7. Chromatography-Column, Paper, thin Layer
8. Ore Analysis-Delomite, Limestone, Calcite
Analysis of Alloys-Such as Cupro-Nicle.
9. Determination of Physical Constants Refractive Index,
Surface Tension, (Effect of Surfactants on Surface
Tension, Viscosity Fluids, Polymer Solutions, Effect of
Additives on Viscosity, Optical Rotation.
10. Study Experiments/Demonstration Experiments.