SYLLABI AND COURSES OF STUDY
FOR
CLASS XII

JAMMU : FROM APRIL, 2014
KASHMIR : FROM NOVEMBER, 2013

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SCHEME OF STUDIES

The students who shall seek admission in Higher Secondary Part – II from the academic session (Oct-Nov) 2011 in case of Kashmir Division including winter zone of Jammu Division and academic session (April – May) 2013 in case of Jammu Division shall follow the given below scheme. The Scheme of studies and the combination of subjects at +2 stage has been prepared as per new scheme of studies. The revised combination of subjects is now as per the standard at National level particularly the standard set by the CBSE and has vertical linkage with under graduate courses offered by the University of Kashmir/Jammu.

Subject Combination at Higher Secondary Part – II (Class 12th)

**FACULTY OF SCIENCE**

<table>
<thead>
<tr>
<th>Group I</th>
<th>Group II</th>
<th>Group III</th>
<th>Group IV</th>
<th>Group V</th>
<th>Group VI</th>
<th>Group VII</th>
</tr>
</thead>
<tbody>
<tr>
<td>General English</td>
<td>Physics</td>
<td>Chemistry</td>
<td>Mathematics</td>
<td>Biology</td>
<td>Geology</td>
<td>Computer Science</td>
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<tr>
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<td>Applied Mathematics</td>
<td>Statistics</td>
<td>Biotechnology</td>
<td>Informatics Practices</td>
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<td>Geography</td>
<td>Microbiology</td>
<td>Environmental–Science</td>
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<td>Biochemistry</td>
<td>Functional English</td>
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<td></td>
<td>Travel, Tourism and Hotel Management</td>
</tr>
</tbody>
</table>

**Note:** A student shall have to opt any two subjects from IV to VII group, but not more than one from each group.

**FACULTY OF HOME SCIENCE**

<table>
<thead>
<tr>
<th>Group I</th>
<th>Group II</th>
<th>Group III</th>
<th>Group IV</th>
<th>Group V</th>
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</thead>
<tbody>
<tr>
<td>General–English</td>
<td>Human Development</td>
<td>Clothing for the Family</td>
<td>Extension–Education</td>
<td>Computer Science</td>
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<td>(Compulsory)</td>
<td>(Compulsory)</td>
<td>(Compulsory)</td>
<td>(Compulsory)</td>
<td>Informatics Practices</td>
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<td>Environmental Science</td>
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<td>Functional English</td>
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<td>Buddhist Studies</td>
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<td>Physical Education</td>
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<td></td>
<td>Travel, Tourism and Hotel Management</td>
</tr>
</tbody>
</table>

**Note:** A student shall have to opt any one subject form group V.
### FACULTY OF COMMERCE

<table>
<thead>
<tr>
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<th>Group IV</th>
<th>Group V</th>
<th>Group VI</th>
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</thead>
<tbody>
<tr>
<td>English (Compulsory)</td>
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<td></td>
<td>Type Writing &amp; Shorthand</td>
<td>Informatics Practices</td>
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<td>Env. Science</td>
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<td>Functional English</td>
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<td>Islamic Studies</td>
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<td>Vedic Studies</td>
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<td>Buddhist studies</td>
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<td>Physical Education</td>
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<td></td>
<td></td>
<td>Travel, Tourism &amp; Hotel Management</td>
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</tbody>
</table>

**Note :-** A student shall have to opt any two subject from IV – VI groups, but not more than one from each group.

### FACULTY OF HUMANITIES

<table>
<thead>
<tr>
<th>Group I</th>
<th>Group II</th>
<th>Group III</th>
<th>Group IV</th>
<th>Group V</th>
<th>Group VI</th>
<th>Group VII</th>
<th>Group VIII</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>Geography– Philosophy</td>
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<td>Education</td>
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<td>Buddhist Studies</td>
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<td>Physical Education</td>
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<td></td>
<td></td>
<td>Travel, Tourism &amp; Hotel Management</td>
<td></td>
<td>History</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>English Literature</td>
<td></td>
<td>Science</td>
</tr>
</tbody>
</table>

**Note :**  
I. A student shall have to opt any four subjects from group II to Group VIII, but not more than one from each group.  
II. No repetition/similarity of incomplete combination of subjects is allowed.  
III. While choosing subjects students are advised to opt for such subjects or combination of subjects, which are available and taught in the institution as per the above mentioned combination.
SCHEME OF ASSESSMENT/EXAMINATION

The Higher Secondary Examination Part – II (12th) conducted by the Board at the end of academic session on the basis of syllabi prescribed for Class 12th is open to eligible candidates and shall be conducted according to the following scheme of examination.

‘General English’: The performance of students in General English in examination shall be assessed on the basis of single paper of 100 marks and 3 hours duration.

GROUP – I : SCIENCE STREAM

Note : (i) Performance in each subject shall be assessed through single paper of 70 marks for Science subjects and 100 marks for Mathematics of 3 hours duration.

a) In case of a subject involving practical there shall be an external practical examination of 20 marks of three hours duration.

b) Marks reserved for internal assessment (which is 10 in case of each subject) shall be awarded by the schools themselves, as part of internal assessment, on the basis of performance of students in two tests (each test of 04 marks) and quality of reportage, i.e., practical notebook (carrying 02 marks) maintained by student.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Theory</th>
<th>Internal Assessment</th>
<th>Practical</th>
<th>External Examination</th>
<th>Total</th>
</tr>
</thead>
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<tr>
<td>Physics</td>
<td>70</td>
<td>10</td>
<td>20</td>
<td></td>
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<tr>
<td>Chemistry</td>
<td>70</td>
<td>10</td>
<td>20</td>
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<tr>
<td>Biology</td>
<td>70</td>
<td>10</td>
<td>20</td>
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<tr>
<td>Biotechnology</td>
<td>70</td>
<td>10</td>
<td>20</td>
<td></td>
<td>100</td>
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<tr>
<td>Microbiology</td>
<td>70</td>
<td>10</td>
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<td>100</td>
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<tr>
<td>Biochemistry</td>
<td>70</td>
<td>10</td>
<td>20</td>
<td></td>
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<td>Geology</td>
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<td>20</td>
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<tr>
<td>Mathematics</td>
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<td>20</td>
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<td>Environmental Science</td>
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<td>100</td>
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<tr>
<td>Informatics Practices</td>
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</tr>
<tr>
<td>Computer Science</td>
<td>70</td>
<td>10</td>
<td>20</td>
<td></td>
<td>100</td>
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</tbody>
</table>

Note – In case of Biology, 10 marks are reserved for internal assessment, 05 marks are for Botany and 05 for Zoology. External practical examination of Botany practicals shall be of 10 marks and two hours duration. External practiced examination in case of Zoology shall be of 10 marks and two hours duration.
GROUP – II : HOME SCIENCE STREAM

Note :-
1) Performance in each subject shall be assessed through one single paper (theory paper of 70 marks) and of 3 hours duration.
2) External practical examination in each subject shall be of 20 marks and 3 hours duration.
3) Marks reserved for internal assessment in practical (in case of each subject) shall be awarded on the basis of performance of students in two tests (each test of 04 marks) and quality of reportage, (maintenance of practical notebook) carrying 02 marks.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Theory</th>
<th>Practical</th>
<th>Internal</th>
<th>External</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Development</td>
<td>70</td>
<td>10</td>
<td>20</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Clothing for the Family</td>
<td>70</td>
<td>10</td>
<td>20</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Extension Education</td>
<td>70</td>
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</table>

GROUP – III : COMMERCE STREAM

<table>
<thead>
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<th>Total</th>
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<tbody>
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<td>Business Studies</td>
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<td>100</td>
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<tr>
<td>Accountancy</td>
<td>80</td>
<td>05</td>
<td>15</td>
<td></td>
<td>100</td>
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<tr>
<td>Entrepreneurship</td>
<td>80</td>
<td>05</td>
<td>15</td>
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<tr>
<td>Business Mathematics</td>
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<td>x</td>
<td>-</td>
<td></td>
<td>100</td>
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<tr>
<td>Short hand and Type writing</td>
<td>-</td>
<td>40</td>
<td>60</td>
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</table>
**GROUP – IV : HUMANITIES STREAM**

**Languages:** - The performance of students in the exam in case of each language shall be assessed on the basis of single paper. Each paper shall be of 100 marks and 3 hours duration.

**Other Subjects:**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Theory</th>
<th>Internal Assessment</th>
<th>Practical</th>
<th>External Examination</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>History</td>
<td>100</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Economics</td>
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<td>x</td>
<td>x</td>
<td>100</td>
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<td>x</td>
<td>x</td>
<td>100</td>
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<tr>
<td>Philosophy</td>
<td>100</td>
<td>x</td>
<td>x</td>
<td>100</td>
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<td>Education</td>
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<tr>
<td>Sociology</td>
<td>80</td>
<td>05</td>
<td>15</td>
<td>100</td>
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<tr>
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<td>10</td>
<td>20</td>
<td>100</td>
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</tr>
<tr>
<td>Music</td>
<td>50</td>
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<td>25</td>
<td>100</td>
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<td>Statistics</td>
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<tr>
<td>Physical Education</td>
<td>60</td>
<td>15</td>
<td>25</td>
<td>100</td>
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</tbody>
</table>

**Note:**

(i) In case of Geography and Home Science (Elective) marks reserved for internal assessment for practical work shall be awarded on the basis of performance in two tests of 04 marks each and quality of reportage (note book) carrying 02 Marks.

(ii) In case of Music marks reserved for internal assessment in practical work shall be awarded on the basis of performance in two tests of 20 marks each and quality of reportage carrying 10 marks.
GENERAL ENGLISH

Maximum Marks: 100

The Paper shall be divided into (04) Sections which shall cover prose & poetry from Chinar-II apart from writing skills & grammar.

Prose:

One seen passage from *Chinar-II* with internal choice followed by questions, fill in the blanks, true false etc. shall be asked to the student of (05) Marks.

One unseen passage with internal choice followed by questions, fill in the blanks, true false etc. shall be asked to the student of (05) Marks

One reference to context type question based on the prose passage from *Chinar II of 05 Marks. One to be attempted out of three.*

Two questions of 04Marks each based on the textbook titled *Chinar-II* of 100-150 words to be attempted out of given four questions. [4 × 2 = 8] Marks

One long Answer type question based on character study/description of scene/ theme /style to be attempted with internal choice. [5 × 1 = 05] Marks

02 objective type questions to be asked based on vocabulary, biographical information of the writer/textual information. Each question shall carry (1/2) Mark [1/2 ×4 = 2] Marks

30 Marks

Poetry

One seen stanza of poem from *Chinar-II* with internal choice followed by questions, fill in the blanks, true false etc. shall be asked to the student of (05) Marks.

One unseen stanza of poem with internal choice followed by questions, fill in the blanks, true false etc. shall be asked to the student of (05) Marks.

One reference to context type question based on the poem from *Chinar II of 05 Marks. One to be attempted out of three.*

Four questions of 02 Marks each based on literary devices (metaphor, simile, hyperbole, personification, imagery, irony, paradox etc.) from poems in *Chinar-II* of 50-100 words to be attempted. Four questions to be done out of six. [2 × 4] = 8 Marks.

23 Marks

Writing Skills

a. Article/paragraphing writing with clues (narrative or descriptive) 05 Marks

b. Letter (personal or official) 05 Marks

c. Diary entry, Notemaking, Dialogue, Report Writing, Advertisement, Poster, E-mail or sms. (15 marks). 25 Marks
Grammar

i. Compound and Complex Sentences [03 Marks]
ii. Tense (Present, Past, Future) [04 Marks]
iii. Auxiliary Verb [01 Marks]
iv. Relative Clause [02 Marks]
v. Conditional Clause [02 Marks]
vi. Reported Speech [02 Marks]
vii. Passives [02 Marks]
viii. Article [02 Marks]
ix. Preposition [02 Marks]
x. Conjunction [02 Marks]

Pattern of Paper

SECTION A

Reading Comprehension——— (20) Marks.

Q 1.1 Two seen passages/stanzas each from prose and poetry, from Chinar-II with internal choice followed by questions, fill in the blanks, true/false etc. shall be asked to the student each of (05) Marks. [5 × 2] = 10 Marks.

Q 1.2 Two unseen passages/stanzas, one from prose and one from poetry with internal choice followed by questions, fill in the blanks, true/false shall be asked to the student, each of (05) Marks. [5 × 2] = 10 Marks

Total (20) Marks

SECTION B

Literature ——— (33 Marks)

Q 3.1 Two questions based on textbook titled Chinar-II of 100-150 words to be attempted out of given four questions. [4 × 2 = 08] Marks

Q 3.2 One long answer type question based on character study/description of scene/theme/style to be attempted with internal choice . [5 × 1 = 05] Marks

Q 3.3 Four very short answer type questions of two marks each based on literary devices and general to be attempted out of nine (metaphor, simile, hyperbole, personification, imagery, irony, paradox etc.) [4 × 2 =8]

One reference to context type question to be attempted out of three based on the prose from Chinar II of 05 Marks

One reference to context type question to be attempted out of three based on the poem from Chinar II of 05 Marks
Q 3.4 (04) objective type questions to be asked based on vocabulary, biographical information of the writer/ textural information. Each question shall carry \( \frac{1}{2} \) mark. \[ \frac{1}{2} \times 4 = 2 \text{ Marks} \]

**SECTION C**

Writing Skills——— (25) Marks

Q 2.1 One question on paragraph writing / article writing (Narrative or Descriptive) to be attempted with internal choice (100—150 Words) \[ 5 \times 1 = 05 \text{ Marks.} \]

Q 2.2 One task on letter writing (Personal & Official) to be attempted with internal choice. \[ 5 \times 1 = 05 \text{ Marks.} \]

Q 2.3 One task to be attempted on note making or diary entry. \[ 5 \times 1 = 05 \text{ Marks.} \]

Q 2.4 One task to be attempted on dialogue writing or report writing (80-100 Words) \[ 5 \times 1 = 05 \text{ Marks.} \]

Q 2.5 One task to be attempted on writing of advertisement or designing a poster (50-80) Words \[ 03 \times 1 = 03 \text{ Marks.} \]

Q 2.6 One task to be attempted on e-mail writing or sms. \[ 2 \text{ Marks} \]

**SECTION D**

Grammar——— (22 Marks)

i. Compound and Complex Sentences \[ 03 \text{ Marks}\]

ii. Tense (Present, Past, Future) \[ 04 \text{ Marks}\]

iii. Auxiliary Verb \[ 01 \text{ Marks}\]

iv. Relative Clause \[ 02 \text{ Marks}\]

v. Conditional Clause \[ 02 \text{ Marks}\]

vi. Reported Speech \[ 02 \text{ Marks}\]

vii. Passives \[ 02 \text{ Marks}\]

viii. Article \[ 02 \text{ Marks}\]

ix. Preposition \[ 02 \text{ Marks}\]

x. Conjunction \[ 02 \text{ Marks}\]

(22) Marks
HOME SCIENCE (ELECTIVE)

Maximum Marks: 100
Theory: 70 marks  Time: 3 Hours
Practicals: 30 Marks

Unit I: EARLY CHILDHOOD (0-3 years)  Marks 12
Some specific characteristics: Physical and motor-height, weight and body proportions; motor development during 0-3 months, 3-6 months, 6-9 months, 9-12 months and 1-3 years (milestones only); social and emotional developments; recognition of people around; socialization, expression of emotions; cognitive development; learning through concrete operations and language development.
Protection from preventable diseases: immunization - concept and types (natural and acquired), breast feeding (one of the ways to develop natural immunity); immunization chart; symptoms and incubation period of childhood diseases - TB, DPT, polio, measles, cholera, diarrhoea.

Unit II: Special needs of disadvantaged and disabled children: socially disadvantaged, physically handicapped (partially blind & deaf, affected/missing limb): characteristics & needs. Substitute care at home and outside: siblings, grand parents, neighbours creche, day care centres etc: Integrated Child Development Scheme (ICDS) - objectives and functions.

Unit III: My Apparel  Marks 11
Clothing and its relation to personality: Factors that influence the selection of clothes: personality, age, climate, occupation, figure, occasion, fashion. Checking size and quality in ready-made garments (need and criteria: seams, hem, plackets, fasteners, workmanship, design, drape). Care of clothes: General principles and precautions to be followed while removing stains and washing: Cleansing agents: soaps and detergents (basic differences); Storage of clothes.

Unit IV: Applications of Home Science Education  Marks 06
Application of knowledge of Home Science in everyday life. Usefulness of some of the skills learnt here for supplementing family income. Skills learnt here can be gainfully used for employment (self-employment, apprenticeship). Further training required to make this field a career: various sources and facilities available for training.

Unit V: Nutrition for Self and Family  Marks 09
Planning meals for the family: meaning and importance of meal planning, principles and factors affecting meal planning, planning meals for the family; keeping in mind the needs of individual members, including children, pregnant women, lactating mother, members suffering from fever and diarrhoea; role and preparation of ORS.( Food groups planning only)

Unit VI: Ways to Ensure Good Health for the Family  Marks 09
using safe drinking water, qualities of safe drinking water; household methods of making water safe for drinking; boiling, filtering, use of alum and...
chlorine tablet, role of hygiene for food handlers at home level. Safety against food adulteration, definition and meaning of food adulteration as given by PFA; common adulterants present in cereals, pulses, milk and milk products, fats and oils, sugar, jaggery, honey, spices and condiments and their ill effects.

Unit VII: Money Management and Consumer Education  Marks 11
Family Income: various sources of family income: (i) money income, (ii) real income, direct and indirect; Supplementing family income-need & ways; need and procedure for keeping household accounts.
Savings and Investment: meaning and importance of savings; ways/methods of investment banks, post-office, LIC, Units, PPF, PF; basis for selection of method of investment risk, security, profit, tax saving.

Unit VIII: Marks 06
Consumer Protection and Education: meaning, problems faced by consumer, Consumer Protection Act (1986) and Services; Consumer aids: levels, standardization marks, advertising, guidebooks/leaflets, Consumer redressal forum. Consumer Behaviour & demand, market demand, its determinants, concept of price elasticity.

Practicals Time: 3 Hours  30 Marks
External: 20 Internal:10
I. Know Little Children Marks 02
II. Nutrition for Self and Family (contd.) Marks 07
III. Money Management and Consumer Education Marks 02
IV. My Apparel Marks 04
V. Things I can do with my Home Science Training – Record Marks 03
VI. Viva-voce Marks 02

Unit I: Know Little Children (0-3 years)
Activity: Observe a child in neighbourhood or at home for various milestones of physical and motor developments and prepare a chart.
Practical: Make an interview schedule for working mother.
Activity: Interview three mothers working outside the home to find out their arrangements of substitute care for their children (0-3 yrs) in their absence.
Practical: Prepare a chart of milestones
Practical: Prepare a chart for immunization of a child.

Unit II: Nutrition for Self and Family
Practicals: Plan meals for the family and carry out modifications to suit individual needs including persons suffering from fever or diarrhoea and for pregnant and lactating mother. Prepare and serve one dish.
Practical: Preparation of oral dehydration solution
Practical: Simple tests for checking adulteration in-
   (i) Cereals
   (ii) Pulses
(iii) Milk and milk products
(iv) Tea leaves
(v) Dhania powder
(vi) Red chillies
(vii) Haldi powder
(viii) Gur (Jaggery)
(ix) Black Pepper (Whole)

Unit III: Money Management and Consumer Education

Activity: Open an account. Find out and report how an account is opened in a bank and post office. Collect and fill forms.

Activity: Read and evaluate labels of any four household items bearing different standardization marks.

Practical: Fill bank post office forms

Practical: Prepare one label each for four household items/products bearing different standardization marks.

Unit IV: My Apparel

Practical: Make sample of
(a) basic stitches and seams:
   (i) Running Stitch
   (ii) Hemming
   (iii) Blind stitch
   (iv) Inter-locking
(b) Fasteners - Buttons and hooks.
(c) Patch work
or make an apron and incorporate all the above (a, b, and c).

Practical: Examine quality in ready-made garments.

Practicals: Relative effect of temperature of water on the clothes during the process of washing clothes (cold, lukewarm, hot). Draw conclusions and how this knowledge is helpful.

Practical: Removal of stains of -
   (i) Tea stain
   (ii) Coffee stain
   (iii) Curry
   (iv) Grease
   (v) Ball point ink
   (vi) Lipstick
   (vii) Blood

Practical: Make a soap/detergent (liquid/powder/cake)
## HISTORY

Max. Marks: 100 Marks  
Time: 3 hrs.

**Units**

I. Babar’s Invasion  7 marks  
II. Humayun; his problems  5 marks  
III. Suri Dynasty  5 marks  
IV. Akbar  9 marks  
V. Jahangir  5 marks  
VI. Shah Jahan  8 marks  
VII. Disintegration of Mughal Empire  8 marks  
VIII. Society and Culture  8 marks  
IX. British Conquest of India  10 marks  
X. Revolt of 1857  10 marks  
XI. Reform Movements  10 marks  
XII. National Movement  15 marks

### DETAILED SYLLABUS

Max. Marks: 100 marks  
Time: 3 hrs.

**Unit I**: Babar’s Invasion and cause of his success.  7 marks  
**Unit II**: Humayun-his problems.  5 marks  
**Unit III**: Suri Dynasty—contribution of Sher Shah  5 marks  
**Unit IV**: Akbar—Consolidation of Mughal Empire  9 marks  
**Unit V**: Jehangir; Role of Nur Jahan  5 marks  
**Unit VI**: Shah Jahan: Changes in Mansabdari System  8 marks  
**Unit VII**: Climax & Disintegration of Mughal Empire Aurangzeb’s Religious Policy; Revolts against Aurangzeb for regional independence. Aurangzeb’s Deccan Policy. Shivaji administration. Causes of the downfall of the Mughal Empire.  8 marks  
**Unit VIII**: Society & Culture:  8 marks  
Class structure; Religious Movements; Architecture; Foreign & European Traders.  
**Unit IX**: British Conquest of India  10 Marks  
(i) Factors leading to the establishment and consolidation of British rule in India with special reference to the conquest of Bengal.  
(ii) Subsidiary Alliance of Lord Wellesley and the Doctrine of lapse of Lord Dalhousie.
Unit X : Revolt of 1857  
(ii) Impact of the British rule on Indian economy and society

Unit XI : Reform Movements  
(i) Brahmo Samaj, Arya Samaj  
(ii) Sir Syed Ahmed Khan.  
(iii) Reforms among Sikhs.  
(iv) Social reforms-Emancipation of Women.

Unit XII : National Movement:  
(a) Moderate and Extremist Phases  
(i) Factors leading to the growth of National Movement.  
(ii) Formation of Indian National Congress and the role of Moderates.  
(iii) Rise of extremism and the partition of Bengal.  
(iv) Boycott and Swadeshi Movement.  
(v) Genesis of Muslim league.  
(b) Gandhian era  
(i) Khilafat and Non co-operation Movement.  
(ii) Civil Disobedience Movement.  
(iii) Quit India Movement.  
(iv) Indian Independence and the Partition.

Books Suggested:
1. Medieval India: A Textbook for Class XII Published by NCERT
2. Modern India: A Textbook for Class XII Published by NCERT
3. Contemporary World History: A Textbook for Class XII Published by NCERT


FUNCTIONAL ENGLISH

Max. Marks: 100  Time: 3 hrs.

A) Literature Reader II

Prose:

● The Turning Point
● Polar Meltdown
● Forests – Desperate Measures Needed Taking up Challenge

One question based on the reading comprehension of prose passage of 10 marks, followed by questions such as Multiple Choice Questions; Fill in the blanks, True / False, Vocabulary etc. (Seen Vs Unseen)  
(1 × 10 = 10 marks)

One questions based on the Summary / Precise of the given prose of 10 marks with internal choice (Seen Vs Unseen)  
(10 × 1 = 10 marks)

One question of 05 marks on the textual understanding of prose lesson with internal choice.  
(5 × 1 = 5 marks)

Short Stories

● Some Hill Stations Ghosts
● The Rightful Inheritor the Earth
● Ha’ Penny
● The Devil Outwitted

One question based on the reading comprehension of short story followed by question based on Vocabulary, Fill in the Blanks, True / False or a question based on the development of a story from a given outline and theme.  
(10 × 1 = 10 marks)

One question of 05 marks based on the moral / theme / style etc. with internal choice  
(5 × 1 = 5 marks)

Poetry

● Abraham Lincoln’s Letter to His Son’s Teacher
● The Secret Machines

Two question based on the Stanzas of the poem followed by questions with internal choice. This shall carry 03 marks.  
(03 × 2 = 6 marks)

Three very short answer type questions based on literary devices, of two marks with internal choice, also by asking about broader terms in general such as metaphor, simile, imagery etc.  
(03 × 2 = 6 marks)
Drama

- Don’t Call Out or You’ll Be Shot
- The Count’s Revenge

One question based on the description of event / situation / character / theme / conversation etc. of 08 marks with internal choice. \(8 \times 1 = 8\) marks

One question on ‘Note Making or Note Taking of a given passage with internal choice (5 marks)

One question on writing of an advertisement on the given caption with internal choice. (Classified vs commercial) (5 marks)

One question based on the writing of memorandum on any given topic with internal choice. (5 marks)

One question on writing of a circular on a given topic with internal choice (5 marks)

One question on writing of report on any of the given topics with internal choice. (5 marks)

One question based on the formation of tables, bar charts, histograms etc. and their interpretation on the given topics with internal choice (5 marks)

One question on the editing / proof reading of the given prose passage. (5 marks)

One question on writing the notes on any one of the following topics:

a) Dialect  
b) Accent  
c) Register  
d) Style  

Books Suggested

- Textbook of Functional English Published by Goyal Brothers in Collaboration with J&K State of School Education.
- Literature Reader II
- Language Skills Book
ECONOMICS

Theory: 100 Marks

Time: 3 Hours

Unit I: Introduction

● What is microeconomics?
● Central problems of an economy, production possibility curve and opportunity cost.

Unit II: Consumer Equilibrium and Demand

● Consumer’s Equilibrium: meaning and attainment of equilibrium through Utility Approach: One and two commodity cases.
● Demand: market demand, determinants of demand, demand schedule, demand curve, movement along and shifts in demand curve, price elasticity of demand, measurement of price elasticity of demand – percentage, total expenditure and geometric methods.

Unit III: Producer Behaviour and Supply

● Production function: returns to factor and returns to scale
● Supply: market supply, determinants of supply, supply schedule, supply curve movement along and shifts in supply curve, price elasticity of supply, measurement of price elasticity of supply – percentage and geometric methods
● Cost and Revenue: Concepts of Costs; short-run cost curves (fixed and variable costs; total, average and marginal costs); concepts of Revenue – total, average and marginal revenue and their relationship. Producer’s equilibrium – with the help of MC and MR.

Unit IV: Forms of Market and Price Determination

● Forms of market – perfect competition, monopoly, monopolistic competition – their meaning and features, oligopoly, meaning, features
● Price determination under perfect competition – equilibrium price, effects of shifts in demand and supply.

Unit V: Simple Applications of Tools of Demand and Supply Curves (Non-Evaluative)

The teachers can be given the flexibility to choose the issues: rationing, floors and ceilings and Food Availability Decline (FAD) Theory (the teachers may also choose alternative examples that are simple and easy to understand)

Unit VI: National Income and Related Aggregates — Basic Concepts and Measurement

● Macroeconomics: meaning.
● Circular flow of income, concepts of GDP, GNP, NDP, NNP (at market price and factor cost), National Disposable Income (gross and net); Private Income, Personal Income and
Personal Disposable Income

- Measurement of National Income – Value Added method, Income method and Expenditure method

**Unit VII: Determination of Income and Employment**  
Marks 12

- Aggregate demand, aggregate supply and their components
- Propensity to consume and propensity to save (average and marginal)
- Meaning of involuntary unemployment and full employment
- Determination of income and employment: two sector model
- Concept of investment multiplier and its working
- Problems of excess and deficient demand
- Measures to correct excess and deficient demand – availability of credit, change in government spending

**Unit VIII: Money and Banking**  
Marks 08

- Supply of Money-currently held by public and commercial banks
- Money: meaning, evolution and functions
- Central bank: meaning and functions

**Unit IX: Government Budget and the Economy**  
Marks 08

- Government budget - meaning, objectives and components.
- Classification of receipts - revenue receipt and capital receipt; classification of expenditure – revenue expenditure and capital expenditure, plan & non-plan, development & non-developmental.
- Balanced budget, surplus budget & deficit budget: meaning & implications.
- Various measures of government deficit - revenue deficit, fiscal deficit, and primary deficit: their meaning and implications.
- Downsizing the role of government: meaning and implications.

**Unit X: Balance of Payments**  
Marks 07

- Balance of payments account - meaning and components;
- Foreign exchange rate – meaning of fixed and flexible rates, merits and demerits; determination through demand and supply.
- A brief analysis about recent exchange rate issues
A. Fundamentals of Human Geography

Unit I: Human Geography: Nature and Scope

- Population of the world – distribution, density and growth;
- Population change-spatial patterns and structure; determinants of population change;
- Age-sex ratio; rural-urban composition;
- Human development – concept; selected indicators, international comparisons.

Unit II: People

- Primary activities – concept and changing trends; gathering, pastoral, mining, subsistence agriculture, modern agriculture; people engaged in agriculture and allied activities – some examples from selected countries;
- Secondary activities – concept; manufacturing: agro-processing, household, small scale, large scale; people engaged in secondary activities – some examples from selected countries;
- Tertiary activities – concept; trade, transport and communication; services; people engaged in tertiary activities – some examples from selected countries;
- Quaternary activities – concept; knowledge based industries; people engaged in quaternary activities – some examples from selected countries.

Unit III: Human Activities

- Land transport – roads, railways – rail network; trans-continental railways;
- Water transport – inland waterways; major ocean routes;
- Air transport – Intercontinental air routes;
- Oil and gas pipelines;
- Satellite communication and cyber space;
- International trade – Basis and changing patterns; ports as gateways of international trade, role of WTO in International trade.

Unit V: Human Settlements

- Settlement types – rural and urban; morphology of cities (case study); distribution of mega cities; problems of human settlements in developing countries.
Unit VI: Map work on identification of features based on above units on the outline Political map of world. Marks 02

B. India: People and Economy Marks 35

Unit VII: People Marks 05

- Population – distribution, density and growth; composition of population: linguistic, sex and religious; rural-urban population change through time – regional variations; occupations.
- Migration: international, national – causes and consequences;
- Human development – selected indicators and regional patterns;
- Population, environment and development.

Unit VIII: Human Settlements Marks 04

- Rural settlements – types and distribution;
- Urban settlements – types, distribution and functional classification.

Unit IX: Resources and Development Marks 12

- Land resources – general land use; agricultural land use – major crops; agricultural development and problems, common property resources;
- Water resources – availability and utilization – irrigation, domestic, industrial and other uses; scarcity of water and conservation methods – rain water harvesting and watershed management (one case study related with participatory watershed management to be introduced);
- Mineral and energy resources – metallic and non-metallic minerals and their distribution; conventional and non-conventional energy sources;
- Industries – types and distribution; industrial location and clustering; changing pattern of selected industries – iron and steel, cotton textiles, sugar, petrochemicals, and knowledge based industries; impact of liberalization, privatization and globalization on industrial location;
- Planning in India – target area planning (case study); idea of sustainable development (case study).

Unit X: Transport, Communication and International Trade Marks 07

- Transport and communication — roads, railways, waterways and airways; oil and gas pipelines; national electric grids; communication networkings – radio, television, satellite and internet;
- International trade — changing pattern of India’s foreign trade; seaports and their hinterland and airports.

Unit XI: Geographical Perspective on Selected Issues and Problems Marks 04

(One case study to be introduced for each topic)

- Environmental pollution; urban-waste disposal;
- Urbanization-rural-urban migration; problem of slums;
- Land Degradation.

Unit XII: Map work on locating and labeling of features based on above units on the outline Political map of world. 

C. Practical Work

Internal assessment: 10 marks
External assessment: 20 marks

Unit I: Processing of Data and Thematic Mapping

- Sources of data;
- Tabulating and processing of data; calculation of averages, measures of central tendency, deviation and rank correlation;
- Representation of data – construction of diagrams: bars, circles and flowchart; thematic maps; construction of dot; choropleth and isopleth maps.
- Use of computers in data processing and mapping.

Unit II: Field Study

Field visit and study: map orientation, observation and preparation of sketch; survey on any one of the local concerns; pollution, ground water changes, land use and land-use changes, poverty, energy issues, soil degradation, impact of floods and drought, catchment area of school, Market survey and Household survey (any one topic of local concern may be taken up for the study; observation and questionnaire survey may be adopted for the data collection; collected data may be tabulated and analysed with diagrams and maps.

Unit II: Practical Record Book and Viva-voce.
POLITICAL SCIENCE

Theory: 100 Marks

Time: 3 Hours

Part A: Contemporary World Politics

1. Cold War Era in World Politics

Emergence of two power blocs after the second world war. Arenas of the cold war. Challenges to Bipolarity: Non Aligned Movement, quest for new international economicorder. India and the cold war.


New entities in world politics: Russia, Balkan states and Central Asian states, Introduction of democratic politics and capitalism in post-communist regimes. India’s relations with Russia and other post-communist countries.

3. US Dominance in World Politics:

Growth of unilateralism: Afghanistan, first Gulf War, response to 9/11 and attack on Iraq. Dominance and challenge to the US in economy and ideology. India’s renegotiation of its relationship with the USA.

4. Alternative Centres of Economic and Political Power:

Rise of China as an economic power in post-Mao era, creation and expansion of European Union, ASEAN. India’s changing relations with China.

5. South Asia in the Post-Cold War Era:


6. International Organizations in a unipolar World:

Restructuring and the future of the UN. India’s position in the restructured UN. Rise of new international actors: new international economic organisations, NGOs. How democratic and accountable are the new institutions of global governance?

7. Security in Contemporary World:


Economic, cultural and political manifestations. Debates on the nature of consequences of globalisation. Anti-globalisation movements. India as an arena of globalization and struggle against it.
9. Environment and Natural Resources in Global Politics: Marks 05
Environment movement and evolution of global environmental norms. Conflicts over traditional and common property resources. Rights of indigenous people. India’s stand in global environmental debates.

Part B: Politics in India since Independence

10. Nation-Building and Its Problems Marks 05
Nehru’s approach to nation-building: Legacy of partition: challenge of ‘refugee’ resettlement, the Kashmir problem. Organisation and reorganization of states; Political conflicts over language.

11. Era of One-Party Dominance Marks 06
First three general elections, nature of Congress dominance at the national level, uneven dominance at the state level, coalitional nature of Congress. Major opposition parties.

12. Politics of Planned Development Marks 05
Five year plans, expansion of state sector and the rise of new economic interests. Famine and suspension of five year plans. Green revolution and its political fallouts.

13. India’s External Relations Marks 06
Nehru’s foreign policy. Sino-Indian war of 1962, Indo-Pak war of 1965 and 1971. India’s nuclear programme and shifting alliances in world politics.

14. Challenge to and Restoration of Congress System: Marks 05

15. Crisis of the Constitutional Order: Marks 07

16. Regional Aspirations and Conflicts Marks 05

17. Rise of New Social Movements: Marks 05

18. Recent Developments in Indian Politics: Marks 06

Book Suggested:
Major concepts of Political Science published by NCERT, New Delhi
PHILOSOPHY

Max. Marks:100

A. INDIAN PHILOSOPHY

1. Nature and Schools of Indian Philosophy
2. Philosophy of the Bhagavad Gita
3. Buddhism, Jainism
4. Nyaya-Vaisesika and Samkhya- Yoga
5. Advaita Vedanta

B. WESTERN PHILOSOPHY

6. Knowledge and truth
7. The causal Principle.
8. Nature of Reality
9. Realism and Idealism

C. APPLIED PHILOSOPHY

10. Environmental Ethics, Professional Ethics and Philosophy of Education

A. INDIAN PHILOSOPHY

Unit 1: Nature and Schools of Indian Philosophy: Some basic issues: Rta, Karma, Four Purusarthas : Dharma, Artha, Kama and Moksa

Unit 2: Philosophy of the Bhagavad Gita: Karma Yoga (Anasakta Karma), Svadharma, Lokasamgraha

Unit 3: Buddhism, Jainism
    Four noble truths and eight-fold path; Theory of dependent origination. Anekantavada, and syadvada.

Unit 4: Nyaya - Vaisesika and Samkhya – Yoga
    (1) Nyaya theory of Pramanas, (2) Vaisesika Theory of Padarthas ‘, (3) Samkhya Theory of Three Gunas, (4) Yoga- The Eight-fold Practice.

Unit 5: Advaita Vedanta
    The nature of Atman, Brahman and the world.

B. WESTERN PHILOSOPHY

Unit 6: Knowledge and Truth
    Rationalism, Empiricism and Kant’s Critical Philosophy
Unit 7: The Causal Principle

Nature of Cause
Aristotle’s theory of four-fold causation cause-effect relationship: entailment, regularity and succession. Theories of causation.

Unit 8: Nature of Reality
Proofs for the existence of God
Ontological, Teleological and Cosmological arguments.

Unit 9: Realism and Idealism
Mind-Body Problem

C. Applied Philosophy

Unit 10: Environmental Ethics and Professional Ethics
(a) Study of Physical, Mental and Spiritual Environments
(b) Medical and Business Ethics.
(c) Philosophy of Education

Suggested Textbooks:

1. John Patrick Introduction to Philosophy
2. John Hospers Introduction to Philosophical Analysis
3. D.M. Datta and S.C. Chatterjee Introduction to Indian Philosophy
4. M. Hiriyanna Essentials of Indian Philosophy
5. A.C. Ewing Fundamental Questions of Philosophy
6. H. Titus Living issues in Philosophy
7. C.D. Sharma A Critical Survey of Indian Philosophy
8. William Lillie: Incorporate An Introduction to Ethics
UNIT 1: CURRICULUM

1.1 Meaning and Importance of Curriculum.
1.2 Definitions — Ross, Cunningham, Tagore, Zakir Husain
   Secondary Education Commission (1952-53)
1.3 Types of Curriculum (Merits and limitations)
   ** Subject-Centered Curriculum.
   ** Activity-Centered Curriculum.
   ** Child-Centered Curriculum.
1.4 Defects of existing Curriculum and its reformative measures. 10 marks

UNIT 2: CO-CURRICULAR ACTIVITIES

1.1 Meaning of Co-Curricular Activities.
1.2 Types —** Literary— (Debates, School Magazine, Library),
   ** Aesthetic & Cultural— (Drama, Educational Tours, Folk activities)
   ** Social — (Morning Assembly & NSS),
   ** Physical— (Games & Sports, NCC, Scouting) 10 marks

UNIT 3: DEVELOPMENT OF EDUCATION IN J&K

1.1 Role of Missionary schools with reference to:
   ** Tyndale Biscoe (1881-82)
   ** Anjuman-i Nusratul Islam (1905)
   ** Dogras with special reference to Primary Education.
   ** Sharp Committee (1916)
   ** K.G. Saidain Report (1939)
   ** A Kazimi Report (1950)
   ** Bhagwan Sahay Committee (1972)
1.2 Brief history of the following Institutions:
   ** Jammu & Kashmir Board Of School Education.
   ** Directorate of School Education.
   ** University of Kashmir.
   ** University of Jammu. 10 marks

UNIT 4: POPULATION EDUCATION

1.1 Meaning and Objectives of Population Education
1.2 Need and importance of Population Education.
1.3 Population Explosion—Meaning, Causes, Consequences and control
1.4 Role of Media (Print and Electronic) for Population Awareness. 10 Marks

UNIT 5: EDUCATIONAL THINKERS

1.1 M. K. Gandhi
1.2 Dr. Zakir Hussain
1.3 John Dewey
   With special reference to:
   ** Life Sketch ** Concept of Education
UNIT 6: STATISTICS IN EDUCATION

1.1 Measures of Variability—
** Concept of Variability
** Methods of determining Variability through
i) Range ii) M.D (Mean Deviation)
iii) Q.D (Quartile Deviation) iv) S.D (Standard Deviation)

1.2 Correlation
** Concept of Correlation
** Computation of correlation:
*Rank Method (Spearman) *Product Movement Method (Pearson) 10 marks

UNIT 7: HUMAN GROWTH AND DEVELOPMENT

1.1 Meaning & Principles of Growth and Development.
1.2 Stages of Growth and Development (Physical, Mental and Social) with special reference to:
** Infancy ** Childhood ** Adolescence
1.3 Needs and Problems of Adolescents with Remedial Measures 10 marks

UNIT 8: MENTAL HEALTH AND HYGIENE

1.1 Meaning and Definition of Mental Health and Hygiene
1.2 Purpose of Mental Health and Hygiene
1.3 Characteristics of Mentally Healthy individual
1.4 Need for Mental Health and Hygiene
1.5 Factors determining Mental Health
** Hereditary ** Physical ** Social
1.6 Causes of poor Mental Health
1.7 Achieving Mental Health 10 marks

UNIT 9: LEARNING

1.1 Meaning of Learning.
1.2 Definitions – Thorndike, Skinner, Hilgard, Gates, Crow & Crow and Jeff Cobb.
1.3 Characteristics of Learning.
1.4 Types of Learning:-
** Perceptual ** Conceptual ** Motor
** Verbal ** Associative
1.5 Laws of Learning (Primary & Secondary) and their educational implications. 10 marks

UNIT 10: ADJUSTMENT & MALADJUSTMENT

1.1 Concept of adjustment & maladjustment
1.2 Characteristics of a well adjusted person
1.3 Causes and symptoms of maladjusted person
1.4 Defense Mechanisms:
** Identification ** Rationalization ** Sublimation
** Compensation ** Escapism ** Fantasy 10 marks
UNIT I: INTELLIGENCE AND APTITUDE

The unit aims at studying how people differ with respect to Intelligence and Aptitude.

- Concept of Intelligence.
- Culture and intelligence, Tests of intelligence.
- Aptitude: Nature and Types
- Giftedness (Nature and Identification)
- Individual differences (heredity-environmental interaction).

9 Marks

UNIT II: SELF AND PERSONALITY

The unit focuses on the study of self and personality in the context of different approaches in an effort to appraise the person

- Concept of self, Self efficacy, Self regulation& techniques
- Concept of Personality, theories of personality (Trait and types, Psychoanalytic, Humanistic)
- Assessment of personality: Self report measures, Projective techniques

9 Marks

UNIT III: MEETING LIFE CHALLENGES

The aim of this unit is to study adjustment, stress and coping strategies. Health and well-being is also discussed

- Concept of adjustment
- Stress: Meaning, Sources and types, Coping strategies.
- Concept of health and well-being

06 Marks

UNIT IV: PSYCHOLOGICAL DISORDERS

The unit discusses the concepts of normality and abnormality and some Psychological disorders.

- Concept of normality and abnormality, Causal factors associated with Psychological disorders
- Classification of Psychological disorders.
- Major Psychological disorders: Anxiety, Schizophrenia (meaning and symptoms).
- Mood disorders, behavioural, substance related.

09 Marks
UNIT V: THERAPEUTIC APPROACHES

The unit discusses the goals, techniques and effectiveness of different approaches used to treat Psychological disorders

- Goals and objectives of therapeutic processes, Stages of therapeutic relationships.
- Types of therapies: Psychodynamic, Humanistic, Cognitive, Behaviour, Biomedical, Yoga and Meditation.
- Rehabilitation of mentally ill patients. 08 Marks

UNIT VI: ATTITUDE AND SOCIAL COGNITION

The unit focuses on the formation and change of attitudes, cultural influences on attributional tendencies and conditions influencing pro-social behaviour

- Nature and components of attitude, attitude formation and change.
- Attribution, Social cognition, Schemas and stereotypes.
- Pro-social behaviour and its techniques prejudice and discrimination, strategies for handling prejudice. 07 Marks

UNIT VII: GROUP PROCESSES AND SOCIAL INFLUENCE

The unit deals with the concept of group, its functions and the dynamics of social influence. Different conflict resolution strategies will also be discussed.

- Meaning of Group, Group behaviour, Factors influencing Group formation, Types of Groups, Social identity, Intergroup Conflict: Conflict Resolution Strategies
- Social influence processes:- conformity, obedience and compliance, cooperation and competition. 08 Marks

UNIT VIII: ENVIRONMENT AND SOCIAL CONCERNS

The purpose of this unit is the understanding and application of Psychology to some important social issues.

- Human- Environmental relationships; Noise pollution, Air pollution, Natural and man-made disasters
- Social issues:- Poverty, Aggression and Violence, Gender discrimination.
- Promoting pro-environmental behaviour, human rights and peace management. 08 Marks

UNIT IXL STATISTICS

The aim of this unit is to introduce the importance of different statistical measures used in Psychology

- Meaning of Statistics, Types of statistics, Preparation of frequency distribution.
- Measures of central tendency: Mean, Median and Mode
- Measures of variability: Range, S.D., Q.D., Average Deviation. 08 marks
PRACTICALS
External = 20 Internal = 10 Total = 30

- One case profile (Developmental history of the subject, using qualitative and quantitative approaches)
- Practicals (Intelligence, Personality, Aptitude, Adjustment, Attitude, Self concept and Anxiety)

Distribution of Marks:
  i. Case Profile: 03 Marks
  ii. Practical File: 03 Marks
  iii. Viva Voce: 04 Marks
  iv. Two Practicals 10 Marks

BOOK PRESCRIBED:
A textbook of Psychology for Class XII published by NCERT, New Delhi
SOCIETY

Maximum Marks : 100
Theory: 80 Marks
Practicals:20 Marks

Time: 3 Hours

INDIAN SOCIETY

Unit 1: Introducing Indian Society
Colonialism, Nationalism, Class and Community

Unit 2: Demographic Structure and Indian Society
Rural-Urban Linkages and Divisions

Unit 3: Social Institutions: Continuity & Change
Family and Kinship
The Caste System
Tribal Society

Unit 4: Market As a Social Institution
Market as a Social Institution

Unit 5: Pattern of Social Inequality & Exclusion
Caste Prejudice, Scheduled Castes and Other Backward Classes
Marginalization of Tribal Communities
The Struggle for Women’s Equality
The Protection of Religious Minorities
Caring for the Differently Abled

Unit 6: The Challenges of Cultural Diversity
Problems of Communalism, Regionalism, Casteism & Patriarchy
Role of the State in a Plural and Unequal Society
What We Share

Unit 7: Suggestions for Project Work
Non-Evaluative

CHANGE AND DEVELOPMENT IN INDIA

Unit 8: Structural Change
Colonialism, Industrialization, Urbanization.
Unit 9: Cultural Change
Modernization, Westernization, Sanskritisation, Secularization.
Social Reform Movements & Laws

Unit 10: The Story of Democracy
The Constitution as an instrument of Social Change
Parties, Pressure Groups and Democratic Politics
Panchayati Raj and the Challenges of Social Transformation

Unit 11: Change and Development in Rural Society
Land Reforms, Green Revolution and Agrarian Society

Unit 12: Change and Development in Industrial Society
From Planned Industrialization to Liberalization
Changes in the Class Structure

Unit 13: Globalisation And Social Change

Unit 14: Mass Media And Communication Process

Unit 15: Social Movements
Class-Based Movements: Workers, Peasants.

Practical Examination
Max. Marks 20
External: 15
Internal: 05
Time allotted: 3hrs

A. Project (undertaken during the academic year at school level)
05 marks
i. Statement of the purpose: 1 1/2 marks
ii. Methodology / Technique: 1 1/2 marks
iii. Conclusion: 2 marks

B. Viva - based on the project work
02 marks

C. Research design
08 marks
i. Overall format: 1 mark
ii. Research Question/Hypothesis : 1 mark
iii. Choice of technique: 2 marks
iv. Detailed procedure for implementation of technique: 2 marks
v. Limitations of the above technique: 2 marks

B & C to be administered on the day of the external examination
APPLIED MATHEMATICS

Maximum Marks: 100 Time: 03hrs

Unit 1st :- Matrices and determinants (20 marks)


Unit 2nd :- Limits and continuity of a function (12 marks)

Definition of limit of a function, algebra of limits, Fundamental limits

$$
\lim_{x \to a} \frac{x^n - a^n}{x - a}, \lim_{\theta \to 0} \frac{\sin \theta}{\theta}, \lim_{x \to 0} \frac{a^nx - 1}{x}, \lim_{n \to \infty} \left(1 + \frac{1}{n}\right)^n
$$

$$
\lim_{x \to 0} \frac{\log(1 + x)}{x}
$$

and their applications.

Continuity of a function.

Unit 3rd:- Derivative (12 marks)

Derivative of a function, its geometrical and physical significance, derivative of some simple functions by first principle, derivative of sum, product and quotient of two functions. Derivative of inverse trigonometric functions (without proof) with applications only.

Unit 4th Applications of derivatives (10 marks)

Tangents and normal (Cartesian Co-ordinates only) Increasing and decreasing functions Maxima and minima. Rolles and Mean value theorem (without proof) and their simple applications.

Unit 5th Integrals (16 marks)

Integration as inverse of differentiation, integration of various functions by substitution, using trigonometric functions, partial fractions, by parts integrals of the type

$$
\int \frac{dx}{x^2 \pm a^2}, \int \frac{dx}{a^2 - x^2}, \int \frac{dx}{\sqrt{a^2 - x^2}}, \int \frac{dx}{\sqrt{x^2 \pm a^2}}.
$$
Definite integrals as a limit of a sum, Fundamental Theorem of Calculus (without proof). Properties of definite integrals and evaluation of definite integrals using properties of definite integrals.

Unit 6th Differential equations (10 Marks)


Unit 7th Statics (10 marks)

Parallelogram law of forces, Resolution of forces, Triangle law of forces. Polygon law of forces. Lami’s theorem. Parallel forces with applications

Unit 8th Dynamics (10 marks)

Velocity, acceleration, equations of motion along a straight line with uniform acceleration

\[ V = u + at; \quad x = ut + \frac{1}{2}at^2; \quad v^2 - u^2 = 2ax; \quad \text{motion under gravity} \]
## ISLAMIC STUDIES

Max. Marks: 100  
Time allowed: 3 hours

<table>
<thead>
<tr>
<th>Units</th>
<th>Marks</th>
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<tbody>
<tr>
<td>I. Worship in Islam (Ibadah and Arkan)</td>
<td>10</td>
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<tr>
<td>II. Ethical Values in Islam</td>
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<td>III. Human Rights in Islam</td>
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<td>IV. Status of Woman in Islam</td>
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<tr>
<td>V. Introduction to the Qu’ran</td>
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<tr>
<td>VI. Knowledge and the Quranic Teachings</td>
<td>10</td>
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<tr>
<td>VII. Social Teachings of the Qu’ran</td>
<td>10</td>
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<tr>
<td>VIII. Economic Teachings of the Qu’ran</td>
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<tr>
<td>IX. Introduction to Hadith</td>
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<tr>
<td>X. Introduction to Fiqh (Law)</td>
<td>10</td>
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</tbody>
</table>

## DETAILED SYLLABUS

### Unit-1: Worship in Islam (*Ibadah* and *Arkan*)  
10 Marks

I. Worship: meaning and importance

II. Arkan: concept and importance

   a. *Salah* (Prayer)
   
   b. *Sawm* (Fasting)
   
   c. *Zakah* (Alms giving)
   
   d. *Hajj* (Holy Pilgrimage)

### Unit 2: Ethical Values in Islam  
10 Marks

i. Meaning and importance

ii. **Virtues** (*Fada’il*)

   a. Truthfulness (*sidq*)  
   b. Justice (‘*adl*)  
   c. Modesty (*haya’*)  
   d. Trust (*amanah*)  

iii. **Vices** (*Rada’il*)

   a. Back biting (*ghibah*)  
   b. Lying (*kidhb*)  
   c. Anger (*gayd*)  
   d. Theft (*sarq*)
Unit 3: Human Rights in Islam 10 Marks

i. Meaning and importance

ii. A brief account of the following human rights:
   a. Right to life
   b. Right to belief
   c. Right to property
   d. Right to freedom of Expression
   e. Right to privacy

Unit 4: Status of woman in Islam 10 Marks

i. As a mother

ii. As a wife

iii. As a sister

iv. As a daughter

Unit 5: Introduction to the Qu’ran 10 Marks

i. Qu’ran: A revelation (wahy) from Allah

ii. Earlier revealed books of Allah

iii. The event of first Quranic revelation

iv. Qu’ran: the final universal message

Unit 6: Knowledge and the Quranic Teachings 10 Marks

i. Quran: A Book of Divine knowledge

ii. Importance of knowledge in the Qu’ran

iii. Commandments:
   a. Lawful (Halal)
   b. Unlawful (Haram)

Unit 7: Social Teachings of the Qu’ran 10 Marks

a. Respect and obedience to parents

b. Respect and obedience to teachers

c. Behaviour with relatives

d. Treatment towards neighbours
Unit 8: Economic Teachings of the Qu’ran 10 Marks

a. Charity (Sadaqah)
b. Crop tax (Ushr)
c. Public treasury (Bait-ul-Maal): concept and importance
d. Usury (Riba): meaning and prohibition

Unit 9: Introduction to Hadith 10 Marks

i. Meaning and importance
ii. Place of Hadith in Islam
iii. Kinds of Hadith: Sahih, Hasan, Maudu, Daif

Unit 10: Introduction to Fiqh (Law) 10 Marks

i. Meaning and importance
ii. Development of Fiqh: early period
iii. Sources of Fiqh:
   a. The Qu’ran
   b. Hadith
   c. Ijma’
   d. Qiyas
VEDIC STUDIES

Max. Marks: 100  Time Allowed : 03 Hours

Unit I  Vedic Scholars – Indian and Western  Marks 10

Unit II  Allied Vedic Literature  Marks 10

Unit III  Universe  Marks 10

Unit IV  The Land and the People  Marks 20

Unit V  Literature having Vedas as Source ‘I’  Marks 15

Unit VI  Literature having Vedas as Source ‘II’  Marks 15

Unit VII  Vedic Science and Technology.  Marks 10

Unit VIII  Vedic Concepts.  Marks 10

Unit I  Vedic Scholars – Indian and Western:

(i) Indian Scholars :
Yask, Venkat Madhav, Sayana,
Swami Dayanand, Aurobindo Ghosha and
Vinoba Bhave.

(ii) Western Scholars :
Rudolf Roth, Friedrich, Max Muller,

Unit II  Allied Vedic Literature :

(i) Vedangas.
(ii) Upavedas

Unit III  Universe :

(i) Origin of Universe.
(ii) Parts of Universe.

Unit IV  The Land and the People :

(i) Mother Land.
(ii) People.
(iii) Flora and Fauna.

Unit V  Literature having Vedas as Source ‘I’:

(i) Ramayana.
(ii) Mahabharata

Unit VI  Literature having Vedas as Source ‘II’ :

(i) Smritis
(ii) Puranas

Unit VII  Vedic Science and Technology :

(i) Ganita.
(ii) Physics
(iii) Chemistry

Unit VIII  Vedic Concepts :

(i) Universal Law
(ii) Sacrifice
(iii) Equality and Unity.
(iv) Punya and Paap.
(v) Four Aims of Life

BOOK PRESCRIBED :

Vedic Studies Part-II
Published by Jammu and Kashmir State Board of School Education.
MUSIC

Max Marks : 100

Theory : 50 Marks

Practical : 50 Marks

1. History of Ancient Indian Music
2. Indian Scale of Shruti Swar Sthana (Shudh Swaras only)
3. Classification of Ragas (Raga Ragini Paddhati and That Raga Paddhati)
4. Time Theory of Indian Music
5. Writing of Notation of the Ragas of your course of Study.
6. Notation of Talas of your course of study (with its single and Layakaris)
7. Definition of Ragas.
8. Definition of Talas
9. Description and construction of the instruments you have opted for (with diagram) Sitar/Tanpura.
10. Life history and contribution of following musicians
    I Bhimsen Joshi II Ravi Shankar III Amjad Ali Khan
11. Definition of nine Jatis Shudh Raga, Chayalab Rag and Sankeerna Raga.

Books Suggested
1. Sangeet Shastra Darpan
2. Sangeet Visharad
3. Kramik pustak Malika (Part I and Part II)

Practical
Note: 25 Marks reserved for internal assessment shall be awarded on the basis of performance
External examination/assessment will be of 25 marks.

PRACTICALS
1. Chhota Khayal or Razakhani Ghat with Taan, or Toda and Jhalla in the following Ragas:-
   Shudh Kalyan, Malkauns 07 Marks
2. Bada Khayal/Maseet Khani Ghat in any one of the Ragas of the course with elaborations 05 Marks
3. Any devotional or Patriotic song and Tarana in any the Ragas  
   02 Marks
4. Recitation of talas of the course :-
   i) Ek taal
   ii) Tilwara taal
   iii) Rupak taal
   iv) Jhap taal  
   05 Marks
5. Viva-Voce  
   06 Marks

Note:- Maintenance of the File for practical work to be included in internal assessment.

SCHEME OF ASSESSMENT

04 Long Answer type Questions = 04Q x 7 Marks = 28 marks
05 Short Answer type Questions = 05Q x 3 Marks = 15 marks
04 Very Short Answer type Questions = 04Q x 1 mark = 04 marks
03 Objective/Multiple Choice Questions = 03Q x 1 mark = 03 marks
MATHEMATICS

Theory: Marks 100

I. RELATIONS AND FUNCTIONS Marks 10
II. ALGEBRA Marks 13
III. CALCULUS Marks 44
IV. VECTORS AND THREE - DIMENSIONAL GEOMETRY Marks 17
V. LINEAR PROGRAMMING Marks 06
VI. PROBABILITY Marks 10

UNIT I. RELATIONS AND FUNCTIONS
1. Relations and Functions

Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions, composite functions, inverse of a function. Binary operations.

2. Inverse Trigonometric Functions

Definition, range, domain, principal value branches. Graphs of inverse trigonometric functions. Elementary properties of inverse trigonometric functions.

UNIT-II: ALGEBRA

1. Matrices

Concept, notation, order, equality, types of matrices, zero matrix, transpose of a matrix, symmetric and skew symmetric matrices. Addition, multiplication and scalar multiplication of matrices, simple properties of addition, multiplication and scalar multiplication. Non-commutativity of multiplication of matrices and existence of non-zero matrices whose product is the zero matrix (restrict to square matrices of order 2). Concept of elementary row and column operations. Invertible matrices and proof of the uniqueness of inverse, if it exists; (Here all matrices will have real entries).

2. Determinants

Determinant of a square matrix (up to 3 x 3 matrices), properties of determinants, minors, cofactors and applications of determinants in finding the area of a triangle. Adjoint and inverse of a square matrix. Consistency, inconsistency and number of solutions of system of linear equations by examples, solving system of linear equations in two or three variables (having unique solution) using inverse of a matrix. Cramer’s rule and its applications.

UNIT-III: CALCULUS

1. Continuity and Differentiability

Continuity and differentiability, derivative of composite functions, chain rule, derivatives of inverse trigonometric functions, derivate of implicit functions. Concept of exponential and logarithmic functions to the base e. Logarithmic functions as inverse of exponential functions.
\[
\lim_{x \to 0} \frac{1}{x}, \quad \lim_{x \to \infty} \frac{1}{x}, \quad \lim_{x \to \infty} \left(1 + \frac{1}{x}\right)^x, \quad \lim_{x \to 0} (1 + x)^{1/x}, \quad \lim_{x \to 0} \frac{\log(1 + x)}{x}, \quad \lim_{x \to 0} \frac{e^x - 1}{x}
\]

Derivative of logarithmic and exponential functions. Logarithmic differentiation, derivative of functions expressed in parametric forms. Second order derivatives. Rolle’s and Lagrange’s Mean Value Theorems (without proof) and their geometric interpretations and simple applications.

2. Applications of Derivatives

Applications of derivatives: rate of change, increasing/decreasing functions, tangents & normals, approximation, maxima and minima (first derivative test motivated geometrically and second derivative test given as a provable tool). Simple problems (that illustrate basic principles and understanding of the subject as well as real-life situations).

3. Integrals

Integration as inverse process of differentiation. Integration of a variety of functions by substitution, by partial fractions and by parts, only simple integrals of the type to be evaluated.

\[
\int \frac{dx}{x^2 \pm a^2}, \quad \int \frac{dx}{\sqrt{x^2 \pm a^2}}, \quad \int \frac{dx}{\sqrt{a^2 - x^2}}, \quad \int \frac{dx}{ax^2 + bx + c}, \quad \int \frac{dx}{\sqrt{ax^2 + bx + c}}
\]

\[
\int \frac{(px + q)}{ax^2 + bx + c} \, dx, \quad \int \frac{(px + q)}{\sqrt{ax^2 + bx + c}} \, dx, \quad \int \sqrt{a^2 \pm x^2} \, dx, \quad \int \sqrt{x^2 - a^2} \, dx,
\]

\[
\int \sqrt{ax^2 + bx + c} \, dx, \quad \int \frac{dx}{a + b \cos x}, \quad \int \frac{dx}{a + b \sin x}, \quad \int (px + q) \sqrt{ax^2 + bx + c} \, dx
\]

Definite integrals as a limit of a sum, Fundamental Theorem of Calculus (without proof). Basic properties of definite integrals and evaluation of definite integrals.

4. Applications of the Integrals

Applications in finding the area under simple curves, especially lines, areas of circles/parabolas/ellipses (in standard form only), area under the curve \( y = \sin x \), \( y = \cos x \), area between the two above said curves (the region should be clearly identifiable).

5. Differential Equations

Definition, order and degree, general and particular solutions of a differential equation. Formation of differential equation whose general solution is given. Solution of differential equations by method of separation of variables, homogeneous differential equations of first order and first degree. Solutions of linear differential equation of the type:

\[
\frac{dy}{dx} + py = q, \text{ where } p \text{ and } q \text{ are functions of } x \text{ and }
\]

\[
\frac{dx}{dy} + px = q, \text{ where } p \text{ and } q \text{ are functions of } y.
\]
UNIT-IV: VECTORS AND THREE-DIMENSIONAL GEOMETRY

1. Vectors


2. Three-dimensional Geometry

Direction cosines/ratios of a line joining two points. Cartesian and vector equation of a line, coplanar and skew lines, shortest distance between two lines. Cartesian and vector equation of a plane. Angle between (i) two lines, (ii) two planes. (iii) a line and a plane. Distance of a point from a plane.

UNIT-V: LINEAR PROGRAMMING

1. Linear Programming

Introduction, definition of related terminology such as constraints, objective function, optimization, different types of linear programming (L.P.) problems, mathematical formulation of L.P. problems, graphical method of solution for problems in two variables, feasible and infeasible regions, feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints).

UNIT-VI: PROBABILITY

1. Probability

Multiplication theorem on probability. Conditional probability, independent events, total probability, Baye’s theorem, Random variable and its probability distribution, mean and variance of random variable. Repeated independent (Bernoulli) trials and Binomial distribution.

Suggested Textbook

1) Mathematics Textbook for Class XII, NCERT, Publication.
UNIT–I: Probability–I

Random experiment, trial, sample space, sample point, event, impossible event, exhaustive events, equally like and mutually exclusive events. Independent & dependent events. Classical/mathematical and statistical definition of Probability. Axioms of probability. Law of addition for two event. Multiplication law for two events. Concept of conditional probability. Statement of Bayes Theorem (without proof) and examples.

UNIT-II: Probability–II


UNIT-III: Regression Analysis

Concept of Regression. Regression lines, Regression coefficients. Properties of Regression coefficients. Angle between two Regression lines. Examples on Regression Analysis.

Unit-IV: Theory of Attributes.


Unit-V: Index Numbers

Introduction, Characteristics of Index numbers, Uses of Index numbers, Problems in the construction of Index numbers. Price relatives. Methods of constructing Index Numbers. Simple or unweighted Index numbers and its limitations. Simple average of price relatives, its merits and de merits. Weighted Index numbers. Method of Laspeyer’s Paasche’s and Fisher’s ideal index numbers. Time and factor reversal tests.
Unit-VI Vital Statistics (08 marks)


Unit-VII Sampling Theory (08 marks)

Meaning and objectives of Sampling. Concept of Statistical population and Sample. Requisites of a good sample. Complete enumeration of population, advantages & disadvantages of complete enumeration over sample survey. Concept of Sampling and non Sampling errors. Types of Samples. Methods of Sampling. (Simple Random Sampling, stratifies random Sampling and systematic Sampling) advantages and disadvantages of these methods.

Unit-VIII: Time Series and Computers. (10 marks)

Introduction and importance of Time Series. Components of Time Series(secular trend, seasonal variation, Cyclic variation and irregular movements). Measure of trend (free hand graphical methods and semi average method).

Computers:- Introduction to operating systems (OS), functions of operating systems, graphical representation of data charts through Excel. Calculation of measures of central tendency trough Excel, Concept of Internet & its applications.

PRACTICAL WORK:- 30 marks

1. Practical’s based on Baye’s theorem.
2. Calculation of two Regression lines.
3. Construction of Index numbers (Laspyer’s, Paasche’s and Fisher’s method.)
4. Practical’s based on measures of fertility and mortality.
5. Estimates of Trend values by free hand and semi average method.
6. Drawing of Chars through Excel.
7. Measures of central Tendency through Excel.

BOOKS SUGGESTED:-

BUSINESS MATHEMATICS

Max. Marks: 100

Unit 1st: Matrices and determinants (15 marks)

Definition of a matrix, various types of matrices. Addition and multiplication of matrices.
Transpose of a matrix and its properties (without proof).

Unit 2nd Limits and continuity of a function (10 marks)

Definition of limit of a function, algebra of limits, fundamental limits

\[
\lim_{x \to a} \frac{x^n - a^n}{x - a}, \lim_{\theta \to 0} \frac{\sin \theta}{\theta}, \lim_{x \to 0} \frac{a^m - 1}{x}, \lim_{n \to \infty} \left(1 + \frac{1}{n}\right)^n,
\]

\[
\lim_{x \to 0} \frac{\log(1+x)}{x}
\]

and their applications. Continuity of a function.

Unit 3rd Derivative (15 marks)

Derivative of a function, its geometrical and physical significance, derivative of some simple functions by first principle method \((x^3(ax+b)^n), \sin x, \cos x, \tan x, \log x, a^x\), derivative of sum, product and quotient of two functions. Derivative of inverse trigonometric functions (without proof) with applications.

Unit 4th Integration (15 marks)

Integration as inverse of differentiation. Integration of various functions by substitutions, partial fractions & by parts. Evaluation integrals of the type

\[
\int \frac{dx}{x^2 \pm a^2}, \int \frac{dx}{a^2 - x^2}, \int \frac{dx}{\sqrt{a^2 - x^2}}, \int \frac{dx}{\sqrt{x^2 \pm a^2}},
\]

\[
\int \frac{dx}{ax^2 + bx + c}, \int \frac{(px + q)dx}{ax^2 + bx + c} \int \sqrt{x^2 \pm a^2} dx \int \sqrt{a^2 - x^2} dx,
\]

\[
\int \frac{dx}{ax^2 + bx + c}, \int \frac{(px + q)dx}{ax^2 + bx + c}
\]
Unit 5th Differential equation


Unit 6th Applications of Integration

Definite integrals as a limit of a sum, Fundamental theorem of calculus (without proof) Properties of definite integrals and evaluation of definite integrals using properties.

Unit 7th Application of calculus in commerce and economics

Average cost and marginal costs. Total revenue, average revenue and marginal revenue. Break even analysis, maximization of total revenue and total profits. Maximization of average costs.

Unit 8th Computing

What are computers, what they can perform and what they can’t perform. Role and use of computers in modern society, meaning of a problem- algorithm, a detailed and precise step by step method of solution of the problem illustrated by means of simple day to day problems. Problems (like buying of an article, multiplication, compound interests, discount, L.C.M and H.C.F with easy exercises.
UNIT 1: PROGRAMMING IN C++

REVIEW: C++ covered In Class -XI,

Object Oriented Programming:

Concept of Object Oriented Programming – Data hiding, Data encapsulation, Class and Object,

Abstract class and Concrete class, Polymorphism (Implementation of polymorphism using Function overloading as an example in C++); Inheritance, Advantages of Object Oriented Programming over earlier programming methodologies,

Implementation of Object Oriented Programming concepts in C++:

Definition of a class, Members of a class - Data Members and Member Functions (methods), Using Private and Public visibility modes, default visibility mode (private); Member function definition: inside class definition and outside class definition using scope resolution operator (::); Declaration of objects as instances of a class; accessing members from object(s), Array of type class, Objects as function arguments - pass by value and pass by reference;

Constructor and Destructor:

Constructor: Special Characteristics, Declaration and Definition of a constructor, Default Constructor, Overloaded Constructors, Copy Constructor, Constructor with default arguments;
Dstructor: Special Characteristics, Declaration and definition of destructor;

Inheritance (Extending Classes):

Concept of Inheritance, Base Class, Derived Class, Defining derived classes, protected visibility mode; Single level inheritance, Multilevel inheritance and Multiple inheritance, Privately derived, Publicly derived and Protectedly derived class, accessibility of members from objects and within derived class(es);
Data File Handling:

Need for a data file, Types of data files – Text file and Binary file; Text File: Basic file operations on text file: Creating/Writing text into file, Reading and manipulation of text from an already existing text File (accessing sequentially); Binary File: Creation of file, Writing data into file, Searching for required data from file, Appending data to a file, Insertion of data in sorted file, Deletion of data from file, Modification of data in a file; Implementation of above mentioned data file handling in C++; Components of C++ to be used with file handling: Header file: fstream.h; ifstream, ofstream, fstream classes; Opening a text file in in, out, and app modes; Using cascading operators for writing text to the file and reading text from the file; open(), get(), put(), getline() and close() functions; Detecting end-of-file (with or without using eof() function); Opening a binary file using in, out, and app modes; open(), read(), write() and close() functions; Detecting end-of-file (with or without using eof() function); tellg(), tellp(), seekg(), seekp() functions

Pointers:

Declaration and Initialization of Pointers; Dynamic memory allocation/deallocation operators: new, delete; Pointers and Arrays: Array of Pointers, Pointer to an array (1 dimensional array), Function returning a pointer, Reference variables and use of alias; Function call by reference. Pointer to structures: Dereference operator: *, ->; self referencial structures;

UNIT 2: DATA STRUCTURES

Arrays:

One and two Dimensional arrays: Sequential allocation and address calculation; One dimensional array: Traversal, Searching (Linear, Binary Search), Insertion of an element in an array, deletion of an element from an array, Sorting (Insertion, Selection, Bubble sort), concatenation of two linear arrays, merging of two sorted arrays; Two-dimensional arrays: Traversal, Finding sum/difference of two NxM arrays containing numeric values, Interchanging Row and Column elements in a two dimensional array;

Stack (Array and Linked implementation of Stack):

Operations on Stack (PUSH and POP) and its Implementation in C++, Converting expressions from INFIX to POSTFIX notation and evaluation of Postfix expression; Queue: (Circular Array and Linked Implementation):

Operations on Queue (Insert and Delete) and its Implementation in C++.

UNIT 3: DATABASES AND SQL

Database Concepts:

Relational data model: Concept of domain, tuple, relation, key, primary key, alternate key, candidate key; Relational algebra: Selection, Projection, Union and Cartesian product;

Structured Query Language:

General Concepts: Advantages of using SQL, Data Definition Language and Data Manipulation Language; Data types: NUMBER, CHARACTER, DATE;
SQL Commands:
CREATE TABLE, DROP TABLE, ALTER TABLE, UPDATE...SET..., INSERT, DELETE; SELECT, DISTINCT, FROM, WHERE, IN, BETWEEN, GROUP BY, HAVING, ORDER BY; SQL functions: SUM, AVG, COUNT, MAX and MIN; obtaining results (SELECT query) from 2 tables using equi-join, cartesian product and union Note: Implementation of the above mentioned commands could be done on any SQL supported software on one or two tables.

UNIT 4: BOOLEAN LOGIC

Binary-valued Quantities, Boolean Variable, Boolean Constant and Boolean Operators: AND, OR, NOT; Truth Tables; Closure Property, Commutative Law, Associative Law, Identity law, Inverse law, Principle of Duality, Idempotent Law, Distributive Law, Absorption Law, Involution law, DeMorgan’s Law and their applications; Obtaining Sum of Product (SOP) and Product of Sum (POS) form from the Truth Table, Reducing Boolean Expression (SOP and POS) to its minimal form, Use of Karnaugh Map for obtaining minimal form of Boolean expressions (up to 4 variables); Applications of Boolean Logic:
- Digital electronic circuit design using basic Logic Gates (NOT, AND, OR, NAND, NOR)
- Use of Boolean operators (AND, OR) in SQL SELECT statements
- Use of Boolean operators (AND, OR) in search engine queries.

UNIT 5: COMMUNICATION AND OPEN SOURCE CONCEPTS

Evolution of Networking: ARPANET, Internet, Interspace; Different ways of sending data across the network with reference to switching techniques;

Data Communication Terminologies:

Concept of Channel, Baud, Bandwidth (Hz, KHz, MHz, GHz) and Data transfer rate (bps, kbps, Mbps, Gbps, Tbps);

Transmission Media:

Twisted pair cable, coaxial cable, optical fiber, infrared, radio link, microwave link and satellite link.

Networking devices:

Modem, RJ45 connector, Ethernet Card, Hub, Switch, Gateway;

Network Topologies and types:

Bus, Star, Tree; Concepts of PAN, LAN, WAN, MAN

Network Protocol:

TCP/IP, File Transfer Protocol (FTP), PPP, Level-Remote Login (Telnet); Wireless/Mobile Communication protocols such as GSM, CDMA, GPRs, WLL; Electronic Mail protocol such as SMTP, POP3, iMAP, Chat, Video Conferencing; VoIP protocols such as Wi-Fi and Wi-Max
Network Security Concepts:

Threats and prevention from Viruses, Worms, Trojan horse, Spams Use of Cookies, Protection using Firewall; India IT Act, Cyber Law, Cyber Crimes, IPR issues, Hacking.

Web Services:

Hyper Text Markup Language (HTML), eXtensible Markup Language (XML); Hyper Text Transfer Protocol (HTTP); Domain Names; URL; IP Address; Website, Web browser, Web Servers; Web Hosting, Web Scripting – Client side (VB script, Java Script, PHP) and Server side (ASP, JSP, PHP), Web 2.0 (for social Networking)

Open Source Terminologies:

Open Source Software, Freeware, Shareware, Proprietary software, FLOSS, GNU, FSF, OSI;

Practicals: 30 Marks

Duration: 3 hours

External: 20 Marks

Internal = 10 Mrks

1. Programming in C++

One programming problem in C++ to be developed and tested in Computer during the examination. Marks are allotted on the basis of following:

Logic: 3 Marks
Documentation/Indentation: 2 Marks
Output presentation: 2 Marks

Notes: The types of problems to be given will be of application type from the following topics

- Arrays (One dimensional and two dimensional)
- Array of structure
- Stack using arrays and linked implementation
- Queue using arrays (circular) and linked implementation
- Binary File operations (Creation, Displaying, Searching and modification)
- Text File operations (Creation, Displaying and modification)

2. SQL Commands

Five Query questions based on a particular Table/Reaction to be tested practically on Computer during the examination. The command along with the result must be written in the answer sheet.

3. Project Work

The project has to be developed in C++ language with Object Oriented Technology and also should have use of Data files. (The project is required to be developed in a group of 2-4 students)

- Presentation on the computer
- Project report (Listing, Sample, Outputs, Documentation)
- Viva
4. Practical File  
Must have minimum 20 programs from the following topics  
- Arrays (One dimensional and two dimensional, sorting, searching, merging, deletion’& insertion of elements)  
- Arrays of structures, Arrays of Objects  
- Stacks using arrays and linked implementation  
- Queues using arrays (linear and circular) and linked implementation  
- File (Binary and Text) operations (Creation, Updation, Query)  
- Any computational based problems  
- 15 SQL commands along with the output based on any table/relation: 3 Marks  

5. Viva Voce  
Viva will be asked from syllabus covered in class XII and the project developed by student.  

GUIDELINES FOR PROJECTS (Class XII)  

1. Preamble  
1.1 The academic course in Computer Science includes one Project. The Purpose behind this is to consolidate the concepts and practices imparted during the course and to serve as a record of competence.  
1.2 A group of 2-4 students as team may be allowed to work on one project.  

2. Project content  
2.1 Project for class XII should ensure the coverage of following areas of curriculum:  
- a. Problem Solving  
- b. Data Structure  
- c. Object Oriented Programming in C++  
- d. Data File Handling  
Theme of the project can be  
- Any subsystem of a System Software or Tool  
- Any Scientific or a fairly complex algorithmic situation.  
  School Management, Banking, Library information system, Hotel or Hospital  
- Management system, Transport query system  
- Quizzes/Games;  
- Tutor/Computer Aided Learning Systems  
2.2 The aim of the project is to highlight the abilities of algorithmic formulation, modular programming, optimized code preparation, systematic documentation and other associated aspects of Software Development.  
2.4 The assessment would be through the project demonstration and the Project Report, which should portray Programming Style, Structured Design, Minimum Coupling, High Cohesion, Good documentation of the code to ensure readability and ease of maintenance.
INFORMATICS PRACTICES

Maximum Marks : 100
Theory : Marks 70
Practicals : Marks 30, External : 20 marks, Internal : 10 marks
Time : 3 hours

<table>
<thead>
<tr>
<th>Topic</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Networking &amp; OSS</td>
<td>20</td>
</tr>
<tr>
<td>Visual Basic Programming</td>
<td>15</td>
</tr>
<tr>
<td>Fundamentals of DBMS</td>
<td>20</td>
</tr>
<tr>
<td>Internet &amp; Web Application Development</td>
<td>15</td>
</tr>
</tbody>
</table>

UNIT I: COMPUTER NETWORKING & OSS

A brief overview of Networking, Identifying computers over a network; Types of Network Address (MAC, IP); Domain Name Resolution; Types of Networks (PAN LAN, MAN, WAN); Networking Topologies (BUS, RING, STAR, TREE); Network Media – Guided (Twisted Pair, Fiber Optics, Co-axial), Unguided (Infrared, Radio, Microwave); Network Devices – Modem, Repeater, Hub, Switch, Gateway and their function; Network Technologies – Ethernet, Bluetooth, WiFi; Network Security – Brief Overview, Network Threats, Virus, Worms. Trojan Horse, Denial Of Service, Snooping; Network Security Measures – Anti-virus, Firewall, Intrusion Detection.


UNIT II : VISUAL BASIC PROGRAMMING

Revision of Decision Structures (IF, IF-Then-Else, Select Case), Revision of Looping Structure (Do–While, While – Wend, For – Next); Functions – Inbuilt Functions (String – Space) (), chr(), Str(), Right(), Left(), Mid(), InStr(), Len(), LTrim(), RTrim(), UCase(), LCase(), String(), Number Function – Sgn(), Val(), Int(), Abs(), Fix(), Sqr(), Power(), Round(), Trunc(): Time Functions–Now(), Time(), Minute(), Month(), MsgBox(), InputBox(); Types of Forms (SDI & MDI).

UNIT III : FUNDAMENTALS OF DBMS

Introduction to Database, definition of Database. Table, Attribute, Tuple / Rows, Field, Data; Data Types & Data Integrity, Candidate Key, Alternate Key, Primary Key, Foreign Key; Constraints (Unique, NULL, Not NULL); Front End and Back End of a DBMS, Examples of Front End Software like Oracle, VB, Visual C++, Etc;
Types of SQL Commands – SQL Data types (Varchar2, Char, Number, Date, Long); SQL Operators (Arithmetic, Relational, Logical); Types of SQL Commands (DDL, DML); DDL Commands (Create, Alter, Drop), DML Commands (Select, Insert, Update, Delete including different Clauses); TCL Commands (Commit, RollBack, SavePoint).

SQL Functions – Brief Overview, Character & String Function; Character Function (Lower, Upper, InitCap), Character Manipulation Function (Concat, Substr, Length, Instr, LPad, Trim), Number Functions (Abs, Ceil, Exp, Len, Long, Mod, Power, Round, SQRT, Trunc, Floor); Date Functions (Months_Between, Add_Months, Next_Day, Last_Day); Conversion Functions (To_Date, To_Number, To_Char); Group Functions (Avg (), Count(), Max(), Min(), Sum()).

UNIT IV : INTERNET & WEB APPLICATION DEVELOPMENT

Introduction, hardware/Software requirement, Uses and facilities of Internet, ISP, WWW, Web Browser, Web Page & Types, Web Address, Search Engines, Web Applications, URL Address.

Introduction to HTML Scripting language, Page Structure, Head Section, Body Section, Base Font, Font, Text Links,. Text Format, Text Size, Text Layout, Marquee, HTML Lists – Bulleted, Numbered, Lists, Images – GIF, JPG, Resizing, Body Around, Alternate Text, Spacing Around, Alignment; Background Color, Background Image; Html Tables, Basic Tags, Table Tags, Row/Cell Tags.

PRACTICALS

Time : 3 Hours

Marks 30

1. LAN Implementation of School Computer Lab. & Identifying different Network Devices used during the setup.

2. Establishing a PAN using PDU (Personal Data Units) any one of the wireless technologies given in the syllabus.

3. WAP to check whether a given number is Even/Odd.

4. WAP to print the Factorial of a given Number.

5. WAP to SWAP two given values.

6. WAP to find min/max of three given numbers.

7. WAP to print the Multiplication table of a given number.

8. WAP to generate the Fibonacci Series.

9. WAP to convert a given string from Lower Case to Upper Case or Vice Versa.
10. Create an Application using Scroll Barr Control and Text Boxes to mix different colors.

11. Students are supposed to workout 25 SQL queries based on one/two tables.

12. Create five Web Pages using different HTML Tags (Heading, Links, Marquee, Images, Background Color).
ENGLISH LITERATURE

Romeo and Juliet by Shakespeare – 40 marks
An Anthology of Poems – 60 marks

Max. Marks 100 Time 3 hrs

Blossoms-II

UNIT-I

01 Say This City Has Ten Million Souls W.H.Auden
02 A Far Cry From Africa Derek Walcott
03 Galib’s Gazal Translated by Aga Shahid Ali
04 When I Have Fears That I May Cease To Be John Keats
05 Selections From Under Siege Mahmud Darwish 15 Marks

UNIT- II

06 The Queen’s Rival Sarojini Naidu
07 The Lotus Toru Dutt
08 A Memory Lost From Delhi Aga Shahid Ali
09 The Tiger And The Deer Sri Aurobindu
10 Ask Me Not For That Old Fervour Faiz Ahmad Faiz
Translated by Shiv K.Kumar 15 Marks

UNIT-III

11 Vaakhs of Lal Ded Translated by Prof. Neer ja Mattoo
12 Rubayat of Omar Khayyam Translated by Edward FitzGerald
13 Leave This Rabindra Nath Tagore
14 The Tale of Melon City Vikram Seth
15 Autumn Kalidasan
Translated by Arthur W. Ryder 15 Marks

UNIT-IV

16 Shrukhs of Sheikh Ul Alam Translated by Prof. G.R.Malik
17 A Will In The Name Of A New Man Kehari Singh Madhukar
Translated by Shiv Nath
18 Seven Ages William Shakespeare
19 The Raven Edgar Allan Poe 15 Marks
The paper shall be divided into two sections, Section “A” shall be exclusively based on the play tilted Romeo and Juliet by Shakespeare carrying 40 Marks while as Section “B” shall be based on Blossoms-II Anthology of poems carrying 60 Marks.

**SECTION “A”**

**Play (40 Marks)**

Q 1. One question based on reference to context. This question shall carry two parts, A & B with internal choice. Each part shall carry 7½ Marks. [7½ × 2 = 15 Marks]

Q 2. One long answer type question on theme, plot, style, background, character etc. of the play. The candidate shall have to attempt one question out of two. [10 × 1 = 10 Marks]

Q 3. This question shall be based on two parts i.e. a & b. Part a (short answer type question) shall be based on specific scene, incident, situation etc. with internal choice which has special importance in the play.

   Part b shall be based on the opinion, critical appreciation of the play. This shall be an open type question based on the student’s understanding of the play with internal choice. Each part shall carry (05) marks. [05 × 02 = 10 Marks]

Q 4. Objective type questions based on the play concerning profile of the playwright dates, theme, style, dramatic technique, plot, incident, dialogue, character etc. Each question shall carry one mark. [01 × 05 = 05 Marks]

**SECTION B**

**(Poetry 60 Marks)**

Q 5. One questions based on reference to context. This question shall carry two parts i.e a & b with internal choice. Each question shall carry 7½ Marks. [7½ × 2 = 15 Marks]

Q 6. This question shall be based on the poems emphasizing on poetic techniques/literary devices. The examiner may ask poetic techniques such as metaphor, simile, personification, imagery, paradox, irony, satire, supernaturalism etc. from the prescribed poems. Students shall have to attempt five questions out of eight each question shall carry four marks. [04 × 05 = 20 Marks]

Q 7. This question shall be based on two parts i.e. a & b, each carrying 05 marks and shall be based on genre specificity of poems such as sonnet, ode, ghazal, free verse etc. The candidate’s comprehensive and critical understanding of poems shall also be tested. The candidate shall have to attempt two questions out of four. There shall be internal choice in questions. [05 × 2 = 10 Marks]

Q 8. Two short answer type question based on textual understanding of the poems with internal choice. [05 × 2 = 10 Marks]

Q 9. Objective type questions based on nineteen poems concerning profile of the poets, dates, poetic techniques, themes style etc. shall be asked. Each question shall carry 01 Mark. [05 × 1 = 05 Marks]
PHYSICS

Maximum Marks: 100
Theory: Marks 70
Practicals: Marks 30

Time: 3 hour

I. Electrostatics  08 marks
II. Current Electricity  07 marks
III. Magnetic effects of current and magnetism  08 marks
IV. Electro-magnetic induction and alternating currents  08 marks
V. Electro-magnetic waves  03 marks
VI. Optics  14 marks
VII. Dual nature of matter and radiation  04 marks
VIII. Atoms and Nuclei  06 marks
IX. Electronic devices  07 marks
X. Communication system  05 marks

Unit I : Electrostatics

Electric charges; conservation of charge, coulomb’s law – force between two point charges, forces between multiple charges, superposition principle and continuous charge distribution.

Electric field, electric field due to point charge, electric field lines, and electric dipole, electric field due to dipole, Torque on a dipole in uniform electric field.

Electric flux, statement of Gauss’s theorem and its application to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell (field inside and outside).

Electric potential, potential difference, electric potential due to point charge, a dipole and system of charges; equipotential surfaces, electric potential energy of a system of two point charges and of electric dipole in an electrostatic field.

Conductor and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarization, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor. Van de Graaff generator.

Unit-II : Current Electricity

Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility and their relation with electric current. Ohm’s law, electric resistance, V-I. Characteristics, (linear, non-linear), electrical energy and power, electric resistivity and conductivity, carbon resistors, colour code for carbon resistors; Temperature dependence of resistance.

Potentiometer-principle and its application to measure potential difference and for comparing e.m.f. of two cells; measurement of internal resistance of a cell.

Unit-III : Magnetic Effects of Current and Magnetism

Concept of magnetic field, Oersted’s experiment, Biot-Savart law and its application to current carrying circular loop. Ampère’s law and its applications to infinite long straight wire, straight and toroidal solenoids.


Torque experienced by a currentloop in uniform magnetic field, moving coil galvanometer-its current sensitivity and conversion to ammeter and voltmeter.

Current loop as a magnetic dipole and its magnetic dipole moment. Magnetic dipole moment of a revolving electron. Magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis. Torque on a magnetic dipole (bar magnet) in uniform magnetic field, bar magnet as an equivalent solenoid, magnetic field lines, Earth’s magnetic field and magnetic elements. Para, dia, and ferro-magnetic substances with examples. Electromagnets and factors affecting their strength, permanent magnets.

Unit IV : Electro-magnetic Induction and Alternating Currents

Electromagnetic induction, Faraday’s laws, induced e.m.f. and current; Lenz’s law, Eddy currents, self and mutual inductance.

Alternating currents, peak and rms value of alternating current/voltage. Reactance and impedance, LC oscillations (qualitative treatment only) & LCR circuits series, Resonance, power in A.C. circuits, watts current, AC Generator and transformer.

Unit-V : Electro-magnetic Waves

Need for displacement current, Electro-magnetic waves and their characteristics (qualitative ideas only), transverse nature of electromagnetic waves.

Electromagnetic spectrum (radio-waves, micro-waves, infra-red, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses.

Unit VI : Optics

Ray Optics - Reflection of light; spherical mirrors; mirror formula, Refraction of light- total internal reflection and its applications, optical fibres, refraction at spherical surfaces, lenses, thin lenses formula, lens-makers formula, Newton’s relation: displacement method to find position of images (conjugate points), Magnification, power of lens, combination of thin lenses in contact. Combination of a lens and a mirror, Refraction and dispersion of light through a prism.

Scattering of light-blue colour of the sky and reddish appearance of the sun at sunrise and sunset. Elementary idea of Raman effect.

Optical instruments – Human eye, image formation and accommodation, correction of eye defects (myopia, hypermetropia, presbyopia and astigmatism) using lenses. Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.

Wave optics-wave front and Huygen’s principle, reflection and refraction of plane wave at
a plane surface using wavefronts. Proofs of laws of reflection and refraction using Huygen’s Principle, Interference, Young’s double slit experiment and expression for fringe width, coherent sources and sustained interference of light.

Diffraction due to a single slit, width of central maximum. Resolving power of microscopes and astronomical telescopes. Polarization, plane polarized light, Brewter’s law, uses of plane polarized light and polaroids.

Unit VII : Dual Nature of Matter and Radiation

Dual nature of radiation. Photoelectric effect, Hertz and Lenard’s observations; Einstein’s photoelectric equation- particle nature of light.

Matter waves, wave nature of particles, de-Broglie relation, Davisson- Germer experiment (experimental details should be omitted; only conclusion should be explained).

Unit VIII : Atomic Nuclei

Alpha-particle scattering experiment, Rutherford’s model of atom, Bohr’s Model of atom; energy levels, Hydrogen spectrum. Continuous and characteristics of X-rays. Composition and size of nucleus; atomic masses, isotopes, isobars, isotones, Radioactivity (alpha, beta and gamma) particles/ rays and their properties, Radioactive decay law, Mass – energy relation, mass defect, binding energy/nucleon and its variation with mass no., nuclear fission and nuclear fusion.

Unit IX : Electronic Devices

Energy bands in solids, conductors, insulators and semiconductors, semiconductor diode, I-V characteristics in forward and reverse bias, diode as a rectifier; I-V characteristics of LED, photo diode, solar cell and Zener diode; Zener diode as a voltage regulator, Junction transistors and its action; characteristics of a transistor, transistor as an amplifier (common emitter configuration and oscillator (common emitter). Logic gates (OR, AND, NOT), concept of NAND and NOR gates, Transistor as a switch.

Unit X : Communication System

Elements of communication system (block diagram only), Band width of signals (speech, T.V and digital data); bandwidth of transmission medium, propagation of electromagnetic waves in the atmosphere, sky and space wave propagation.

Need for modulation; Production and detection of an amplitude modulated wave.
Practicals : 30 marks
External: 20
Internal: 10

Every student will perform at least 15 experiments (7 from section A & 8 from section B). The activities mentioned here should be for the purpose of demonstration. One project of three marks is to be carried out by the students.

Evaluation Scheme for Practical Examination:
- One experiment from each of the two sections = 10 marks
- One activity from each of the two sections (2 activities in total) = 2+2= 04 marks
- Record of one Investigatory Project and viva based on Project = 02 marks
- Practical Record of experiments and activities = 02 marks
- Viva-voce on experiments and activity = 02 marks

Total Marks = 20

Section – A

Experiments:
1. To determine resistance per cm. of a given wire by plotting a graph of pot. difference vs. current (Ohm’s law).
2. To find resistance of a given wire using metre bridge and hence determine the specific resistance of its material.
3. To verify the laws of combination (series/parallel) of resistance using a metre bridge.
4. To compare the e.m.f of two given primary cells using potentiometre.
5. To determine internal resistance of a given primary cell using potentiometre.
6. To determine resistance of a galvanometre by using half deflection method and also find its figure of merit.
7. To convert the given galvanometre (of known resistance and figure of merit) into an ammetre and voltmetre of desired range and to verify the same.
8. To find the frequency of the a.c. mains with a Sonometre.

Activities:
1. To measure the resistance and impedance of an inductor with or without iron care.
2. To measure resistance voltage (AC/DC), current (AC) and check continuity of a given circuit using multi metre.
3. To assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse and a power source.
4. To study the variation in potential drop with length of a wire for a steady current.
5. To draw the diagram of a given open circuit comprising at least a battery, rheostat, key;
ammetre and voltmetre. Make the components that are not connected in proper order and correct the circuit and also circuit diagram.

Section – B

Experiment:

1. To find the focal length of a convex mirror, using a convex lens.
2. To find the focal length of a concave lens using a convex lens.
3. To find the value of v for different values of u in case of a concave mirror and also to find its focal length.
4. To find the focal length of a convex lens by plotting a graph between u and v or between I/u and I/v.
5. To determine angle of minimum deviation (\(d_m\)) for a given prism by plotting a graph between angle of incidence and angle of deviation (\(d_m\)).
6. To determine refractive index of a glass slab using a traveling microscope.
7. To find refractive index of a liquid using I) concave mirror II) convex lens and plane mirror.
8. To draw the characteristics of a common-emitter npn or pnp transistor and to find out the values of current and voltage gains.
9. To draw the I-V characteristics curve of a p-n junction in forward bias and reverse bias.
10. To draw the characteristic curve of a zener diode and to determine its reverse break down voltage.

Activities:

1. To study effect of intensity of light by varying distance of the source on an L.D.R.
2. To identify a diode, a LED, a transistor, and IC, a resistor and a capacitor from mixed collection of such items.
3. Use of multimetre to i) identify base of transistor ii). Distinguish between npn and pnp-transistors iii) see the unidirectional flow of current in case of a diode and an LED. iv) Check whether a given electronic component (e.g. diode, transistor or IC) is in working order.
4. To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab.
5. To observe polarization of light using two polaroids.
6. To observe diffraction of light due to a thin slit.
7. To study the size and nature of the image formed by i) convex lens, ii) concave mirror, on a screen by using a candle and screen for different distances of the candle from the lens/mirror.
8. To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses.
Investigatory Projects:

1. To investigate whether the energy of a simple pendulum is conserved.
2. To determine the radius of gyration about the centre of mass of a scale used as a bar pendulum.
3. To investigate changes in the velocity of a body under the action of a constant fare and determine its acceleration.
4. To compare effectiveness of different materials as absorbers of sound of heat.
5. To determine the wave length of laser beam by diffraction.
6. To study various factors on which the internal resistance, emf of a cell depends.
7. To construct a time switch and study dependence of its time constant on various factors.
8. To study infrared radiations emitted by different sources using photo-transistor.
9. To compare effectiveness of different materials and insulators.
10. To design an automatic traffic signal system using suitable combination of logic gates.
11. To study luminosity of various electric lamps of different powers and make.
12. To compare the Young’s modulus of elasticity of different specimens of rubber and also draw their elastic hysterises curve.

CHEMISTRY

Maximum Marks: 100
Theory: Marks 70
Practicals: Marks 30
Time: 3 hour

Unit I  Solid State  4 marks
Unit II  Solutions  5 marks
Unit III Electrochemistry  5 marks
Unit IV  Chemical Kinetics  5 marks
Unit V  Surface Chemistry  4 marks
Unit VI General Principles and Processes of Isolation of Elements  3 marks
Unit VII p-Block Elements  8 marks
Unit VIII d- and f- Block Elements  5 marks
Unit IX  Coordination Compounds  3 marks
Unit X  Haloalkanes and Haloarenes  4 marks
Unit XI  Alcohols, Phenols and Ethers  4 marks
Unit XII  Aldehydes, Ketones and Carboxylic Acids  6 marks
Unit XIII  Organic Compounds containing Nitrogen  4 marks
Unit XIV  Biomolecules  4 marks
Unit XV  Polymers  3 marks
Unit XVI  Chemistry in Everyday Life  3 marks

Unit-I: SOLID STATE

Classification of solids based on different binding forces: molecular, ionic, covalent and metallic solids, amorphous solids and crystalline solids (elementary idea only), unit cell in two dimensional & three dimensional lattices, packing efficiency, calculation of density of unit cell, packing in solids, voids, number of atoms per unit cell in a cubic unit cell, point defects. Properties of solids (electrical, magnetic & dielectric), Band theory of metals, conductors, semi-conductors and insulators and n & p type semiconductors.

Unit-II: SOLUTIONS

Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, colligative properties: relative lowering of vapor pressure of a solution, Raoult’s law, elevation of boiling point, depression in freezing point temperature and osmotic pressure), determination of molecular masses using colligative properties. Abnormal molecular mass, van’t Hoff factor and calculations involving it.

Unit-III: ELECTROCHEMISTRY

Redox reactions, conductance in electrolytic solutions, specific conductivity, molar
conductivity, variation of conductivity with concentration, Kohlrausch’s law and its applications
Electrolysis and laws of electrolysis (elementary idea), dry cell- electrolytic cells and galvanic cells;
lead accumulator, emf of a cell, standard electrode potential, Nernst equation and its application to
chemical cells, relation between Gibb’s energy change and emf of a cell, fuel cells, corrosion

Unit-IV: CHEMICAL KINETICS

Rate of reaction (average and instantaneous rate of a reaction), factors affecting rate of
reactions: (concentration, temperature, catalyst), rate law, specific rate constant and order, molecularity
of a reaction, integrated rate expression of zero and first order reactions and their derivations, half
life period. Concept of collision theory (elementary idea, no mathematical derivation), Activation
energy, Arrhenius equation.

Unit-V: SURFACE CHEMISTRY

Adsorption- physical and chemical adsorption, factors affecting adsorption of gases on solids;
Catalysis: homogeneous and heterogeneous, activity & selectivity. Enzyme catalysis, Colloidal state:
distinction between true solution, colloids and suspensions. Types of colloids- lyophilic and lyophobic,
multimolecular, macromolecular and associated colloids (micelles), properties of colloids: Tyndall
effect, Brownian movement, Electrophoresis, Coagulation, Emulsions-types of emulsions. Elementary
idea about nanomaterials.

Unit-VI: GENERAL PRINCIPLES AND PROCESSES OF ISOLATION OF ELEMENTS

Principles and methods of extraction: concentration, oxidation, reduction, electrolytic method
& refining; occurrence & principles of extraction of aluminium, copper, zinc and iron.

Unit- VII: p-BLOCK ELEMENTS

**Group 15 Elements:** General introduction, electronic configuration, occurrence, oxidation
states, trends in physical and chemical properties; nitrogen: preparation, properties & uses. Compounds
of nitrogen: preparation & properties of ammonia and nitric acid, oxides of nitrogen (structure only),
Phosphorus – allotropic forms; compounds of phosphorus: preparation & properties of phospine,
halides (PCl₃, PCl₅) and oxo- acids (elementary idea only).

**Group 16 Elements:** General introduction, electronic configuration, occurrence, oxidation
states, trends in physical and chemical properties; dioxygen: preparation, properties & uses. Classification of oxides; ozone. Sulphur- allotropic forms; compounds of sulphur: preparation,
properties & uses of SO₂ and Sulphuric acid: industrial process of manufacture, properties and uses,
other oxides and oxoacids of sulphur (structures only).

**Group 17 Elements:** General introduction, electronic configuration, oxidation states, trends
in physical and chemical properties; compounds of halogens-preparation, properties and uses of
Chlorine and hydrochloric acid, interhalogen compounds, oxoacids of halogens (structures only)

**Group 18 Elements:** General introduction, electronic configuration, occurrence, trends in
physical & chemical properties & Uses.

Unit- VIII: d and f –BLOCK ELEMENTS

General introduction, electronic configuration, occurrence and characteristics of the transition
metals, general trends in properties of first row transition metals (metallic character, IE, electrode
potential, oxidation state, ionic radii, catalytic properties, colored ions, complex formation, magnetic properties, interstitial compounds, alloy formation). Preparation and properties of $K_2Cr_2O_7$ and $KMnO_4$.

Lanthanides: electronic configuration, oxidation state, chemical reactivity and lanthanide contraction and its consequences.

Actinides- electronic configuration, oxidation states and comparison with lanthanoids.

**Unit- IX: CO-ORDINATION COMPOUNDS**

Co-ordination compounds: Introduction, ligands, co-ordination number, color, magnetic properties and shapes, IUPAC nomenclature of mononuclear co-ordination compounds. Bonding (Werner’s theory, VBT and CFT); structural and stereoisomerisms, importance of coordination compounds in qualitative inclusion of analysis, extraction of metals and biological systems.

**Unit-X: HALOALKANES AND HALOARENES**

**Haloalkanes:** Nomenclature, nature of C-X bond, physical & chemical properties, mechanism of substitution reactions. Stability of carbocations, R-S and d-l configurations.

**Haloarenes:** Nature of C-X bond, substitution reactions (directive influence of halogens for monosubstituted compounds only), Stability of carbocations, R-S and D-L configurations

Uses and environmental effects of– dichloromethane, trichloromethane, tetrachloromethane, iodoform, freon, and DDT.

**Unit- XI: ALCOHOLS, PHENOLS AND ETHERS**

**Alcohols:** Nomenclature, methods of preparation, physical & chemical properties (of primary alcohols only), identification of primary, secondary & tertiary alcohols; mechanism of dehydration of alcohols, uses, some important compounds – methanol and ethanol.

**Phenols:** Nomenclature, methods of preparation, physical & chemical properties, acidic nature of phenol, electrophillic substitution reactions, uses of phenols.

**Ethers:** Nomenclature, methods of preparation, physical & chemical properties and uses.

**UNIT- XII: ALDEHYDES, KETONES AND CARBOXYLIC ACIDS**

**Aldehydes and Ketones:** Nomenclature, nature of carbonyl group, methods of preparation, physical & chemical properties & mechanism of nucleophilic addition reaction to C = O group, reactivity of alpha hydrogen in aldehydes, uses.

**Carboxylic Acids:** Nomenclature, acidic nature, methods of preparation, physical & chemical properties and uses

**UNIT- XIII: ORGANIC COMPOUNDS CONTAINING NITROGEN**

**Amines:** Nomenclature, classification, structure, methods of preparation, physical & chemical properties, uses, identification of primary, secondary & tertiary amines.

**Cyanides and Isocyanides:** Structures of cyanide and isocyanide groups, nomenclature, preparation, physical properties and chemical reactions.
**Diazonium Salts:** Preparation and chemical reactions (mechanism of diazotization), and importance in synthetic organic chemistry.

**UNIT- XIV: BIOMOLECULES**

**Carbohydrates:** Classification (aldoses and ketoses), monosaccharides: Glucose, fructose: structure, preparation and chemical reactions; oligosaccharides (sucrose, lactose & maltose) Polysaccharides: (starch, cellulose and glycogen); importance.

**Proteins:** Elementary idea of amino acids: peptide bond, polypeptides and primary, secondary, tertiary and quaternary structure of proteins (Qualitative idea only). denaturation of proteins; enzymes, lipids & hormones, their classification & functions.

**Nucleic Acids:** DNA and RNA (purines and pyrimidines, nucleosides, nucleotides and fragments up to four nucleotides).

**Vitamins:** Classification and functions, sources and deficiency diseases.

**UNIT- XIV: POLYMERS**

Natural & synthetic polymers, methods of polymerization (addition and condensation), co-polymerization, and some important polymers: natural and synthetic like polythene, nylon, Bakelite, polyesters and rubber. Biodegradable and non- biodegradable polymers.

**Unit-XVI: CHEMISTRY IN EVERYDAY LIFE**

i) **Chemicals in medicine and health care**- analgesics, tranquillizers, antiseptics, disinfectants, antimicrobials, anti-fertility drugs, anti-histamines, antibiotics, antacids.

ii) **Chemicals in food**- preservatives, artificial sweetening agents.

iii) **Cleansing agents** – Soaps and detergents, cleansing action.

**PRACTICALS**

**External: 20**

**Internal:10**

**Evaluation Scheme for Practical Examination:**

- Volumetric analysis = 06 marks
- Salt Analysis = 06 marks
- Content based experiment = 04 marks
- Class record, Project work and viva = 04 marks

**Total = 20 marks**

**A. SURFACE CHEMISTRY**

i) Preparation of one lyophilic and one lyophobic sol
   - Lyophilic sol-starch, egg albumin and gum
   - Lyophobic sol-aluminium hydroxide, ferric hydroxide, arsenious sulphide.

ii) Study of the role of emulsifying agents in stabilizing the emulsion of different oils.
B. CHEMICAL KINETICS
   i) Effect of concentration and temperature on the rate of reaction between sodium thiosulphate and hydrochloric acid.
   ii) Study of reaction rates of any one of the following:
       a) Reaction of iodide ions with hydrogen peroxide at room temperature using different concentration of iodide ions.
       b) Reaction between potassium iodate (KIO₃) and sodium sulphite (Na₂SO₃) using starch solution as indicator (clock reaction).

C. THERMOCHEMISTRY
   Any one of the following experiments:
   i) Enthalpy of dissolution of CuSO₄ or KNO₃.
   ii) Enthalpy of neutralization of strong acid (HCl) and strong base (NaOH).
   iii) Determination of enthalpy change during interaction (Hydrogen bond formation) between acetone & chloroform.

D. ELECTRO CHEMISTRY
   i) Variation of cell potential in Zn/Zn²⁺ // Cu²⁺/ Cu with change in concentration of electrolytes (CuSO₄ or ZnSO₄) at room temperature.

E. CHROMATOGRAPHY
   i) Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of Rₚ values.
   ii) Separation of constituents present in an inorganic mixture containing two cations only (constituents having wide difference in Rₚ values to be provided).

F. PREPARATION OF INORGANIC COMPOUNDS
   i) Preparation of double salt of ferrous ammonium sulphate or potash alum.
   ii) Preparation of potassium ferric oxalate.

G. TEST FOR THE FUNCTIONAL GROUPS PRESENT IN ORGANIC COMPOUNDS
   Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (primary) groups.

H. Study of carbohydrates, fats and proteins in pure form and detection of their presence in given foodstuffs.

I. Determination of concentration/ molarity of KMnO₄ solution by titrating it against a standard solution of:
   i) oxalic acid
   ii) ferrous ammonium sulphate.
J. Qualitative Analysis

Determination of one cation and one anion in a given salt (insoluble salts to be excluded):

**Cations:** Pb$^{2+}$, Cu$^{2+}$, As$^{3+}$, Al$^{3+}$, Fe$^{3+}$, Mn$^{2+}$, Zn$^{2+}$, Ni$^{2+}$, Co$^{2+}$, Ca$^{2+}$, Sr$^{2+}$, Ba$^{2+}$, Mg$^{2+}$, NH$_4^+$

**Anions:** CO$_3^{2-}$, S$^{2-}$, SO$_3^{2-}$, SO$_4^{2-}$, NO$_2^-$, NO$_3^-$, Cl$^-$, Br$^-$, I$^-$, PO$_4^{3-}$, C$_2$O$_4^{2-}$, CH$_3$COO$^-$

**PROJECT WORK**

Wherever feasible may include

1) Model Preparation

2) Investigatory Project

- To prepare rayon thread from filter paper by cupra ammonium process.
- Determine the oxalate content of Guava fruits at different stages of ripening.
- Study of insecticides and pesticides in various fruits and vegetables.
- To determine the amount of casein present in different samples of milk from different sources.
- Preparation of soyabean milk and its comparison with natural milk.
- To determine the presence of adulterants in common foods such as sugar, butter, oil, red chilly paper, turmeric powder, rice.
- Prevention of rusting of iron by using cathode protection method.

3) Science Exhibits.

4) Participation in Science Fairs

**Book Suggested:** Textbook of Chemistry for class XII published by NCERT, New Delhi
BIOLOGY

Maximum Marks: 100
Theory: Marks 70 Time: 3 hour
Practicals: Marks 30

SECTION A (Botany) Marks: 35

Unit-I: Reproduction in Flowering Plants Marks: 07

Asexual Reproduction: Vegetative propagation in plants, micropropagation.


Unit-II: Genetics Marks 09

- Heredity and variation
- Mendelian inheritance, Deviations from Mendelism: incomplete dominance, co-dominance, Multiple alleles, Pleiotropy, Chromosomal theory of inheritance, Elementary idea of polygenic inheritance, Chromosomes & genes,
- Search for genetic material & DNA as genetic material: Structure of DNA & RNA, DNA packaging, DNA Replication (Semiconservative), Central dogma, Protein Biosynthesis: Transcription, translation, genetic code, Gene expression and regulation (lac-operon).

Unit-III: Biology and Human welfare Marks: 07

- Plant breeding: Introduction, steps in plant breeding and application of plant breeding, and single cell protein, Biofortification.
- Tissue culture: Cellular totipotency, technique and application of tissue culture
- Microbes in Human Welfare: in household food processing, industrial production, sewage treatment, Production of energy (Biogas), biocontrol agent (Biopesticides) & Biofertilizers.
- Genetically Modified organism- Bt crops
- Biopiracy and patents.

Unit- IV: Ecology and Environment Marks: 12

Meaning of ecology, environment, habitat and niche: Organisms and environment.


Environmental Issues: Air and water pollution and their control, solid waste management, agrochemicals and their effects, Radioactive waste management, Green house effect and global warming, Ozone depletion in stratosphere, Deforestation, Any three case studies as success stories addressing environmental issues.

SECTION B (Zoology)  35 Marks

Unit-I : Reproduction  Marks 11


ii) Human Reproduction- Male and female reproductive systems, Microscopic anatomy of testis & ovary; Gametogenesis (spermatogenesis & oogenesis. Menstrual cycle), Fertilization, embryo development upto blastocyst formation, implantation; Pregnancy and placenta formation (elementary idea), Parturition (elementary idea) and Lactation (elementary idea).

iii) Reproductive Health: Need for reproductive health & prevention of Sexually Transmitted Diseases (STD), Birth control- need & methods, Contraception and Medical Termination of Pregnancy (MTP), Amniocentesis, Infertility & assisted reproductive technologies: IVF, ZIFT, GIFT (Elementary idea for general awareness).

Unit–II: Genetics and Evolution  Marks 12

- Sex determination in humans, birds and honeybee.
- Inheritance pattern of Hemophilia and Color blindness in human beings.
- Mendelian Disorders in humans: Chromosomal disorders in humans, Down’s syndrome, Turner’s & Klinefelter’s syndromes.
- Genome and Human Genome project.
- DNA fingerprinting.
- Origin and evolution of Man.

Unit-III : Biology and Human Welfare  Marks 07

- Health and Disease: Basic concepts of immunology, vaccines; pathogens, parasites causing human diseases (Typhoid, Hepatitis, Malaria, Filariasis, Ascariasis, Common Cold, Amoebiasis, Ring Worm); Cancer, HIV and AIDS.
- Insects & human welfare: Silk, honey, lac.
- Adolescence, drug & alcohol abuse.
- Poultry, Dairy Farming

Unit IV: Biotechnology and its Application  Marks 05

i) Genetic Engineering (Recombinant DNA technology), cloning

ii) Applications in Health: Human insulin & vaccine production, gene therapy

iii) Biosafety issues.
Practicals Time: 3 Hours
External: 20  Internal:10
Marks: 30

Botany based Practicals: 15 Marks
i) Internal assessment: 05 marks
ii) External assessment: 10 marks

Zoology based Practicals: 15 Marks
i) Internal assessment: 05 marks
ii) External assessment: 10 marks

List of Experiments

1. Study pollen germination on a slide.
2. Collect and study soil from at least two different sites and study them for texture, moisture content, pH and water holding capacity of soil. Correlate with the kinds of plants found in them.
3. Collect water from two different water bodies around you and study them for pH, clarity and presence of any living organisms.
4. Study the presence of suspended particulate matter in air at the two widely different sites.
5. Study of plant population density by quadrat method.
6. Study of plant population frequency by quadrat method.
7. Prepare a temporary mount of onion root tip to study mitosis.
8. To study the effect of the different temperatures and three different pH on the activity of salivary amylase on starch.

Study/observation of the following (Spotting)

1. Flowers adapted to pollination by different agencies (wind, insect)
2. Pollen germination on stigma through a permanent slide.
3. Identification of stages of gamete development i.e. T.S. testis and T.S. ovary through permanent slides. (from any mammal)
4. Meiosis in onion bud cell or grasshopper testis through permanent slides.
5. T.S. of blastula through permanent slides.
6. Mendelian inheritance using seeds of different color / size of any plant.
7. Prepared pedigree charts of genetic traits such as rolling of tongue, blood groups, widow’s peak, and color blindness.
8. Exercise on controlled pollination-Emasculation, tagging and bagging.
9. Identification of common disease causing organisms like Ascaris, Entamoeba, Plasmodium, Ringworm through permanent slides or specimens. Comment on symptoms of diseases that they cause.
10. Two plants and two animals found in xerophytic conditions. Comment upon their morphological adaptations.
11. Plants and animals found in aquatic conditions. Comment upon their morphological adaptations.

BIOTECHNOLOGY

Maximum Marks: 100
Time: 3 hours
Theory: Marks 70
Practicals: Marks 30
External : 20
Internal : 10

Protein and Gene Manipulation

Unit I: Protein Structure and Engineering
Marks 15
- Introduction to the world of Proteins: Introduction, Nature of proteins
- 3-D Shape of Proteins: Primary, Secondary, Tertiary and Quaternary Structures
- Structure function relationship in Proteins: Enzymes (lock and key model, induced fit model only), Nature of interactions between enzymes and substrate (theoretical approach only)
- Purification of Proteins
- Characterization of Proteins: Peptide Mapping, 2-D gel electrophoresis, Mass spectrometry
- Protein based products: Blood based products, Vaccines, Enzymes, Antibodies, Hormones & Growth factors, Industrial enzymes, Non-catalytic proteins, Nutraceutical proteins
- Proteomics: Basic idea only

Unit II: Recombinant DNA Technology
Marks 15
- Introduction
- Tools of rDNA Technology: Vectors (Plasmid, Cosmid, Phage, BAC, YAC), Restriction enzymes and applications (DNA fingerprinting, forensic use and paternity only), Ligase, DNA (isolation and characterization)
- Making Recombinant DNA
- DNA Library (Elementary idea)
- Introduction of Recombinant DNA into host cells
- Identification of recombinants
- Polymerase chain reaction
- DNA Probes: Definition
- Hybridization Techniques: Southern, Northern and western blotting (brief idea)
- DNA Sequencing (Brief idea)

Unit III: Genomics and Bioinformatics
Marks 10
- Introduction: Genomics
- Genome Sequencing Projects: Human genome project, ELSI
- Genome similarity, SNP’s and comparative genomics
Cell Culture Technology

Unit IV: Microbial Culture and Applications Marks 10
- Introduction
- Microbial Culture Techniques: Types of cell culture (Batch and Continuous Culture), Nutrients for culture, culture procedure, physical parameters (pH, temperature, aeration), Equipments for culture
- Measurement and Kinetics of microbial growth
- Microbial growth measurement: Quantifying cell concentration
- Scale up of microbial process
- Isolation of microbial products
- Strain isolation and improvement
- Applications of microbial culture technology
- Bio-safety of genetically modified microbes

Unit V: Plant Cell Culture and Applications Marks 10
- Introduction
- Cell and Tissue Culture Techniques: Nutrient media, Plant cell culture (Protoplast culture), Plant tissue culture–Organogenesis and Somatic embryogenesis
- Applications of Cell and Tissue Culture: Micropropagation, Meristem culture, Embryo culture and somatic hybrids
- Gene Transfer Methods in Plants: Vector and Non-vector mediated
- Transgenic Plants with Beneficial Traits: Herbicide resistance, stress tolerance, disease resistance, increased nutrient content, commercial application of transgenic plants
- Bio-safety of genetically modified plants

Unit VI: Animal Cell Culture and Applications Marks 10
- Introduction
- Animal Cell Culture Techniques: Primary and secondary cell cultures, media, serum, cryopreservation, thawing
- Cell lines: Types of cell lines (finite and continuous), physical environment for culturing cells, characterization of cell lines, equipment required
- Applications of Animal Cell Culture: Transgenic products by animal cells (t-PA, Factor VIII, monoclonal antibodies)
- Stem Cell Technology: Elementary idea of embryonic, adult and germ stem cells
PRACTICALS
Time: 3 Hours
Marks 30

Note: Every Student shall do the following experiments during the academic session.

LIST OF EXPERIMENTS

1. Isolation of genomic DNA from bacteria/RBC.
2. Isolation of plasmid DNA from bacteria.
3. Analysis of genomic or plasmid DNA using agarose gel electrophoresis.
4. Multiplication of any medicinal/aromatic plant through any tissue culture technique.
5. Data retrieval and data base search using internet site NCBI.
6. Microscopic examination of growing mammalian cells.
7. Download a DNA and protein sequence from internet, analyze and comment on it.
8. Production and estimation of ethanol from microbial culture.
9. Culturing bacteria (E.coli) under laboratory conditions.
10. Project work.
   a. Lab visits, sum up the list of equipments, facilities, conditions and their utilities.
   b. Interaction with a faculty/Ph. D Scholar during visit and submit a report on the work
      that is being carried by the duo.
      the articles from any of the discipline pertaining to syllabus and critically comment of
      the downloaded articles.
   d. Filed Visit to plant gene banks of IIIM (Jammu/Srinagar, or DRDO (Leh) or SKUASTJ/
      K or universities of J and K

SCHEME OF EVALUATION

Internal assessment: 10 marks
External examination: 20 marks

Internal Assessment: 10 marks
A. Project work:
   (i) Write up: 06
   (ii) Viva: 04

External Examination: 20 marks
The Scheme of evaluation at the end of the session will be as under:
B. One experiment: 12
   Practical record: 04
   Viva on Practicals: 04
Total 20

RECOMMENDED BOOKS:

A textbook of BIOTECHNOLOGY for class XII by Foundation Books Pvt Limited, New Delhi
MICROBIOLOGY

Maximum Marks: 100

Theory : 70 Marks  Time: 03 hr
Practical: 30 Marks
External : 20 Marks
Internal : 10 Marks

Unit I: Host Microbe Interaction  Marks 11

Chapter I: Host-microbe relationship and disease process: mutualism, commensalism and parasitism. Pathogen virulence, infection, pathogenicity and disease. Classification of diseases like infectious, non-infectious, congenital, communicable, non-communicable, contagious and zoonotic.

Chapter II: Epidemiology: Definition, Carrier state, Prevalence, Incidence of diseases, Case fatality, transmission of diseases by contact, water, food, soil and air. Sporadic, epidemic, endemic and pandemic.

Unit II: Bacterial Genetics  Marks 12

Chapter III: Historical background, DNA structure, replication, RNA types, plasmids and transposons, genetic code, protein synthesis (transcription, translation), lac operon, Mutation, recombination (conjugation, transduction and transformation).

Chapter IV: Gene cloning, definition and steps. Vectors (plasmid, bacteriophage, cosmid).

Unit III: Immunology  Marks 12


Chapter VI: Organs and cells of immune system. Humoral and cell mediated immunity. Structures and classes of immunoglobulin, Phagocytosis, Complement system, Hypersensitivity, Vaccines, Interferons.

Unit IV: Applied Microbiology  Marks 20

Chapter VII: Environmental Microbiology

Air: Microorganisms found in air. Methods of controlling microorganisms in air.

Soil: Microorganisms in soil, Brief outline of bio-geochemical cycles (carbon, nitrogen, phosphorus and sulphur).

Chapter VIII: Food Microbiology

Microorganisms commonly found in food and food products, Food poisoning, Prevention of food borne diseases, Pasteurization of milk. Definition of fermentation.

Unit V: Diseases  Marks 15

Definition, Etiology, transmission, Pathogenesis, diagnosis and. control of Human diseases (AIDS and tuberculosis), Animal diseases (Rabies and Brucellosis) and Plant diseases (Apple scab and Rice blast).

Practical

1. Sterilization by autoclave and hot air oven
2. Media preparation: Nutrient broth and agar
3. Demonstration of motility by hanging drop method.
4. Demonstration of colony characteristics
5. Lactophenol, cotton blue, staining of fungi.
6. Visit to govt. institutions (microbiology laboratories) for demonstration and working of refrigerator, deep freeze, bacteriological loop, ELISA reader, thermal cycler, fermenter etc.
7. Project work with ten page write up on any one : like collection and transport of clinical sample, serum separation, sample preservation, antibiotic sensitivity test.
TRAVEL, TOURISM AND HOTEL MANAGEMENT

Max Marks : 100  Time : 03 Hours

Part A: TRAVEL & TOURISM MANAGEMENT (ADVANCED)

Unit I  Travel Agency & Tour Operator – Definition & Differentiation, Origin, History & Development, Types of Travel Agency – Group, Retail, Outbound, Inbound & Independent Tour Operations.  Marks 10

Unit II  Functions of Travel & Tour Operations: Ticketing, Reservations, Itinerary preparation, Tour packaging – Concept, Organisations & Agencies in Tour packaging, Various Types of Tour packages.  Marks 10

Unit III  Significance of Linkages, Networking & Coordination in travel trade, Coordination with Accommodation & Transport Sector, Public sector tourism organizations, Shopping enterprises, Various Concessions, Discounts & other Incentives offered by Hospitality, Transportation & other sectors of tourism to Travel agents & Tour operators.  Marks 10

Unit IV  Concept of Carrying Capacity, Meaning and Concept of Tourism Impacts, Types of Impacts; Physical, Socio-cultural, Economic, Tourism Organizations: PATA and IATA, MAP WORK: Location of important Tourist Destinations of J & K in the tourist map.  Marks 10

Unit V  Introduction and Concept of Marketing, Approaches to marketing, components of marketing -mix with special reference to tourism.  Marks 10

Part B: HOTEL MANAGEMENT (ADVANCED)

Unit I  FRONT OFFICE  Marks 10

Front Office operations, Organization Chart, Staffing, Scheduling, Work Shifts, Job Specifications and Job Descriptions of Front Office Personnel.

Unit II  HOUSE KEEPING  Marks 10

Meaning and Definition of House keeping, Importance of House keeping, Responsibility of House keeping Department, a Career in House keeping Department.

Unit III  FOOD AND BEVERAGE  Marks 14

Introduction to Food & Beverage Industry, Types of Catering Establishments, Introduction to Food and Beverage Operations, F& B service areas in a Hotel, Restaurant, Coffee Shops, Room service, Bars, Banquet, Discotheques, Still rooms, Grill room, Snack bar, Executive Lounges, Business Centres and Night Clubs
Unit IV COMMUNICATION SKILLS  
Verbal and Non-verbal, Telecommunication Skills; Telephonic situations/ Queries Handlings, e-Telecommunication.

Unit V ACCOUNTING  

REFERENCES:
2. Tourism Development and its Impacts – S P Bansal, Sai Printographer, New Delhi
BIOCHEMISTRY

Maximum Marks: 100
Theory: Marks 70  
Practicals: Marks 30 (External : 20 and Internal : 10)  
Time: 3 hours

Unit-I: Mammalian Hormones derived from lipids  
General introduction to hormones, Physiological and Biochemical role of Steroidal hormones: Cortisol, Cortisone, Aldosterone, Testosterone, Progesterone and Cholecalciferol; Eicosanoids: Prostaglandins, Thromboxanes and Leucotrienes.

Unit-II: Hormones derived from Aminoacids, Peptides and Proteins  
Physiological and biochemical role of: Thyroxine (T₄ and T₃), adrenalin and nor-adrenalin, Vasopressin, ACTH, Angiotensin and Erythropoietin, Insulin, Glucagon, growth hormone, parathormone, and calcitonin.

Unit-III: Enzymes  

Unit-IV: Lipid Metabolism  
Action of lipases, activation and transport of fatty acids, b-oxidation, ketosis. Malonyl SCOA formation and Biosynthesis of fatty acids. Brief account of cholesterol biogenesis and arterosclerosis.

Unit-V: Nucleic acid Metabolism  

Unit-VI: Carbohydrate Metabolism – Part I  

Unit-VII: Carbohydrate Metabolism – Part II  
Citric acid / Tricarboxylic acid cycle and its amphibolic role. Electron Transport Chain and bioenergetics. Gluconeogenesis and photosynthesis : (C₃, C₄ and CAM pathways).
Unit-VIII: Metabolism of Amino acids 07 marks


Unit-IX: DNA Replication and Transcription 07 marks

DNA polymerases and their specific functions. DNA replication; leading and lagging strands. Okazaki fragments. Transcription: Initiation, DNA-dependent RNA polymerase, processing of mRNA in eukaryotes and concept of ribozymes, introns and exons. Post-transcriptional modifications including capping and tailing of m-RNA in eukaryotes. Drugs inhibiting transcription.

Unit-X: Translation / Protein Biosynthesis 07 marks

History of Codon concept; Redundancy of codons, wobble hypothesis, point mutations and silent mutation. Translation: activation of amino acids, formation of amino-acyl tRNAs, initiation, elongation and termination. Factors involved in transcriptional process. Drugs inhibiting translation.

Laboratory Course 30 marks

- Introduction to infectious diseases and handling of Biological samples.
- Collection of Urine and Blood samples aseptically.
- Qualitative analysis of human urine sample.
- Centrifugation: Basic principles and separation of plasma/sera.
- Colorimetry: Beer — Lambert’s Law, use of electricity/battery-operated colorimeter
- Quantitation of blood/serum/plasma:
  - Glucose (o-Toluidine method)
  - Glucose urea (Diacetylmonooxime method)
  - Cholesterol (Zak Method)
  - Total Bilirubin ( Diazotization method).

Project work: Restrict to local area, selected families, for:

- Urine analysis for: microscopic examination, albumin and Sugar:
- Serum glucose
- Serum Cholesterol
- Serum Bilirubin
The subject deals with the interdependence of living things within their environment and provides an insight into the orderly interplay of the factors influencing environmental change. The impact of human demands on renewable and non-renewable resources, and the limited availability of these resources in nature, have been linked to correlate with patterns of human behavior necessary to evolve a sustainable environmental paradigm.

AIMS:

“Environment education should simultaneously attempt to create awareness, transmit information, teach knowledge, develop habits and skills, promote values, provide criteria and standards and present guidelines for problem solving and decision-making. It, therefore, aims at both cognitive and affective behavior modifications. The latter necessitates both classroom and field activities. This is an action-oriented, project centered and participatory process leading to self-confidence, positive attitudes and personal commitment to environment protection. Furthermore, the process should be implemented through an interdisciplinary approach.”

1. To acquire knowledge of the origin and functioning of the nature system and its correlation with the living world.
2. To develop an understanding that human beings, plants and animals are part of a natural phenomenon and are interdependent.
3. To appreciate the influence of human activity on the natural processes.
4. To develop awareness of the need and responsibility to keep the natural system in a condition that sustains life.
5. To develop sensitivity in personal attitudes to environmental issues.
6. To develop an understanding of how local environments contribute to the global environment.
7. To develop sense of responsibility and concern for the welfare of the environment and all life forms which share this planet.
8. To develop a sound basis for further study, personal development and participation in local and global environmental concerns.

1. Action on the Atmosphere: 10 marks

(a) Control of atmospheric pollution: methods; costing urgency, legislation; role of government (local and national); responsibility of industry; role of environmental organization.
(b) Dilemma of developing countries: development/pollution equation; lack of economic capacity to deal with atmospheric pollution; role of multinationals.
(c) Satellite imagery as a mean of monitoring the global environment.
(d) Moving towards urgent international action and changing attitudes to deal with the causes and consequence of the damage of the ozone layer.

(a) Population dynamics: factors causing population change (birth between immigration and emigration); relation between the factor; age structure and its significance; population pyramids; survivorship curves; three general shapes R and K strategies.
(b) Human populations (Malthusian model and demographic transition).
(c) Population regulation: growth without regulation (exponential); simple population regulation (logistic growth curve); factors regulating population size (space, food and water, territories, predators, weather and climate, parasite and diseases, disasters and self-regulation).
(d) Human population control: family planning; education; economic growth; status of women.
(e) Threats to the ecosystem: habitat destruction; genetic erosion; loss of diversity; expanding agriculture; impound water; waste from human societies; increasing human consumption.
(f) Conservation: importance; the critical state of Indian forests; conflicts surrounding forested areas- populations and trebles and their rights -tourism -poaching - roads - development projects - dams; scientific forestry and its limitations; social forestry; the role of the forest department; NGOs; joint forestry management; wild life - sanctuaries, conservation and management in India; Project Tiger as a case study in conservation.

3. Planning for Environmental Conservation and Protection 12 marks
(a) Ecosystem analysis: understanding complex systems; critical and state variables as system indicator; indicators of inter-relationships; successions and systems resilience; predicting and assessing system responses to impacts and their interventions; rapid appraisal methods.
(b) Human environment interaction: quality of life Vs. quality of environment; environmental issues and problems; role of belief and value; analyzing brief statement for underlying values; issues analysis - separating symptoms from problems; identifying the players and their positions; understanding interacting problems and identifying critical control points; problems analysis; identifying variables (human behaviors, values, ecological, etc); determining the relationships between variables; formulating questions for research; planning research; generating problems, solutions, briefs and specifications.
(c) Evaluation and assessment of impacts: approaches and techniques of environment and social impact assessment; environment impact assessment as a planning tool and a decision making instrument; interpreting environment impact assessments.

4. Technology and Environment 12 marks
(a) Technological evolution and models: hi-tech; low-tech; intermediate; appropriate; traditional; interaction between technology, resources environment and development; energy as a binding factor; the need for reorienting technology.
(b) Renewable energy: limitations of conventional sources; sources of renewable energy and their features (solar, wind, biomass, micro-hydel and muscle power)

(c) Health: incidents of disease as an indicator of the health of the environment; prevention of diseases by better nutrition, sanitation, access to clean water, etc.; communicable and non-communicable diseases; techniques of low cost sanitation; policy and organization to provide access to basic health service for all; the role of traditional and local systems of medicine.

(d) Biotechnology: potential; limitations.

5. Pollution 13 marks

(a) Disruption of nutrient cycles and habitats: atmospheric pollution; human activities that change the composition of the atmosphere; connection between pollution and development; local and global effects (greenhouse effect, ozone depletion) and their impact on human life; burning of fossil fuel products- effect on ecosystem and human health.

(b) Pollution control approaches-prevention and control: as applied to fossil fuel burning; the role of PCBs; industrial pollution control-principles-devices-costs-policy incentives; combating global warming; third world interest; impact on economic growth. The international political dimensions; third world interest; impact on economic growth.

(c) Water pollution: Water cycle; pollution of surface water, ground water, ocean water; industrial pollution and its effects; domestic sewage and its treatment - techniques and appropriate technology; marine ecosystem protection and coastal zone management; soil pollution-source - effects.

6. Legal Regimes for Sustainable Development 10 marks

(a) National legislative frameworks for environment protection and conservation; survey of constitutional provisions (including directive principles); national laws; state laws of India.

(b) International legal regimes: on trade and environment (GATT, WTO, IPR, TNC regional arrangement and preferential trade arrangements); on climate; on common resources (forests, bio-diversities, oceans and space); international institutions (UNEP, UNCTAD, WHO, UNDP, etc.); international initiatives (Earth Summit, Agenda 21).

Course Work / Project Work

Marks: 20

Suggested Assignments

The practical/project work carrying 20 marks has to be undertaken under the guidance of the teacher and to be evaluated as a part of the External Assessment. The project work could take one of the following forms:

1. Address a current environmental problem (preferably at local or regional scale) and should include problem identification and analysis, use of secondary data as well as some collection of primary data, design of solution, documentation of the entire process in the form of a solution proposal or make a field study of the effect of human interaction on the natural
environment and write a project report (1500 words) on the likely impact of the interaction on the global environment.

2. Design and conduct an environment impact assessment. The candidates may use secondary data, demonstrate their capacity to collect and analyse primary data by incorporating some primary data collected and use it in a few sectors of their work or prepare an original study/essay (2000 words) on an area of the prescribed curriculum that is indicative of his/her appreciation/concern for environmental issues and make a functional model to support the above.

3. Systematic monitoring of an aspect of the local environment over a period of at least six months. The candidate must use quantitative techniques of monitoring, sampling scientifically. The data collection must be interpreted and presented in the form of a project report (1500 words).

4. Conduct a study on the density and population of plants growing in a particular area using the quadral method and prepare a report.

5. Make a field study of the effect of human interaction on the natural environment and write a project report (1500 words) on the likely impact of the interaction on the global environment.

6. Prepare an original study/essay (2000 words) on an area of the prescribed curriculum that is indicative of his/her appreciation/concern for environmental issues and make a functional model to support the above.

TEXTBOOK PRESCRIBED:

PHYSICAL EDUCATION

Max.Marks.100 Time: 2.30 hrs

Theory: 60 Marks
Practical: 40 Marks (External: 25, Internal: 15)

THEORY

Unit I. PHYSICAL FITNESS 05 Marks
- Meaning and importance of Physical fitness.
- Components and types of Physical fitness.
- Factors effecting physical fitness.

Unit II. TRAINING METHODS 10 Marks
- Meaning and concept of training.
- Methods of training: Isometric and Iso-kinetic Exercise, Continuous Method, Interval Training and Fartlek, Circuit training, Acceleration Runs and Pace Races.

Unit III. SOCIOLOGICAL ASPECTS OF PHYSICAL EDUCATION 10 Marks
- Meaning of Sociology and its Importance in Physical Education and Sports.
- Games and Sports as man’s cultural heritage.
- Development of leadership qualities and group dynamics through physical Education.
- Value Education through physical Education programmes.

Unit IV. MORAL EDUCATION 05 Marks
- Need and Importance of Moral Education.
- Moral Education through Physical Education.

Unit V. SPORTS AND ENVIRONMENT 10 Marks
- Concept of environment.
- Need of environment in physical education programme.
- Role of individual in improvement of environment for health promotion and prevention of sports related accidents.

Unit VI. YOGA 05 Marks
- Meaning and importance of yoga.
- Yoga and Indian heritage.
- Elements of yoga.
Unit VII. CONCEPT OF MAJOR GAMES/SPORTS 10 Marks

- Cricket, Athletics, Basketball and Table Tennis.
- History of games (Above Games)
- Rules, measurement of the field/court. (Above Games)

Unit VIII. SPORTS MEDICINE FIRST AID REHABILITATION 05 Marks

- Meaning and Importance of Sports Medicine.
- Doping (meaning, and drugs for doping)
- First Aid and Rehabilitation of the following sports injuries:
  - Acute injuries: such as dehydration, heat stroke, and exercise-induced asthma.
  - Chronic injuries: such as aches and pain of unknown origin, tendinitis (swelling in the tendons), and stress fractures (hairline fractures of the bone due to overuse).

PRACTICAL: 40 marks

Internal assessment: 15 Marks

Internal assessment shall comprise Games/ sports (kho-kho, badminton, shot put) and Project work. The break up of the marks is as under;

1. Games / sports (kho-kho, badminton, shot put). 10 Marks
2. Trekking. 05 Marks

External assessment: 25 Marks

External assessment shall comprise skill test of Games/ sports (any game/ sport of student’s choice) and Record file (the students shall maintain the practical file by drawing the field/ court with measurement and rules of the games/sports. The break up of the marks is as under;

1. Skill test of Games/sports. (students choice game) 15 Marks
2. Record file. 05 Marks
3. Vivo-voce. 05 Marks
BUDDHIST STUDIES

Max. Marks: 100 Marks  
Time Allowed: 03 hours

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<tr>
<th>Unit I: Trisharanagamana (Refuge to Three Jewels)</th>
<th>Marks 10</th>
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<tr>
<td>I. Definition of Taking Refuge</td>
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<td>II. Cause for Taking Refuge</td>
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<td>III. Literal Meaning of Jewel</td>
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<td>IV. Precepts Concerning Taking Refuge</td>
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<td>V. Benefits of Taking Refuge</td>
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<th>Unit II: Panchashila</th>
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<td>II. Explanation of Panchashila</td>
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<th>Unit III: Karma and Rebirth</th>
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<td>I. Definition of Karma</td>
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<td>II. Classification of Karma</td>
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<td>III. Concept of Re-berth</td>
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<th>Unit IV: Post Gautama Buddha Preceptors</th>
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<td>I. Mahakashyapa</td>
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<td>II. Ananda</td>
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<td>III. Upagupta</td>
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<td>IV. Shvenavastra</td>
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<td>V. Dhidhika</td>
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</table>
(vi) Krishna
(vii) Sudarshana

Unit V: Buddhism and Modern World
(i) Buddhism and World Peace
(ii) Buddhism and Science
(iii) Buddhism and Ecology

Unit VI: Introduction to Sacred Books of Buddhism
(i) Tripitaka
(ii) Kangyur
(iii) Stangyur

Unit VII: Introduction to Sadalankara (Six Acharyas of Buddhism)
(i) Nagarjuna
(ii) Asanga
(iii) Vasubandhu
(iv) Aryadeva
(v) Dinnaga
(vi) Dharmakirti

Unit VIII: Bodhichitta
(i) Definition of Bodhichitta
(ii) Classification of Bodhichitta
(iv) Cultivating of Bodhichitta
(v) Benefits of Bodhichitta

Unit IX: Paramita
(i) Definition of Paramita
(ii) Classification of Paramita
(iii) Practice of Paramita
(iv) Benefits of Paramita

Unit X: Introduction to the Buddhist Art and Architecture
(i) The Buddhist Art and Architecture of Kashmir
(ii) The Buddhist Art and Architecture of Jammu
(iii) The Buddhist Art and Architecture of Ladakh
Unit I : GEODYNAMICS

(A) Volcanoes

(i) Definition.

(ii) Parts of a volcano.

(iii) Types of volcanoes.

(iv) Products of volcanoes/ volcanic activity.

(v) Distribution of volcanoes in the World.

(B) Earthquakes

(i) Definition.

(ii) Causes and effects of earthquakes.

(iii) Focus and Epicentre.

(iv) Seismic waves.

(v) Richter scale of earthquake intensity.

(vi) Seismograph and seismograms.

(vii) Seismic belts of the World.

Unit II : GENERAL GEOLOGY

A. Elementary study of the interior of the Earth.

B. Age of the Earth.

(i) Methods based on rate of sedimentation and rate of increase of salinity of sea water.

(ii) Radioactive methods, Uranium – lead ratio method and C¹⁴ method.
Unit III : PALAEONTOLOGY

A. Morphological description of the following:
   (i) Brachiopoda.
   (ii) Bivalvia (Lamelibranchia).
   (iii) Trilobita.

B. Systematic position, Stratigraphical range and morphological features of the following genera:-
   Spirifer, Productus, Syringothyris, Cardita, Trigonia, Pecten, Calymene, Paradoxides, Agnostus.

Unit IV : MINERALOGY

A. The chemical composition, Physical Properties, mode of occurrence and uses of the following groups of minerals:
   (i) Pyroxene group.
   (ii) Amphibole group.
   (iii) Feldspar group.

Unit V : ECONOMIC GEOLOGY

(i) Physical characters, chemical composition, and distribution of ores of Copper, Iron, and Aluminium in India,
(ii) Distribution of coal and petroleum in India.

Unit VI : STRUCTURAL GEOLOGY

A. Folds
   i. Definition of Fold.
   ii. Description of the following types of folds: Anti-Clinorium, Synclinorium, Symmetrical fold, Asymmetrical fold, Over turned fold, Dome and Basin.
   iii. Criteria of recognition of folds in the field

B. Fault
   i. Definition of fault.
   ii. Description of the following types of faults: Normal fault, Reverse fault, Step fault, Horst and Graben, Thrust fault and strike slip fault.

C. Unconformity
   (i) Definition of unconformity.
   (ii) Types and importance of unconformities.
PRACTICALS
Max. Marks: 30 Time : 3 hrs.
Internal Assessment: 10 External Examination : 20

1. The systematic position, stratigraphic range and description (with suitable sketches) of the following genera:
   Spirifer, Products, Syringothyris, Cardita, Trigonia, Pecten, Calymene, Agnostus, Paradoxides.

2. Megascopic description and identification of the following minerals. Enstatite, Hypersthene, Hornblende, Orthoclase, Hematite, Chalcopryite, Malachite, Pyrolusite, Bauxite, Iron pyrite, Sphalerite, Galena, Quartz, Muscovite, Biotite, Magnetite, Magnesite, Beryl, Tourmaline, Olivine.

3. Drawing of a section of a simple geological map.

5. Field work and viva-voce: Field work compulsory for at least fifteen days.

Books Suggested:

5. Ruttleys Elements of Mineralogy By H.H. Reed.
6. Invertebrate Palaeontology by Henry Wood.
ELECTRONICS

Total Marks : 100
Theory : 70 marks
Practicals : 30 marks
Internal Assessment: 10 marks
External Exam : 20 marks
Time: 3 Hours

I. MEASUREMENT & PMMC MOVEMENT
   Measurements, significance of measurement, accuracy, precision, sensitivity, resolution. Errors & its types, Methods of measurement.
   D’ Arsonval movement, construction and working of PMMC galvanometer, conversion of PMMC to voltmeter, ammeters, multirange ammeters and voltmeters.

II. INSTRUMENTS & TRANSDUCERS
   Cathode ray tube (CRO) electron gun, electrostatic focusing, electrostatic
   Deflection (Qualitative treatment), Deflection plates, CRT screens block diagram of CRO.
   Transducers: classification of transducers, types of transducers, transducers selection, strain gauge, and gauge factor, LVDT, temperature measurement – resistance thermometer and thermocouple.

III. COMMUNICATION SYSTEMS
   Modulation- Need for modulation, type of modulation, amplitude modulation, modulation index. Analysis of AM waves, Side Band frequency, band width of am wave, power in AM Wave, square law modulator De-modulation- De-modulation of AM wave using envelope detector. Limitation of AM. Frequency modulation-mathematical representation of FM wave, advantage of FM over AM, Concept of digital modulation- sampling theorem, types of digital modulation- PAM, PWM, PPM, PCM.
   Radio broadcasting, block diagram of Radio receiver/transmitter, Introduction to supper heterodyne radio receiver. Introduction to scanning, bandwidth of TV signal, Modulation methods used for audio and video transmission. Introduction to picture tube in a TV receiver (CRT).
IV. NUMBER SYSTEM & LOGIC GATES

Number system-decimal, binary, octal, hexadecimal. Inter conversion of various number systems. Binary addition, subtraction, multiplication and division, 2’s complement of a number. Boolean algebra and de-Morgan’s theorem logic gates: OR, AND, NOT gates (diode logic), truth table. NAND, NOR, EX-OR gates, realization of logic function using AOI and NAND/NOR universal gates.

V. COMBINATIONAL LOGIC CIRCUITS

Half adder, full adder, half subtractor and full subtractor, Comparator, Multiplexer, Demultiplexer, Encoder, Decoder, Parity checker and Generator.

VI. FUNDAMENTALS OF COMPUTER

Classifications of computers on the basis of type, data processing and memory size. Software, hardware, firmware. Block diagram of computer – ALU, CPU. Memory and I/O devices.

Memory : semiconductor memory, RAM, ROM, PROM, EPROM, EEPROM, Volatile and non volatile memories. magnetic memory – floppy disk, hard disk, CDROM, Application of computer.

Recommended/suggested books
1. Principle of electronics by V.K. Metha and R.Metha, S. Chand, Delhi-55
2. Basic electronics for tomorrow’s world by Len Jones (Cambridge University Press)

PRACTICALS

Marks: 30  Time: 3 hours
Internal = 10 Marks
External = 20 Marks

Section I

1. To study amplitude modulation, trace wave form and calculate modulation index.
2. To study frequency modulation and trace the wave form.
3. To study amplitude demodulation/detection.
4. To construct a voltmeter using a galvanometer.
5. To construct an ammeter using a galvanometer.
6. To study operation of loud speaker.
7. To study operation of microphone.
8. To extend the range of a voltmeter.
9. To extend the range of an ammeter.
Section II

1. To study the diode logic OR –gate.
2. To study the diode logic AND –gate.
3. To study transistor as an inverter.
4. To study OR gate using IC-7432.
5. To study AND gate using IC 7408.
6. To study NOT gate using IC 7404.
7. To study NAND gate.
8. To study NOR gate.
9. To study EX-OR gate.
10. To study half adder.
11. To study full adder.
12. To study half subtractor.
13. To study parity checker/generator.
14. To study NAND gate as universal gate.
15. To study NOR gate as universal gate.

Note: - Minimum 15 practicals 5 from Section-I and 10 from Section-II have to be performed.
Part A: Principles and Functions of Management

Unit I: Nature and Significance of Management
- Management - concept, objectives, importance
- Management as Science, Art, Profession.
- Levels of management
- Management functions - planning, organizing, staffing, directing and controlling
- Coordination - characteristics and importance

Unit 2: Principles of Management
- Principles of Management - concept, nature and significance
- Fayol’s principles of management
- Taylor’s Scientific Management - principles and techniques

Unit 3: Management and Business Environment
- Business Environment - importance
- Dimensions of Business Environment - Economic, Social, Technological, Political and Legal
- Economic Environment in India; Impact of Government policy changes on business and industry, with special reference to adoption of the policies of liberalization, privatization and globalisation.

Unit 4: Planning
- Concept, features, importance, limitations
- Planning process
- Types of Plans - Objectives, Strategy, Policy, Procedure, Method, Rule, Budget, programme.

Unit 5: Organising
- Concept and importance.
- Steps in the process of organizing.
- Structure of organization - functional and divisional.
- Formal and informal organization.
● Delegation: concept, elements and importance.
● Decentralization: concept and importance.
● Difference between delegation and Decentralization

**Unit 6: Staffing**
- Concept and importance of staffing
- Staffing as a part of Human Resource Management
- Staffing process
- Recruitment - meaning and sources
- Selection - process
- Training and Development - Concept and importance. Methods of training

**Unit 7: Directing**
- Concept and importance
- Elements of Directing
  - Supervision - concept and role
  - Motivation - concept, Maslow’s hierarchy of needs; Financial and non-financial incentives.
  - Leadership - concept; qualities of a good leader
  - Communication - concept, formal and informal communication; barriers to effective communication.

**Unit 8: Controlling**
- Concept and importance
- Relationship between planning and controlling
- Steps in the process of control
- Techniques of controlling: budgetary control,

**Part B : Business Finance and Marketing**

**Unit 9: Business Finance**
- Concept, importance, objectives of Business finance
- Financial decisions: factors affecting
- Financial planning - concept and importance.
- Capital Structure - concept and factors affecting
- Fixed and Working Capital - concept and factors affecting its requirements.
- Difference between Capital Market and Money Market.
Unit 10: Financial Markets

- Capital market and types - primary and secondary market.
- Stock Exchange - Functions, Trading Procedure, NSEI, OCTEI.
- Securities and Exchange Board of India (SEBI)- Objectives and Functions.

Unit 11: Marketing Management

- Marketing - meaning, functions and role, marketing and selling
- Marketing mix - elements
  - Product - nature, classification, branding, labeling and packaging
  - Price - Factors determining fixation of price
  - Physical distribution: Elements; Channels of distribution: types, function, choice of channels
  - Promotion-Elements of promotion mix; Advertising - role, limitations, objections against advertising.
- Personal selling - concept, importance; Sales promotion - merits, limitations, methods; Publicity - concept and role.
- Personal Setting
- Sales promotions

Unit 12: Consumer Protection

- Importance of consumer protection
- Consumer rights
- Consumer responsibilities
- Role of consumer organizations and NGOs.

Suggested textbook

1. Business Studies published by NCERT, New Delhi
ACCOUNTANCY

Max Marks: 100

Time: 03 hours

Theory: 80 Marks
Project work: Marks 20
Internal : 05 Marks
External : 15 Marks

Part A: Accounting for not for Profit Organizations, Partnership Firms and Companies

1. Accounting for not for profit organizations. Marks 10
2. Accounting for Partnership Firms Marks 05
3. Reconstitution of Partnership Marks 20
4. Accounting for Share Capital and Debenture Marks 25

Part B: Financial Statement Analysis

5. Analysis of Financial Statements Marks 12
6. Cash Flow Statement Marks 08
7. Project Work Marks 15

Unit 1 : Project File 3 marks
Unit 2 : Written Test 9 marks (one hour)
Unit 3 : Viva Voce’ 3 marks

OR

Part C: Computerized Accounting

5. Overview of Computerized Accounting System Marks 05
6. Accounting using Database Management System (DBMS) Marks 08
7. Accounting Applications of Electronic Spread sheet Marks 07
8. Practical Work in Computerized Accounting Marks 15
   Unit 1: File 3 marks
   Unit 2: Practical Examination 9 marks (one hour)
   Unit 3: Viva Voce’ 3 marks

Part A: Accounting for Not-For-Profit Organizations, Partnership Firms and Companies

Unit 1: Accounting for Not-for-profit Organizations Marks 10
   ● Meaning and features of not for profit organizations.
   ● Meaning and features of fund based accounting.
   ● Receipts and payments Account
   ● Preparation of Income and Expenditure Account and Balance Sheet from Receipt and payment Account with additional information.
Unit 2: Accounting for Partnership firms
Marks 05
- Nature of Partnership firm, Partnership Deed-meaning, importance.
- Partners' Capital Accounts: Fixed vs Fluctuating Capital, Division of Profit among partners, Profit and Loss Appropriation Account including past adjustments.

Unit 3: Reconstitution of Partnership
Marks 20
Changes in Profit Sharing Ratio among the existing partners-Sacrificing Ratio and Gaining Ratio.
- Accounting for Revaluation of Assets and Liabilities and distribution of reserves (Accumulated Profits).
- Admission of a Partner: Effect of Admission of Partner, Change in Profit Sharing Ratio, Accounting Treatment for Goodwill (as per AS 10), Revaluation of Assets and Liabilities, Adjustment of Capitals.
- Dissolution of a partnership firm. (excluding Garner Vs Murrey and Peace Meal System).

Unit 4: Accounting for Share Capital and Debenture
Marks 25
- Share Capital: Meaning and Types.
- Accounting for share capital: Issue and Allotment of Equity and Preference Shares; public subscription of shares : over subscription and under subscription; issue at par, premium and at discount; calls in advance, calls in arrears, issue of shares for consideration other than cash. Meaning of Private placement of shares and employee stock option plan.
- Forfeiture of shares: accounting treatment, re-issue of forfeited shares.
- Presentation of Share Capital in company’s Balance Sheet.
- Issue of debentures at par; Premium and at discount; writing of discount and loss on issue of debentures; Issue of debentures as collateral security; issue of debentures for consideration other than cash.
- Redemption of debentures; sources : out of profits - debenture redemption reserve; out of capital-methods : lump sum payment, draw by lots, purchase in the open market and conversion (excluding cum-interest and ex-interest).

Part B: Financial Statement Analysis

Unit 5: Analysis of Financial Statements
Marks 12
- Financial Statements of a Company: preparation of simple balance sheet of a company in the prescribed form with major headings only.
- Financial Statement Analysis: meaning, significance, limitations,
- Tools for Financial Statement Analysis: Comparative Statements, Common Size Statements, Accounting Ratios: meaning and objectives, types of ratios:
  - Liquidity Ratios: Current Ratio, Liquid Ratio
  - Solvency Ratios: Debt to Equity, Proprietary Ratio
Activity Ratios: Inventory Turnover, Debtors Turnover, Working Capital Turnover, Fixed Assets Turnover

Profitability Ratio: Gross Profit, Operating, Net Profit, Return on Investment, Earning per Share, Dividend per Share, Price Earning Ratio

Unit 6: Cash Flow Statement Marks 08
- Cash Flow Statement: Meaning and objectives, preparation, adjustments related to depreciation, dividend and tax, sale and purchase of non-current assets (as per revised standard issued by ICAI)

Unit 7: Project Work Marks 15
1. Project File 3 marks
2. Written Test 9 marks (one hour)
3. Viva Voce’ 3 marks

OR

Part C: Computerised Accounting

Unit 5: Overview of Computerized Accounting System Marks 05
- Concept and types of Computerised Accounting System (CAS)
- Features of a Computerized Accounting System
- Structure of a Computerised Accounting System

Unit 6: Accounting using Database Management System (DBMS) Marks 08
- Concept of DBMS
- Objects in DBMS: Tables, Queries, Forms, Reports
- Creating data tables for accounting
- Using queries, forms and reports for generating accounting information.
- Applications of DBMS in generating accounting information such as shareholders records, sales reports, customers’ profile, suppliers’ profile, payroll, employees’ profile, and petty cash register.

Unit 7: Accounting Applications of Electronic Spreadsheet Marks 07
- Concept of an Electronic Spreadsheet (ES)
- Features offered by Electronic Spreadsheet
- Applications of Electronic Spreadsheet in generating accounting information, preparing depreciation schedule, loan repayment schedule, payroll accounting and other such applications.

Unit 8: Project Work Marks 15
1. Project File 3 marks
2. Written Test 9 marks (one hour)
3. Viva Voce’ 3 marks

Suggested Text books:
1. Accountancy, published by NCERT, New Delhi
ENTREPRENEURSHIP

Maximum Marks: 100

Time: 03 hours

Theory: 80

Practicals: 20

[Internal: 05 Marks]

[External: 15 Marks]

Unit I: Entrepreneurial Opportunities and Enterprise Creation

Marks 20

- Sensing Entrepreneurial Opportunities
- Environment Scanning
- Market Assessment
- Identification of Entrepreneurial Opportunities
- Selection of an Enterprise
- Steps in setting up of an Enterprise

Unit II: Enterprise Planning and Resourcing

Marks 30

- Business Planning - Preparation of a Project Report
- Resource Assessment - Financial and Non-Financial
- Fixed and Working Capital Requirement, Funds, Flows, Profit Ratios, Break Even Analysis etc.
- Mobilising Resources - Sources and Means of Fund, Facilities and Technologies for starting an Enterprise.
- Organising/Production of goods and services - quality, quantity and flow of inputs.

Unit III: Enterprise Management

Marks 30

(a) General management: Basic Management functions.

(b) Managing Market: Meaning, Functions of Marketing, Marketing Mix:
   * Product
   * Price
   * Place
   * Promotion (advertising and sales promotion)

(c) Managing Finance - Sources of Long Term and Short Term Finances
   * Determination of Cost, Income, Calculation of Profit/Loss.

(d) Managing Growth and Sustenance - Affecting Change, Modernisation, Expansion, Diversification and Substitution.

(e) Entrepreneurial Discipline - Laws of Land, Ecology, Consumer’s Concept, Adherance to Contract and Credits.
PRACTICAL

1. Project Report/Survey Report 09 Marks
2. Viva-Voce on PW /SR 03 Marks
3. Case Study 03 Marks


1. Project Report/Market Survey Report 09 Marks

a) Project Report:

Preparation of a Project Report for an enterprise involving products/services

Students may be provided adequate guidance to choose a project based on their interests and availability of information and authentic inputs in the locality. The specimen proforma of project report given in the textbook may be used for preparing the report. However, mechanical preparation of the report by filling in the information in the proforma should be discouraged.

Further, as the students will be required to appear for a Viva-voce on the basis of their projects, sufficient care should be taken by the students to prepare the report after studying the various aspects involved thoroughly. In a nutshell, the project report should lead to viable enterprise.

b) Market Survey Report

Market research is the process and technique of finding out who your potential customers are and what they want. The survey may be on products and services already available in the market or students may also conduct surveys for new products and services. The report of the survey should be organised under the following broad headings:

1. Objectives.
2. Methods and tools (interviews, questionnaires etc.) to be used to collect information.
3. Records of data and information.
4. Analysis of data and information.
5. Interpretation and conclusion.

For example, a survey may be conducted to find out the choice of households in toiletry soap, tooth paste etc. The data may be analysed to establish a pattern that may be useful to an entrepreneur.

Guidelines for assessment of Project Report / Survey Report

1. Presentation: Format, Clarity, Use of graphs, tables and other visuals, organisation, methodical recording of data and information and general neatness of execution. 4 marks
2. Originality and Creativity 3 marks
3. Authenticity of information and correctness of calculations and general feasibility of the project/ sustainability of conclusion drawn in the survey. 2 marks

2. Viva Voce on the Project /Market Survey Report 03 Marks

The questions should establish that the report is the original work of the student and that the student has a reasonably clear understanding of the work carried out by him/her. Entrepreneurial qualities such as leadership, self-belief, creativity, originality, initiative etc. may also be assessed by asking a variety of questions related to the report.
3. Case Study

A case study is a focused research on an organization, enterprise, practice, behavior or person undertaken to highlight an aspect that the study attempts to examine. For instance, a case study may be conducted on the pollution control methods being employed by an industry. Or a successful industrialist may be chosen as a subject of a case study to analyze and understand the strategies that the industrialist adopted: to achieve success. Ideally, a case study should be conducted on subjects with the objectives of bringing to the fore beliefs, practices, strategies, values etc. that have made them what they are. Such studies help us to understand the way in which great minds think and operate. We may also conduct case studies on failures; why a company collapsed, how a service lost its market etc. From both the types of case study, we learn lessons; how to do something or how not to do something. They also provide valuable insight into the processes involved in an enterprise.

A few topics are suggested for carrying out case studies:

i) Drawing a profile of a successful entrepreneur.

ii) Studying a public sector undertaking and highlighting its success/failure, by analyzing the factors responsible.

iii) Studying a small scale unit in the locality to bring out the procedures and processes adopted by the unit to become a feasible business venture.

iv) A study of competition in business by choosing two or more rivals in the market and analyzing their strengths and weaknesses.

v) Take the school itself for a case study and analyze any two aspects of the school plant for chalking out a plan of action: infrastructure, academics, co-curricular activities etc.

vi) A case study on a thriving fast food shop/restaurant in your locality. What makes it so popular?

vii) A case study on the ways in which a business unit has mobilized its financial resources.

viii) A case study on the enterprise management techniques adopted by a business house.

ix) A case study on the marketing strategies of a successful consumer durable company.

x) A case study on the financial management of a Public Limited Company.

xi) A case study on any Specialized Institution that supports and guides the establishment of a small scale unit.

xii) Studying the balance sheets of two big private companies to assess their trade and credit worthiness.

xiii) Studying the inventory management of a large manufacturing industry to ascertain the processes involved for optimizing cost.

xiv) Carrying out a case study on an established industrial house/company to find out the value system of the company and how it fulfils its social commitment/obligations.

xv) Carrying out a case study on an established industry to ascertain the processes followed to reduce/prevent pollution.

xvi) Study on environment friendly companies and their contribution to preservation.

Assessment of Case Studies

i) Presentation: Format, accuracy, clarity, authenticity and general neatness

ii) Analysis and Conclusions
TYPEWRITING AND SHORTHAND

Maximum Marks : 100
External : 60
Internal : 40

Time allowed : 3 hours

Section A
(TYPEWRITING)

External Examination : 30
Internal assessment : 20 marks

There shall be one practical paper of 30 marks and 3 hours duration. The paper shall contain the following exercises:

i) Passage of 400 – 500 words (prose) ............................. 10 Marks
ii) A business letter ......................................................... 08 Marks
iii) A tabular statement .................................................... 07 Marks
iv) Viva – voce ................................................................. 05 Marks

In viva-voce, knowledge of the following be tested:

i) Key board
ii) Function of different parts of machine.
iii) Table setting and
iv) Maintenance of typewriter shall be tested.

The length of the above material will be in accordance with the time allowed. Accuracy and arrangement shall be given paramount importance.

The speed expected of the examinees shall be 30 words per minute.

Actual time taken by the examinees in typing out the passage shall be noted on the answer sheet.

INTERNAL ASSESSEMENT : 20 Marks

20 Marks allocated for internal assessment shall be awarded on the basis of two tests one of 10 marks and the other of 10 marks.

1ST TEST : 10 Marks
SECOND TEST : 10 Marks

Section B
(SHORTHAND)

External Examination : 30 marks
Internal assessment : 20 marks

EXTERNAL EXAMINATION :

The candidates shall be required to take down dictation in shorthand at speed of 60 words per minute. The material for shorthand may be a passage of 800 – 1000 words.
After taking down dictation students shall be required to transcribe the same in their own handwriting, in long hand.

The outline of the shorthand shall have to be attached by the candidate with the answer sheet. 7 marks are reserved for outline (shorthand).

<table>
<thead>
<tr>
<th>Outline</th>
<th>07 Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transcription in long hand</td>
<td>18 marks</td>
</tr>
<tr>
<td>Viva-voce</td>
<td>05 marks</td>
</tr>
</tbody>
</table>

In Viva-voce, knowledge of consonants and vowels, Grammoalogues, Contractions, abbreviations, suffixes and prefixes, etc shall be tested.

INTERNAL ASSESSMENT

Marks in internal assessment shall be awarded on the basis of two tests (internal) as given below:

<table>
<thead>
<tr>
<th>1st Test</th>
<th>10 marks</th>
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</thead>
<tbody>
<tr>
<td>2nd Test</td>
<td>10 marks</td>
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</tbody>
</table>

Note: The school shall maintain a cumulative record card indicating marks awarded to candidates in the internal assessment both in typewriting and shorthand.
HOME SCIENCE (MAIN STREAM)
HUMAN DEVELOPMENT

Maximum Marks : 100
Theory: 70 marks  Time: 3 Hours
Practicals: 30 Marks (External: 20; Internal:10)

Unit I : Growth and Development  15 marks
Understanding the concepts of child development and child study-importance, history and scope. Definitions: Growth and Development.
Maturation: Basic factors in development, principles of development; influence of heredity and environment.

Unit II : How life begins  10 marks
The menstrual cycle, fertilization; conception: prenatal development

Unit III : Post Natal  10 marks
Post natal care of baby and the mother; Immunisation, Growth and development from Birth to six years.

Practicals
Care of the mother-to-be.
Nutrition, medical check-ups,
Clothing and hygiene
Visit to a Primary Health Centre: Preparations for delivery at home or in hospital
Clothing for the new baby and other needs.
Visit to a baby clinic.
Feeding (Breast and bottle)
Food (preparation). Diets for the growing child. Hygiene for the baby; visit to a paediatric clinic, a nursery school to observe activities; play, creative activities, etc.

Unit IV : Stages of Development  10 marks
Characteristic and changes in infancy, early and late childhood. Development of motor skills, speech, intellectual and emotional development.
**Unit V : Early childhood**

- Needs of early childhood, play and play equipment-outdoor and indoor, Necessary social and self-help skills. The child’s first books and learning experiences.
- Story telling, music, creative activities, clay painting, collage.

**Unit VI : Socialization**

- Socialization of the child, social development, Moral development

**Practicals**

1. Visit to a kindergarten to observe children at play and other activities. Toy making.
CLOTHING FOR THE FAMILY

Maximum Marks : 100
Theory: 70 marks  Time: 3 Hours
Practicals: 30 Marks (External: 20; Internal:10)

Unit I : Clothing  10 marks
Clothing needs of the family with reference to climate, family income, age of family members, activity and fashion. The clothing budget, choice of textiles with reference to utility, durability and cost.

Unit II : Fabrics  18 marks
Textiles and their care, classification of textile Fabrics
Fabrics: natural and man-made. Characteristics and general properties of various fibres physical and chemical properties. Various types of yarns and weaves, dyeing.

Unit III : Garments  07 marks
Care & finishing garments, Household laundry.
Principles and method of application of friction
Care of following fabrics – cotton, silk, woolen and synthetics.
Removal of common stains.

Practicals
Microscopic appearance of fibres. Physical and chemical tests.
Study of different types of yarn. Study of different types of weaves. Home bleaching dyeing and printing of textiles, stain.
Washing of different fabrics and finishing them. Dry cleaning and spot cleaning of woolen garments, steam pressing of woolen garment. Darning patching on cotton, wool and printed fabrics.

Unit IV : Patterns  10 marks
Clothing: constructions of commercial patterns and drafted patterns, Basic patterns for various garments for different ages and the genders. Basic principles involved in laying out patterns on cloth.

Unit V : Basics of apparel construction  18 marks
Basic processes involved in stitching and finishing garments. Cutting and stitching the following garments:
i) Head scarf
ii) Apron and choice of three of the following

iii) Shalwar and kameez

iv) Blouse and petticoat

v) Baby layette

vi) Child frock and panty/child smock and rompar

vii) Gents pyjama and Kalidar Kurta. Different kinds of embroidery. Indian and foreign. Parts of the sewing machine. How to thread it? Wind the bobbin and use it

Unit VI: Textile Finishes

07 marks

Importance of finishing

Classification of finishes.

Preparatory process-designing, scouring, bleaching

– Mechanical-Singeing, napping, shearing, designing

– Shrinking, texturing, calendaring etc.

– Chemical-Scouring, bleaching, mercerizing etc.

– Functional finishes-Wrinkle resistant, water resistant and repellant, flame retardant, durable press, soil resistant, anti pilling, anti-microbial.

Practicals

Learning to use commercial patterns and make adaptations from them. Learning the draft basic patterns for common garments for different ages and genders to fit individual differences, body measurements from the standard patterns.

Laying out patterns on cloth. Cutting out garments.

Ability to use the following process stitches.

i) Tucking

ii) Remming stitch

iii) Run and back stitch

iv) Back stitch

v) Hemming seam

vi) Plain seam

vii) French seam

viii) Run and fall seam

Herns: (i) Straight (ii) Herns on curved edges

Fartenings: (i) Plack openings (ii) Pipings (iii) Buttons and Button holes (iv) Pkjjkj Buttons (v) Hooks and eyes

Hooks and eyes

Facing and bindings

Stitching on a fall or a saree simple embroidery and decorative stitches.

Practice in using a sewing machine.
EXTENSION EDUCATION

Maximum Marks: 100
Theory: Marks 70
Practicals: Marks 30
Internal: 10
External: 20

Unit I: What is Home Science? 11 marks


Unit II: Areas of Home Science 12 marks

The areas of concern of Home Science:
1. Food Science
2. Human Development
3. Management of Resources
4. Textiles and clothing
5. Extension Education
The role of the Home Science Scientist in the community

Unit III: Methods of Teaching & Planning 12 marks

Methods of teaching people. Methods of teaching Home Science in formal and non-formal situations.
Planning and organizing a short extension programme within the school itself.
Evaluation-meaning, scope and its importance.

Practicals and related experiences

- Survey of local community to determine their impressions of what Home Science means to them. An assignment to determine what the student concepts is of Home Science.
- Collect information and prepare a report on the activities of the village level worker/Home Scientist in the community in which the student lives.
- Prepare a chart to show how Home Science draws itself from various disciplines.
- Preparation of charts to show the scope of each area and possibilities for employment/self employment.
- Experience with meeting groups in rural and urban settings, familiarity with the demonstration and discussion methods, Group discussion method.
A group of 2-3 girls will plan and organize one extension lecture demonstration, self-evaluation of programme, group evaluation of programme by teacher and class mates.

Unit IV : Development Communication 12 marks

1. Concept meaning, purpose of communication, importance of communication and development.
2. Types of communication-
   - Verbal and Non-verbal
   - Intra-personal and interpersonal
   - Formal and informal
   - Traditional and modern
3. Communication through mass media-concept, characteristic of mass communication, mass communication media, functions of mass communication, advertising and effect of mass communication.

Unit V : Psychology of Communication 11 marks

- Listening-concept, the listening process, feedback.
- Perception-Selective attention, types of perception.
- Learning-meaning, principles of learning and its implication in extension, adult learning.
- Motivation-meaning.

Unit VI : Communication 12 marks

Mass Communication in Home Science. Familiarity with various media for communication: Visual media, Audio media, Audio-visual media Literature, books and journals

Learning to prepare a lesson for a class; realisation/appreciation understanding of Home Science programmes on radio, T.V, articles or features in newspapers, magazines, etc. preparing simple low-cost materials for communication purposes, charts, flip charts, exhibits, graphs, flash cards. Radio and T.V scripts. Writing and illustrating a story of children.

Demonstration of the use of commonly available equipment.

Approaches of communication in development
i. Individual-Personal visits, phone calls, letters.
ii. Group-lectures, Group discussions group demonstration, excursions and field trips.
iii. Audio-visual aids, meaning, classification, importance, advantages, limitations and use.

Practical & related experience

1. Production of visual aids-Charts, Posters, Flashcards, Transparencies.
2. Display material – Bulletin Board, Flannel graph board.
3. Giving demonstration and putting up exhibitions
4. Preparation of folk media of Rajasthan-puppets, songs, social drama, Phad, Hela Khayal
5. Preparation of Printed material-Leaflets, holders, pamphlets
हिंदी (Hindi)

पाठ्य क्रम एवं अंक विभाजन

<table>
<thead>
<tr>
<th>पाठ्य क्रम</th>
<th>अंक विभाजन</th>
<th>पूर्णांक</th>
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<td>क निबंध लेखन</td>
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<td>ख काव्य भाग मानसर</td>
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<td>ग काव्य नाटक अंथा युग</td>
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<tr>
<td>घ उपन्यास निर्माण</td>
<td>24</td>
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<tr>
<td>ड हिंदी साहित्य का इतिहास</td>
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<td>ए (आधुनिक काल-द्वितीय युग छायावाद तथा प्रगतिवाद) काल परिचय विशेषताएं एवं कवि ज्ञान</td>
<td>100</td>
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<td>बी भाषा राज भाषा राष्ट्रभाषा एवं सम्पर्क भाषा (अंतर महत्व एवं हिंदी में स्थान)</td>
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खण्ड क

1. रचनात्मक लेखन (निबंध)
   विषय सामाजिक समस्याएं विज्ञान एवं तकनीक देश-प्रेम, अनुशासन, खेल संबंधी एक प्रश्न होगा? 08
2. काव्य भाग मानसर में से विकल्प सहित सप्रसंग व्याख्या संबंधी एक प्रश्न होगा? 05
3. काव्य भाग मानसर में से कविता सार साहित्य परिचय
   आलोचनात्मक एक प्रश्न पूछा जाएगा (विकल्प सहित) 05
4. हिंदी साहित्य का इतिहास में से विकल्प सहित एक प्रश्न पूछा जाएगा 05
5. काव्य नाटक अंथा युग में से विकल्प सहित एक सप्रसंग व्याख्या संबंधी प्रश्न पूछा जाएगा। 05
6. काव्य नाटक अंथा युग में से विकल्प सहित अंक सार चरित्र-चित्रण एवं आलोचनात्मक संबंधी प्रश्न पूछा जाएगा। 05
7. उपन्यास निर्माण में से विकल्प सहित चरित्र-चित्रण एवं आलोचनात्मक एक प्रश्न पूछा जाएगा। 05

खण्ड (ख) (लघु उतरापेश्वी प्रशन)

8. काव्य भाग मानसर में से कविता संबंधी 2 प्रश्न पूछे जाएंगे। (2Q×3M=6)
9. काव्य नाटक अंथा युग में से कविता संबंधी 2 प्रश्न पूछे जाएंगे (2Q×3M=6)
10. हिंदी साहित्य (आधुनिक काल 2 प्रश्न भाषा संबंधी 1 प्रश्न) में से 3 प्रश्न पूछे जाएंगे। (3Q×3M=9)
11. उपन्यास निर्माण में से 3 प्रश्न पूछे जाएंगे न तथा एक प्रश्न गद्यांश प्रश्नोत्तर संबंधी (3Q×3M=9)
खण्ड ग (अति लघुतरोक्षी प्रश्न केवल बारह)

12. काव्य भाषा मानसर में से कवि और कविता संबंधी 3 प्रश्न पूछें जाएं। (3Q×2M=6)
13. हिंदी साहित्य का इतिहास में से इतिहास एवं भाषा संबंधी 2 प्रश्न पूछें जाएं। (2Q×2M=4)
14. काव्य नाटक अंधा युग में से नाटक कार एवं काव्य नाटक संबंधी 3 प्रश्न पूछें जाएं। (3Q×2M=6)
15. उपन्यास निर्माला में से उपन्यास एवं उपन्यास कार संबंधी 4 प्रश्न पूछें जाएं। (4Q×2M=8)

खण्ड घ

बस्तुनिष्ठ प्रश्न केवल

16. (क) काव्य भाषा मानसर में से दो प्रश्न पूछें जाएं। (2Q×1M=2)
   (आ) काव्य भाषा अंधा युग में से दो प्रश्न पूछें जाएं। (2Q×1M=2)
   (इ) उपन्यास निर्माला में से दो प्रश्न पूछें जाएं। (2Q×1M=2)
   (ई) हिंदी साहित्य का इतिहास में से दो प्रश्न पूछें जाएं। (2Q×1M=2)

पाठ्यक्रम में निर्धारित पुस्तक

1. काव्य भाषा ‘मानसर’ – जम्मू एवं कश्मीर राज्य विद्यालय शिक्षा बोर्ड द्वारा प्रकाशित।
2. हिंदी साहित्य का परिचयात्मक इतिहास भागीरथ मिश्र लेखक राष्ट्रीय शैक्षिक अनुसंधान विकास परिषद द्वारा प्रकाशित।
3. काव्य नाटक : ‘अनुसंधान’ लेखक डॉ. धर्मवीर भारती – प्रकाशन महल इलाहाबाद द्वारा।
4. उपन्यास ‘निर्माला’ लेख उपन्यासकार सम्राट मुंशी प्रेमचंद प्रकाशन कला मंदिर दिल्ली द्वारा।

नोट – उपन्यास निर्माला में से सप्तसंग व्याख्या से संबंधित कोई प्रश्न नहीं पूछा जाएगा।

नोट – परीक्षा में प्रश्न-पत्र निर्माण हेतु मार्गदर्शन

| प्र. 1 | 8 अंक | 8 अंक |
| प्र. 2-7 | 6×5 | 30 अंक |
| प्र. 8-17 | 10×3 अंक | 30 अंक |
| प्र. 18-29 | 12×2 अंक | 24 अंक |
| प्र. 30 | 8×1 अंक | 8 अंक |
| 30 प्रश्न | 100 अंक |
PUNJABI

Max. Marks: 100
Time : 3 Hours

1. पुमडब 'वाणी पृष्ठ' दिसें - 30 Marks
2. पुमडब 'चेतन्तिया सृष्टि वर्गीय' दिसें - 26 Marks
3. पुमडब 'आत्मी' दिसें - 26 Marks
4. विख्यातवचन उपाय - 18 Marks

(i) 'वाणी पृष्ठ' पुमडब दिसें दिखां जरीयां लिखितां भुज्जां उड़े नीलां उठ।

(०) ग्राही वीर सम्ब
(१) ये, पुमडब सम्ब
(२) ये, भेड़ सम्ब
(३) अभिरुचि पूजा
(४) धिकना सम्ब महिलाची।

(ii) 'चेतन्तिया सृष्टि वर्गीय' पुमडब चीमां 13 चरांतियां दिसें एक स्थिरां 3 चरांतियां (Non-Evaluative) उठ।

(०) महादिन
(१) वे लड़ी सिरहटी
(२) महादिन लक्ष्मण संगी ते।

(iii) 'आत्मी' (मैंसैंडीकी) दिम, आम सम्ब।

(iv) विख्यातवचन

(१) लेख-उचुचा
(२) विख्यातवचन, द्वितीय-दूरी मृदु, ध्वनि मुहु बाहेर भव।

Books Prescribed

1. वाणी पृष्ठ (आपल्या-वाणी) भंडार सृष्टि दृष्टि सम्ब, बाहु लब्ध भें गौरीलालभिती, अभिन्नभूत।
2. चेतन्तिया सृष्टि वर्गीयां, सृष्टि आज्ञातिक सम्ब। हे अभी वे कल्याणकार आवेदणी, संभ।
3. आत्मी (मैंसैंडीकी) दिम, आम सम्ब, व्याकृतिकी रुप्त भें भाग मेलम, अभिन्नभूत।
4. सृष्टिविख्यातवचन अदे लेख उच्चतां। by तरवित्त सम्ब ‘पृष्ठोड़’।
**SCHEME OF ASSESSMENT**

Max. Marks: 100  
Time Allowed: 3 Hours.

### Long Answer Type Questions

1. वारल-पूरवा प्रामुख्य 'के चौ स्थिर सी प्रमुखा मिट्टा विषाणु अधिकारिक बतें (वेसी दे ने हिंदी)।  
2. वारल-पूरवा प्रामुख्य 'के चौ स्थिर बहिर्गता दे साध (वेसी दे हिंदी ने हिंदी)।  
3. वारल-पूरवा प्रामुख्य 'के चौ स्थिर वे सी नीली (वेसी दे ने हिंदी)।  
4. चैत्राकारी चौधरी चौधरी चौधरी चौधरी 'के - चौधरी चौधरी चौधरी चौधरी पूर्व। (वेसी दे ने हिंदी)।  
5. चैत्राकारी चौधरी चौधरी चौधरी चौधरी 'के - प्रामुख्य भविष्य चौधरी पूर्व। (वेसी दे ती ने हिंदी)।  
6. 'अलमारी' प्रामुख्य 'के - हिंदी धार्मिक - टूटे दी पुष्पिका टेम ने विषाणु अधिकारिक (वेसी दे ने हिंदी)।  
7. अलमारी प्रामुख्य 'के हिंदी हेतु हेतु हेतु हेतु हेतु। (वेसी दे ने हिंदी)।  
8. विभागवाल 'के सेव-चुक्ता (Essays) (वेसी दे ने हिंदी)।  

### Short Answer Type Questions

9. वारल-पूरवा प्रामुख्य 'के बेसी दे पूर्व बतें उठ। (उत पूर्व दे भव 3 उठ)  
10. अपराम्य प्रामुख्य 'के हिंदी पूर्व बतें उठ। (उत पूर्व दे भव 2 उठ)  

### Very Short Answer Type Questions

11. वारल-पूरवा प्रामुख्य 'के बेसी दे पूर्व बतें उठ। (उत पूर्व दे भव 2 उठ)  

### Multiple Choice Type Questions

1. वारल-पूरवा प्रामुख्य 'के दे बतें उठ।  
2. चैत्राकारी चौधरी चौधरी चौधरी चौधरी 'के हिंदी बतें उठ।  
3. अलमारी प्रामुख्य 'के हिंदी बतें उठ।  

Total = 100 Marks
प्र.1 "इन्द्र-धनुक" पुस्तक का संकलन काय्य-रचनाएं चा

(क) कैसे इका प्रश्नों की समस्या जां पैटर्न दी व्याख्या (अंदरूनी विकल्प समेत) 5

(ख) "इन्द्र-धनुक" पुस्तक च संकलन निकाह चा कैसे इक गहाण दी समायोग 
व्याख्या (अंदरूनी विकल्प समेत) 5

(ग) "इन्द्र-धनुक" पुस्तक च संकलन कहानियों व्याख्या कैसे इक गहाण दी समायोग 
व्याख्या (अंदरूनी विकल्प समेत) 5

प्र.2 हिन्दी "इन्द्र-धनुक" पुस्तक च संकलन कृपया इक कवि दा जीवन ते साहित्यिक परिवेर (अंदरूनी विकल्प समेत) 5

(ख) "इन्द्र-धनुक" पुस्तक च संकलन कृपया इक काव्य-रचना दा सार ते कंद्री भाव (अंदरूनी विकल्प समेत) 5

(ग) "इन्द्र-धनुक" पुस्तक च क्या इक निर्देशाकार दा जीवन ते साहित्यिक परिवेर (अंदरूनी विकल्प समेत) 5

(घ) "इन्द्र-धनुक" पुस्तक च संकलन गजगोंड पांड्याबे चा कृपया इक शायर दा 
शायरी ते आंदो विशेषता बांध सुझाल (अंदरूनी विकल्प समेत) 5

लौटके जवाब

प्र.3 इन्द्र-धनुक पुस्तक च संकलन ला

(क) काव्य-रचनाएं बांध 4 सुझाल ........................................ 3+3+3+3=12

(ख) निकाह बांध 3 सुझाल ........................................ 3+3+3=9

(ग) कहानिये बांध 3 सुझाल ........................................ 3+3+3=9
प्र 4  (क) "तोगरी साहित्य दा इतिहास" थमा उपन्यास ते नाटक दी विकास-यात्रा बारे 2 सुअंगल ................................. 2+2=4

(ख) "तोगरी साहित्य दा इतिहास" थमा गंगल दी विकास-यात्रा बारे इक सुअंगल ................................. 2

(ग) "इन्द्र-धनुख" पुस्तक दे निबंधे दी पाठ्य समग्री थमा 3 सुअंगल ................................. 2+2+2=6

(घ) "इन्द्र-धनुख" पुस्तक दे निबंधे दी पाठ्य समग्री थमा 3 सुअंगल ................................. 2+2+2=6

(ङ) "इन्द्र-धनुख" पुस्तक दिये काव्य-रचनाएं थमा 4 सुअंगल ................................. 2+2+2+2=8

वस्तुनिष्ठ सुअंगल

प्र 5 "इन्द्र-धनुख" पुस्तक दिये

(क) काव्य-रचनाएं थमा 2 सुअंगल ................................. 1+1=2

(ख) कहानिये थमा 2 सुअंगल ................................. 1+1=2

(ग) निबंधे थमा 2 सुअंगल ................................. 1+1=2

(घ) "तोगरी साहित्य दा इतिहास" चा नाटक, उपन्यास ते प्राशीन कविये बारे 3 सुअंगल ................................. 1+1+1=3
संस्कृत (SANSKRIT)

Marks: 100  Time: 3 Hours

प्र 1 09 वर्तमानिन्त प्रश्न
क) 3 प्रश्न ‘प्रतिमा नाटक’ से 3
ख) 2 प्रश्न संस्कृत साहित्य की रूपरेखा से 2
ग) 2 प्रश्न ‘मेघदूत’ से 2
घ) 2 प्रश्न व्याकरण से 2

प्र 2) संस्कृत साहित्य से सम्बन्धित 3 प्रश्न:–

क) संस्कृत साहित्य की उत्पत्ति पर एक लघु दिप्पणी, अथवा रामायण तथा महाभारत महाकाव्य का साक्षरता वर्णन एवं संस्कृत साहित्य का महत्त्व। (आत्मिक विकल्प सहित) 5

ख) शूद्रक, अश्वचोप तथा हर्ष नाटककारों में से किसी एक नाटककार के जीवन तथा उसकी कृतियों का साक्षरता वर्णन (आत्मिक विकल्प सहित) 4

ग) दण्डी, सवन्नभु तथा वाणभट्ट लेखकों में से किसी एक गद्यकार के जीवन तथा उसकी कृतियों का साक्षरता परिचय (आत्मिक विकल्प सहित) 4

प्र 3 ‘प्रतिमानाटकम’ में से किन्हीं तीन श्लोकों को प्रसंग सहित व्याख्या।
प्रत्येक श्लोक अपने आप में पूर्ण होना चाहिए। श्लोकों अथवा दोनों का संस्कृत से हिंदी अनुवाद (आत्मिक विकल्प सहित) 6+6+6=18

प्र 4 ‘प्रतिमानाटकम’ में से किन्हीं दो गद्यांशों, श्लोकों अथवा दोनों का संस्कृत से हिंदी अनुवाद (आत्मिक विकल्प सहित) 4+4=8

प्र 5 ‘प्रतिमानाटक’ के पाद्यविषय से सम्बन्धित एक प्रश्न:–
चरित्र-विचार अथवा नाटक के प्राकृतिकम् पक्ष के प्रश्न एवं प्रतिमानाटक के पहले चार अंको में से एक अंक का सार 5

प्र 6 ‘मेघदूत’ के दो श्लोकों को समस्त सहित व्याख्या
एक श्लोक 1 से 15 में से तथा एक श्लोक 16 से 30 श्लोकों में से हो। (प्रत्येक श्लोक आत्मिक विकल्प सहित) 5+5=10

प्र 7 ‘मेघदूत’ के चार श्लोकों का हिंदी में अनुवाद।
2 श्लोक 1 से 17 में से हो तथा 2 श्लोक 18 से 35 में से हो। 3+3+3=12

प्र 8 ‘मेघदूत’ से पाद्य-विषय संबंधी एक प्रश्न गीतिकाव्यों में मेघदूत का स्थान अथवा मेघ के जाने वाले मार्ग का वर्णन अथवा मेघदूत में प्राकृतिक वर्णन (आत्मिक विकल्प सहित) 5
प्र 9 व्याकरण:-

क) 1. हल संधि, वितर्क संधि

2. हल संधिचढ़ई (आन्तरिक विकल्प सहित)

ख) 1. दो हलन्त शब्दों की रूपावली तीनों वचनों में:-

राजून, श्वन, विद्वसू, चन्द्रशसू

2. दो सर्वनाम शब्दों की रूपावली तीनों लिंगों में:

गुणमद, अस्मद, तथा तद् (आन्तरिक विकल्प सहित)

ग) धातुओं के क्रियारूप (केवल परस्पर)

दिवादिगण: नशु, पूरु, तथा भ्रम्

(दो धातु प्रत्येक गण से चढ़विकल्प सहित)

घ) कृदन्त प्रत्यय: तुपन, क्वा, त्त्पप, अणीयार, चतु।

(कोई तीन प्रत्यय चढ़विकल्प)

ड) अव्यय का सामान्य परिचय उदाहरण सहित

व) समास-वकुब्रीहिं और अव्ययीभाव (प्रत्येक समास का एक-एक उदाहरण आन्तरिक विकल्प सहित)

नोट: प्रतिमानात्तक के आखिरी तीन अंक (5,6,7) Non-evaluative
There shall be one theory paper of 100 marks of 3 hours duration that contains three following parts:

1. Language portion of the prescribed textbook 40
2. Prose portion of the prescribed textbook 30

Selected Chapter:

1. به نام خدا
2. پنبو طبیب با بیمار
3. حکایت از گلستان (1426)
4. شام در رستوران
5. حکایت از رساله نگارش
6. روباه و خروس
7. ابن سینا و ابن مسکویه
8. بختیاری

3. Poetry portion of the prescribed textbook 30

Selected Chapter:

1. گل، آیینه، قرآن
2. نوبت دیدار
3. آرام جان
4. دوست
5. مادر
6. بی ثباتی ابن جهان (3–1)
7. خصلت

Scheme of Assessment:

1. Translation of five Persian Sentences into English/Urdu out of eight sentences 5 Marks
2. Translation of five English/Urdu sentences into Persian out of eight sentences 5 Marks
3. One seen passage from “Gulistan-i-Farsi-II” Followed by questions with internal choice. 5 Marks
4. Congugation of Persian verbs with respect to Past, Present and Future tense with internal choice. 5 Marks
5. Fill in the blanks with suitable Persian words with internal choice. 5 Marks
6. (a) To write the meaning and sentences of five Persian words out of eight 5 Marks
   (b) Persian verbs 2 1/2×2 1/2
7. Arrangement of sentences 5 Marks
8. To write down the five Persian sentences about any following topic: 5 Marks
   بهار در کشمیر، هواز کشمیر، خزان در کشمیر، استاد مدرس، کتابخانه
Part - II (Prose)

1. Translation of selected Persian Prose portion into English/Urdu (3×5) 15 Marks
(3 part with internal choice)

2. Translation of selected prose portion from English/Urdu to Persian (3×5) 15 Marks
(3 part with internal choice).

Part - III (Poetry)

1. Translation of one selected Persian verse into English/Urdu (3×5) 15 Marks
(3 parts with internal choice)

2. Translation and explanation with reference to contest of two selected Persian verse into English/Urdu (2×5) 10 Marks
(2 parts with internal choice)

3. One objective type question consisting of 5MCQs based on prescribed prose and poetry section 5 Marks

Textbook Prescribed

ARABIC

Maximum Marks: 100  

The Paper shall have four Parts i.e. Part-I (Prose), Part-II (Quranic Portion and Al-hadith), Part-III (Writing Skills) and Part-IV (Grammar).

Part-I (Prose)

1. Translation of Quranic Verses of the prescribed textbook into Urdu or English with internal choice. 5 Marks
2. Translation of Al-hadith and phrases of Arabic into Urdu or English with internal choice. 5 Marks
3. Explanation with reference to context in Urdu or English based on passage extracted from the prescribed textbook with internal choice. 5 Marks
4. One literary question pertaining to the topics contained in the prose portion of the textbook. 5 Marks
5. One question regarding the sum and substance of the topics of prose portion with internal choice. 5 Marks
6. Meaning of ten words from the prose portion with internal choice. 5 Marks

Poetry-II (Quranic Portion and Al-hadith)

1. Translation of two poetry sections out of three into Urdu and English. 5 Marks
2. Explanation with reference to context of two poetry sections out of three into Urdu or English. 5 Marks
3. One literary question pertaining to the poetry portion of the textbook prescribed. 5 Marks
4. A note of 100-150 words on life and contribution of a poet prescribed in the textbook. 5 Marks

Part-III (Writing Skill)

A. Write a short paragraph in Arabic with internal choice. 5 Marks
B. Five multiple choice questions from prose portion of the prescribed textbook. 5 Marks
C. Five multiple choice questions from poetry portion of the prescribed textbook. 5 Marks
D. Translation of ten simple sentences of Urdu into Arabic. 5 Marks
Question on Applied Grammar.
The topics are:

Textbook Prescribed

A textbook of Arabic entitled "تجميل العربية" for Class-12th published by Jammu and Kashmir State Board of School Education
(3) نصب تمام شمارہ متمم سے کسی ایک کے حالات گھیری ہے جن کے خاص وصولات قائم بنیں
کرتا
(5 مہرے)
(3) شمار نصب قائم سے دو گھیروں متمم سے کسی ایک کا خاص تیر کرتا
(3 مہرے)
(3) تمام شمارہ عناوین متمم سے کسی ایک شمارہ صنف پہنے لکھتا
(3 مہرے)
(5) دو گھیروں پر شمارہ عناوین متمم سے دو گھیروں تیر کرتا اور مشمار نہیں:
(6 مہرے)

پہلی مہم کے آخر پر ہر ایک گھیروں سوالات متمم سے دو گھیروں تیر کرتا
(6 مہرے)

حصہ ج ........ (تختیقی کام)

ا. دو گھیروں یا جوڑ کی عناوین متمم سے کسی ایک پہنچ ہوئے تیر کرتا
(6 مہرے)

(5 مہرے)

ب. دو گھیروں یا جوڑ کی عناوین متمم سے کسی ایک پہنچ ہوئے تیر کرتا
(6 مہرے)

حصہ د .... اوہو ادب کی تاریخ سے متعلق سوالات اور

سوالات

یہ پہلے گھیروں سوالات متمم سے دو گھیروں جوابات:

1. اعلی گھیروں تیر کی
2. ہوئے بند تیر کی
3. اوردو زبان کا آغاز اور اثرات
4. دسوتیاں ویلی ویلی ایک گھیروں کا پہنچوی دو ایک
5. خطوط غائب

(3+2+3=8 مہرے)

(1) اوردو ادب کی تاریخ سے متعلق سوالات اور

سوالات

ii

- نصب تمام شمارہ عناوین، شمارہ عناوین سے کسی ایک کا خاص تیر کرتا

10=1*10 سوالات- Objective
ازرو

طلیق ہے پہلی میں کتاب نشری اساتذہ اور عارف کا مطالبہ کرتا ہے۔ بہا کا ایک جب کہ معلومات حاصل کی گئیں ہے، جگہی مزید کتاب اور پڑھنے کا جواب دیتا۔ محض کتاب کا تحریری صلت کا جواب دیتا۔ ایک ہی کتاب کے سوالات کا جواب دیتا جا کر یہ ہے objective۔

جو ہے۔

اعتناء پر چاہیے صحیح پیش کیا جا گیا، پر جو ہے کہ خود مختار ہے، یہ طرح ہوں گے۔

حصہ الجزء

نثر

(1) نئی اساتذہ ہیں ہر پیشکش اقتصادی اور مضمون اور مضمون اور مضمون کا مطالعہ کر کے ایک ہی کتاب کرتے ہیں۔

(2) نئی اساتذہ ہیں ہر پیشکش اقتصادی اور مضمون کا مطالعہ کر کے ایک ہی کتاب کرتے ہیں۔

(3) فیصلہ نئی اساتذہ ہیں ہر پیشکش اقتصادی اور مضمون کا مطالعہ کر کے ایک ہی کتاب کرتے ہیں۔

(4) نئی اساتذہ ہیں ہر پیشکش اقتصادی اور مضمون کا مطالعہ کر کے ایک ہی کتاب کرتے ہیں۔

(5) نئی اساتذہ ہیں ہر پیشکش اقتصادی اور مضمون کا مطالعہ کر کے ایک ہی کتاب کرتے ہیں۔

کارنامہ پر مذکرہ کیا جا گیا۔

حصہ ب۔

شعری

(1) اندازی کتاب نئی اساتذہ ہیں ہر پیشکش اقتصادی اور مضمون کا مطالعہ کر کے ایک ہی کتاب کرتے ہیں۔

(2) اندازی کتاب نئی اساتذہ ہیں ہر پیشکش اقتصادی اور مضمون کا مطالعہ کر کے ایک ہی کتاب کرتے ہیں۔
حسین ها عری

کل سرمایه‌ای آن‌ها: 300 میلیون دلار

کل مالیاتی: 120 میلیون دلار

کل بدهکاری: 80 میلیون دلار

کل ضریح: 40 میلیون دلار

کل خسارت: 100 میلیون دلار

لطفاً جواب‌های بخش دروازه‌های ورودی و خروجی را در صفحات بعدی ارائه دهید.
مبتسم

٨٥١۰۰۰١١۰١۱٢١۰۰١١۰١۰۰١١۰١۰١۰۰۱١۱١۰۰١١۰۱۰۰١١۰۱۰۱۰۱١۱۰۰١١۱۰

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حصه الف……………… نفر

۵۱۱۲۱۳۱۴۱۰۱۵۱۰۱۶۱۷۱۸۱۹۲۰۲۱۲۲۲۳۲۴۲۵۲۶۲۷۲۸۲۹۳۰

۷۸۹۰۱۰۱۱۰۱۲۰۱۳۰۱۴۰۱۵۰۱۶۰۱۷۰۱۸۰۱۹۰۲۰۰۲۱۰۲۲۰۲۳۰۲۴۰۲۵۰۲۶۰۲۷۰۲۸۰۲۹۰۳۰۰
བོད་ཡིག་གི་ཐོན་ཕོ་ལ་བོད་ཡིག

1. བོད་ཡིག་གི་ཐོན་ཕོ་ལ་བོད་ཡིག
2. བོད་ཡིག་གི་ཐོན་ཕོ་ལ་བོད་ཡིག
3. བོད་ཡིག་གི་ཐོན་ཕོ་ལ་བོད་ཡིག
4. བོད་ཡིག་གི་ཐོན་ཕོ་ལ་བོད་ཡིག
5. བོད་ཡིག་གི་ཐོན་ཕོ་ལ་བོད་ཡིག
6. བོད་ཡིག་གི་ཐོན་ཕོ་ལ་བོད་ཡིག

ང. ཆོས་དབང་།
1. བོད་ཡིག་གི་ཐོན་ཕོ་ལ་བོད་ཡིག
2. བོད་ཡིག་གི་ཐོན་ཕོ་ལ་བོད་ཡིག

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１. རོག་དུས་འཕོག་པོ་དཔེ་བོམས། སྨོན་བཤད་སུས་པའི་དགོས་བྱའི་ཚོགས་པ། དེས་པའི་

２. རོ་ཐུང་བགས་པར་བཤད། སོགས་པའི་མདོ་་བཤད་དབང་གཅིག་ཐོས་པའི་

３. རོ་ཐུང་བགས་པར་བཤད། སོགས་པའི་མདོ་་བཤད་དབང་གཅིག་ཐོས་པའི་

４. རོ་ཐུང་བགས་པར་བཤད། སོགས་པའི་མདོ་་བཤད་དབང་གཅིག་ཐོས་པའི་

５. རོ་ཐུང་བགས་པར་བཤད། སོགས་པའི་མདོ་་བཤད་དབང་གཅིག་ཐོས་པའི་

６. རོ་ཐུང་བགས་པར་བཤད། སོགས་པའི་མདོ་་བཤད་དབང་གཅིག་ཐོས་པའི་

７. རོ་ཐུང་བགས་པར་བཤད། སོགས་པའི་མདོ་་བཤད་དབང་གཅིག་ཐོས་པའི་