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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) 2012 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

Group I	Group II	Group III	Group IV	Group V	Group VI	Group VII
General English (Compulsory)	Physics (Compulsory)	Chemistry (Compulsory)	Mathematics Applied Mathematics	Biology Statistics Geography	Geology Biotechnology Microbiology Biochemistry	Computer Science Informatics Practices Environmental– Science Functional English Physical Education Islamic Studies Vedic Studies Buddhist Studies Electronics

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

Group I	Group II	Group III	Group IV	Group V
General– English (Compulsory)	Human Development (Compulsory)	Clothing for the Family (Compulsory)	Extension– Education (Compulsory)	Computer Science Informatics Practices Environmental Science Functional English Islamic Studies Vedic Studies Buddhist Studies Physical Education Travel, Tourism and Hotel Management

Note : A student shall have to opt any one subject form group V.

FACULTY OF COMMERCE

Group I	Group II	Group III	Group IV	Group V	Group VI
General–English (Compulsory)	Business–Studies (Compulsory)	Accountancy (Compulsory)	Entrepreneurship or Economics	Business–Mathematics Type Writing & Shorthand	Computer Science Informatics Practices Env. Science Functional English Islamic Studies Vedic Studies Buddhist studies Physical Education Travel, Tourism & Hotel Management

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

Group I	Group II	Group III	Group IV	Group V	Group VI	Group VII	Group VIII
General–English (Compulsory)	Urdu Hindi Kashmiri Dogri Punjabi Bhoti	Arabic Sanskrit Persian Economics	Mathematics Applied – Mathematics Sociology	Psychology Music Geography Philosophy Education	Home–Science (Elective) History	Statistics Political-Science	Computer Science Informatics Practices Environmental – Science Functional English Islamic Studies Vedic Studies Buddhist Studies Physical Education Travel, Tourism & Hotel Management English Literature

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.

| Subject | Theory | MARKS | | Total |
| | | Practical | | |
		Internal Assessment	External Examination	
Physics	70	10	20	100
Chemistry	70	10	20	100
Biology	70	10	20	100
Biotechnology	70	10	20	100
Microbiology	70	10	20	100
Biochemistry	70	10	20	100
Geography	70	10	20	100
Geology	70	10	20	100
Mathematics	100	x	x	100
Statistics	70	10	20	100
Environmental Science	70	10	20	100
Informatics Practices	70	10	20	100
Computer Science	70	10	20	100

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.

| Subject | Theory | MARKS | | Total |
| | | Practical | | |
		Internal Assessment	External Examination	
Human Development	70	10	20	100
Clothing for the Family	70	10	20	100
Extension Education	70	10	20	100

GROUP – III : COMMERCE STREAM

| Subject | Theory | MARKS | | Total |
| | | Practical | | |
		Internal Assessment	External Examination	
Business Studies	100	-	-	100
Accountancy	80	05	15	100
Entrepreneurship	80	05	15	100
Business Mathematics	100	x	-	100
Short hand and Type writing	-	40	60	100

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:

Subject	Theory	Practical Internal Assessment	External Examination	Total
History	100	x	x	100
Economics	100	x	x	100
Geography	70	10	20	100
Political Science	100	x	x	100
Philosophy	100	x	x	100
Education	100	x	x	100
Psychology	70	10	20	100
Sociology	80	05	15	100
Home Science (Elec.)	70	10	20	100
Music	50	25	25	100
Statistics	70	10	20	100
Mathematics	100	x	x	100
Islamic Studies	100	x	x	100
Physical Education	60	15	25	100

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 test 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   **Time: - 3 Hours**

➢ **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 C*hinar-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 C*hinar-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

1

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]**
		(22) 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*

2

Q 3.4 (04) objective type questions to be asked based on vocabulary, biographical information of the writer/ textual information. Each question shall carry ½ mark. **[1/2 × 4 = 2 Marks]**

Total (33) 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 × 1] = 05 Marks.**

Q 2.2 One task on letter writing (Personal & Official) to be attempted with internal choice.

[5 × 1] = 05 Marks.

Q 2.3 One task to be attempted on note making or diary entry. **[5× 1] = 05 Marks.**

Q 2.4 One task to be attempted on dialogue writing or report writing (80-100 Words)

[5 × 1] = 5 Marks.

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

Q 2.6 One task to be attempted on e-mail writing or sms. **[2 Marks]**

Total (25) Marks

SECTION D

Grammar—— (22 Marks)

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]**
		(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: Marks 06

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: Marks 09

Ways to Ensure Good Health for the Family: 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.	ShahJahan	**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 Mugal Empire   **9 marks**

Expansion of the Empire; Administrative measures: Land revenue and Mansabdari system; Towards Integration: Akbar's Rajput and Religious policies and Din-i-Ilahi.

Unit V   : Jehangir; Role of Nur Jahan   **5 marks**

Unit VI   : Shah Jahan : Changes in Mansabdari System   **8 marks**

Problem of succession

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   **10 Marks**

     (i) Causes and consequences. Causes of the failure of the Revolt of 1857.

     (ii) Impact of the British rule on Indian economy and society

Unit XI : Reform Movements   **10 marks**

     (i) Brahmo Samaj, Arya Samaj

     (ii) Sir Syed Ahmed Khan.

     (iii) Reforms among Sikhs.

     (iv) Social reforms-Emancipation of Women.

Unit XII : National Movement: **15 marks**

    (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

A

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 × 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   **(5 marks)**

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   Marks 04

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

Unit II: Consumer Equilibrium and Demand   Marks 18

- 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   Marks 18

- 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   Marks 10

- 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

Marks 15

- 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

11

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

GEOGRAPHY

Maximum Marks : 100

Theory: 70 marks   **Time: 3 Hours**

Practicals: 30 Marks

A. Fundamentals of Human Geography   Marks 35

Unit I: Human Geography: Nature and Scope   Marks 03

Unit II: People   Marks 05

- 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 III: Human Activities   Marks 10

- 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 IV: Transport, Communication and Trade   Marks 10

- 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   Marks 05

- 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. Marks 03

C. Practical Work   Marks 30

Internal assessment: 10 marks

External assessment:20 marks

Unit I: Processing of Data and Thematic Mapping   Marks 10

- 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   Marks 07

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.   Marks 03

POLITICAL SCIENCE

Theory: 100 Marks   **Time: 3 Hours**

Part A: Contemporary World Politics

1. Cold War Era in World Politics   Marks 07

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.

2. Disintegration of the 'Second World' and the Collapse of Bipolarity.   Marks 07

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: Marks 06

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: Marks 04

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: Marks 06

Democratisation and its reversals in Pakistan and Nepal. Ethnic conflict in Sri Lanka, Impact of economic globalization on the region. Conflicts and efforts for peace in South Asia. India's relations with its neighbours.

6. International Organizations in a unipolar World: Marks 05

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: Marks 05

Traditional concerns of security and politics of disarmament. Non-traditional or human security: global poverty, health and education. Issues of human rights and migration.

8. Globalisation and Its Critics.   Marks 05

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

Political succession after Nehru. Non-Congressism and electoral upset of 1967, Congress split and reconstitution, Congress' victory in 1971 elections, politics of 'garibi hatao'.

15. Crisis of the Constitutional Order: Marks 07

Search for 'committed' bureaucracy and judiciary. Navnirman movement in Gujarat and the Bihar movement. Emergency: context, constitutional and extra-constitutional dimensions, resistance to emergency. 1977 elections and the formation of Janata Party. Rise of civil liberties organisations.

16. Regional Aspirations and Conflicts   Marks 05

Rise of regional parties. Punjab crisis. The Kashmir situation. Challenges and responses in the North East.

17. Rise of New Social Movements: Marks 05

Farmers' movements, Women's movement, Environment and Development-affected people's movements. Implementation of Mandal Commission report and its aftermath.

18. Recent Developments in Indian politics: Marks 06

Participatory upsurge in 1990s. Rise of the JD and the BJP. Increasing role of regional parties and coalition politics. UF and NDA governments. Elections 2004 and UPA government.

Book Suggested:

Major concepts of Poltical Science published by NCERT, New Delhi

PHILOSOPHY

Max. Marks:100   **Time: 3hrs**

A. INDIAN PHILOSOPHY

1. Nature and Schools of Indian Philosophy **Marks 10**
2. Philosophy of the Bhagavad Gita **Marks 10**
3. Buddhism, Jainism **Marks 10**
4. Nyaya-Vaisesika and Samkhya- Yoga **Marks 10**
5. Advaita Vedanta **Marks 10**

B. WESTERN PHILOSOPHY

6. Knowledge and truth **Marks 10**
7. The causal Principle. **Marks 10**
8. Nature of Reality **Marks 10**
9. Realism and Idealism **Marks 10**

C. APPLIED PHILOSOPHY

10. Environmental Ethics, Professional Ethics and Philosophy of Education **Marks 10**

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), Svadharama, 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

EDUCATION

Unit 1: Curriculum: 10 marks

    a) Meaning and importance of curriculum with reference to the views as put forth by:

       i) Ross   ii) Cunningham   iii) Dewey   iv) Tagore

       v) Zakir Hussain

    b) Types of curriculum:

       i) Subject centred curriculum: its meaning, merits and demerits.

       ii) Activity centred curriculum: its meaning, merits and demerits.

       iii) Defects in Curriculum

Unit II: Co-curricular activities: 8 marks

    a) Meaning and Significance.

    b) Types:

       i) Literary

       ii) Physical

       iii) Social

       iv) Cultural

       v) Aesthetic

Unit III: Gandhian Education: 8 marks

    Basic scheme of education with reference to :

    (i) Aims

    (ii) Curriculum

    (iii) Teacher

    (iv) Methodology

    (v) Discipline

Unit IV: Elementary Education: 10 marks

    (a) Meaning & Objectives

    (b) Universalization:

       (i) Problems

       (ii) Remedies – Non-Formal Education (NFE), District Primary Education Programme (DPEP), and Early Childhood Care and Education (ECCE).

    (c) Wastage & Stagnation – causes & remedies

Unit V: National Integration: 6 marks

    (a) Meaning and importance

(b) Obstacles in the way of national integration

(c) Role of education in promoting national integration

Unit VI: Population Education: 6 marks

(a) Meaning and Objectives of population education

(b) Population Explosion: causes, its effects and strategies of population control.

Unit VII: Human Development: 10 marks

(i) Meaning and Principles of growth and development:

(ii) Stages of growth and development (infancy, Childhood and Adolescence with reference to physical, mental and social development)

Unit VIII: Child Study: 6 marks

(i) Meaning and Importance.

(ii) Methods (case study and observation methods)

Unit IX: Role of Emotions in the development of a child: 6 marks

(a) Meaning and Classification.

(b) Common patterns of emotions (Affection. Fear, Anger and Jealousy)

(c) Training of emotions

Unit X: Acquired Elements of behaviour: 5 marks

Imitation sympathy and suggestion: their meaning

Types and importance of education.

Unit XI: Learning: 10 marks

(i) Meaning and definition as given by Skinner, Hilgard, Gales, Thorndike.

(ii) Laws of learning (Primary and Secondary) and their educational implications.

(iii) Types of learning (Perceptual, Motor, Verbal and Conceptual)

Unit XII: Educational Statistics: 15 marks

(i) Meaning of variability.

(ii) Methods of determining variability through Range, Q.D, M.D, and S.D. (Calculations)

Books Suggested

1. A textbook of Education by Dr. G. Rasool and Dr. H. P. Mangotra.
2. A Modern Textbook of Education by J. S. Walia.
3. Educational Statistics by Dr. G. Rasoo1.
4. Education Psychology by H. R. Bhatia.
5. An Introduction to Education by N. A. Nadeem. Fulbright Publishing Company, Simco Press Building, Doodganga Road, Karan Nagar, Srinagar-190010 (Kashmir).

PSYCHOLOGY

Maximum Marks : 100

Theory: 70 marks   **Time: 3 Hours**

Practicals: 30 Marks

PSYCHOLOGY, SELF AND SOCIETY

Unit I: Intelligence and Aptitude   Marks 09

The unit aims at studying how people differ with respect to intelligence and aptitude Individual differences in intelligence: Theories of Intelligence; Culture and Intelligence; Emotional intelligence; Aptitude: Nature and types: Assessment of psychological attributes.

Unit II: Self and Personality   Marks 10

This unit focuses on the study of self and personality in the context of different approaches in an effort to appraise the person. The assessment of personality will also be discussed.

Concepts of self, self-esteem, self-efficacy and self-regulation; Culture and self; Personality Concept; Approaches to Personality: Type and Trait, Psychodynamic, Humanistic, Behavioural and Cultural; Assessment of Personality: Self-report Measures, Behavioural Analysis, and Projective Measures.

Unit III: Human Strengths and Meeting Life Challenges   Marks 07

This unit deals with the nature of stress and how responses to stress depend on an individual's appraisal of stressors. Strategies to cope with stress will also be dealt with.

Life challenge and adjustment; Concept of adaptation; Human strengths and virtues: Nature, types and effects on psychological functioning; Coping with stress; Concepts of health and well-being; Life style, health and well-being.

Unit IV: Psychological Disorders   Marks 10

This unit discusses the concepts of normality and abnormality and the major psychological disorders.

Concepts of abnormality and psychological disorder, Causal factors associated with abnormal behaviour, Classification of disorder, Major psychological disorders: Anxiety, Somato-form Dissociative, Mood, Schizophrenic, Developmental and Behavioural Substance Related.

Unit V : Therapeutic Approaches and Counseling   Marks 07

This unit discusses the goals, techniques and effectiveness of different approaches to treat psychological disorders.

Nature and process of therapy; Nature of therapeutic relationship; Types of therapies: Psychodynamic, Humanistic, Cognitive, Behavior; Alternative therapies: Yoga, Meditation; Zen; Rehabilitation of mentally ill people. Counseling.

Unit VI: Attitude and Social Cognition   Marks 08

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

Explaining behaviour through attributions; Social cognition; Schemas and stereotypes; Impression formation; Nature and components of attitudes; Attitude formation and change; Behaviour in the presence of others: Pro-social Behaviour; Prejudice and discrimination; Strategies for handling prejudice.

Unit VII : Social Influence and Group Processes   Marks 07

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

Influence Processes: Nature of Conformity, Obedience, and Compliance: Cooperation and Competition; Groups: Nature, formation and types; Influence of group on individual behaviour; Social identity; Inter-Group Conflict; Conflict Resolution Strategies.

Unit VIII: Environmental and Social Concerns   Marks 06

This unit focuses on the application of psychological understanding to some important social issues.

Human- environment relationship; Environmental effects on human behaviour. Noise, pollution, crowding, natural disasters, social issue: Aggression and Violence; Social Inequality and Poverty; Media and human values; Promoting pro-environmental behaviour, Human rights and citizenship; Peace.

Unit IX: Applied Psychology   Marks 06

This unit introduces some of the important areas of application of psychology.
Application of psychology to following areas:
1. Sports
2. Education
3. Communication
4. Organisation

PRACTICAL   30 Marks

External: 20   Internal:10

Psychological Testing Practicals

The students shall be required to prepare one case profile and conduct 2 Practicals related to the topics covered in the course. The case profile will include developmental history of the subject, using both qualitative (observation, interview) and quantitative (Psychological testing) approaches. Practicals would involve using standardized psychological assessment devices in different domains (e.g. intelligence, personality, aptitude, adjustment, attitude, self-concept, and anxiety).

Distribution of Marks:

(i) Practical File   **03 Marks**

23

(ii) Case Profile	**03 Marks**
(iii) Viva Voce (Case profile and practical)	**04 Marks**
(iv) Two practicals (5 for accurate conduct and 5 for reporting).	**10 Marks**

Textbook Suggested: A textbook of Psychology published by NCERT, New Delhi.

SOCIOLOGY

Maximum Marks : 100

Theory: 80 Marks   **Time: 3 Hours**

Practicals:20 Marks

INDIAN SOCIETY

Unit 1: Introducing Indian Society   **Non-Evaluative**

    Colonialism, Nationalism, Class and Community

Unit 2: Demographic Structure and Indian Society   **Marks 06**

    Rural-Urban Linkages and Divisions

Unit 3: Social Institutions: Continuity & Change   **Marks 06**

    Family and Kinship
    The Caste System
    Tribal Society

Unit 4: Market As a Social Institution   **Marks 06**

    Market as a Social Institution

Unit 5: Pattern of Social Inequality & Exclusion   **Marks 06**

    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   **Marks 08**

    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   **Marks 06**

    Colonialism, Industrialization, Urbanization.

Unit 9: Cultural Change   Marks 06

Modernization, Westernization, Sanskritisation, Secularization .
Social Reform Movements & Laws

Unit 10: The Story of Democracy   Marks 06

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   Marks 06

Land Reforms, Green Revolution and Agrarian Society

Unit 12: Change and Development in Industrial Society   Marks 06

From Planned Industrialization to Liberalization
Changes in the Class Structure

Unit 13: Globalisation And Social Change   Marks 06

Unit 14: Mass Media And Communication Process   Marks 06

Unit 15: Social Movements   Marks 06

Class-Based Movements: Workers, Peasants.

Caste-Based Movements: Dalit Movement, Backward Castes, Trends in Upper Caste
Responses.Women's Movements in Independent India. Tribal Movements. Environmental
Movements.

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

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**

Chapter I: Algebraic Equations   **(10 marks)**

Definition of a Polynomial, Algebraic Equation, Roots of an equation, Fundamental Theorm of Algebra (without proof), Every Equation of nth degree has n and only n roots, Synthetic division, Relation between the roots and coefficients of an equation, Solution of cubic equations under given conditions (Roots in A.P, G.P, H.P etc).

Chapter II: Matrices and Determinants.   **(14 marks)**

Definition of Matrix, Types of matrices; Addition and Multiplication of Matrices, Transpose of a matrix, Properties of Transpose (with illustration and without proof).
   a) $(A')' = A$
   b) $(KA)' = KA'$ where K is a real number.
   c) $(A + B)' = A' + B'$
   d) $(AB)' = B'A'$

Determinants of order not exceeding 3, Properties of determinants (with illustrations and without proof) and their application, Minors and co-factors of the elements of a determinant: Zero relation, Solution of Linear Equation (with not more that 3 variables) using determinants (Cramers rule). Singular and non-singular Matrices, Adjoint of a Matrix, Inverse of a Matrix, Solution of Linear Equations with not more than 3 variables using matrix methods.

Chapter III: Probability   **(06 marks)**

Random experiment and sample space, event, Definition of Probability in a discrete sample space, its simple applications. Theorems on probability:.
$P(\bar{A}) = 1 - P(A)$, $P(A \cup B) = P(A) + P(B) - P(A \cap B)$, and their simple applications

Chapter IV: Partial Fractions   **(06 marks)**

Partial fractions with Linear, Repeated Linear and Quadratic Denominators.

Chapter V: Three Dimensional Geometry   **(14 marks)**

Co-ordinate of a point in space, Distance between two points, Section formula, Direction cosines and direction ratios of a line joining two points, Projection of the join of two points on a given line, Angle between two lines whose direction ratios are given.

Chapter VI: Limits and Continuity of a function   **(10 marks)**

Limit of a function, Left and Right hand limits, Algebra of Limits, Fundamental Limits,

$$\lim_{x \to a} \frac{x^n - a^n}{x - a}, \lim_{\theta \to 0} \frac{Sin\theta}{\theta} \lim_{x \to 0} \frac{e^x - 1}{x}, \lim_{x \to a} \frac{\log(1 + x)}{x}$$

And their Applications. Continuity of a function at a point.

Chapter VII: Differentiation   **(10 marks)**

Derivative of a function, Its Geometric and Physical significance, Derivative of some simple functions from first principle (Algebraic, Exponential and Trigonometric only). Derivative of Sum, Difference, Product and quotient of functions. Second order derivative of a function Derivative of Inverse Trigonometric functions

Chapter VIII: Applications of Derivatives   **(10 marks)**

Tangents and Normals, (Cartesian Cordinates only), Maxima and Minima. Statements of Rolle's Theorem and Lagranges Mean Value Theorem and their simple applications.

Chapter IX: Integration   **(10 marks)**

Integration as inverse of differentiation, Integration by substitution, Integration by parts, Integration by partial fractions, Simple problem on definite integrals.

Chapter X: Differential Equations   **(10 marks)**

Differential Equations of first order and first degree, Variable separable, Homogeneous Equations, Linear differential equations.

Textbook Suggested: A textbook of Mathematics by NCERT, New Delhi.

ISLAMIC STUDIES

Max. Marks: 100   **Time allowed: 3 hours**

Units	Marks
I. Teachings of Islam	10
II. Islamic character	10
III. Human values in Islam	10
IV. Human Rights in Islam	10
V. Status and Rights of women	10
VI. Introduction to the Quran	10
VII. Knowledge and the Quranic teachings	10
VIII. Economic teachings of the Quran	10
IX. Introduction to Hadith	10
X. Introduction to Fiqh	10

Unit-I : Teachings of Islam   10 marks

    (i)   Justice

    (ii)   Liberty

    (iii) Equality

    (iv) Tolerance

Unit-II : Islamic Character   10 marks

    (i) Greetings, Manners at meetings – Mutual help and Cooperation.

    (ii) Relation with neighbours and relatives.

    (iii) Respect for Life

    (iv) Respect for feelings and emotions.

    (v) Respect for Parents and Elders.

Unit-III : Human values in Islam   10 marks

    (i) Concept of human values.

    (ii) Significance of the fundamentals of Islam in inculcating values.

    (iii) Preservation of the rules of human behaviour:

        (a) Faithfulness

        (b) Honesty

        (c) Obedience

        (d) Politeness

        (e) Mercy

Unit-IV : Human Rights in Islam   10 marks

   (i) Importance of human rights in Islam.

  (ii) A brief account of the following rights:

     (a) Right to Life.

     (b) Right to Property.

     (c) Right to Self-respect.

     (d) Right to Freedom Speech and Thought.

     (e) Right to Asylum.

     (f) Right to privacy.

     (g) Right to seek Knowledge.

     (h) Right to Relation.

     (i) Children's rights.

     (j) Right to belief.

Unit-V : Status and Rights of women   10 marks

   (i) Status of women in pre-quaint times.

  (ii) Rights of women in Islam:

     (a) Equality in Status.

     (b) Right of Inheritance.

     (c) Freedom in Marriage.

     (d) Mutual rights between Man & Woman.

     (e) Significance of Maher (Dower).

Unit–VI : Introduction to the Quran   10 marks

   (i) What is revelation?

  (ii) The chain of revelations (The torah, the Zaboor, the Injeel, the Quran).

 (iii) The Quranic view of the revelations.

 (iv) The first revelation of the Quran.

Unit–VII : Knowledge and the Quranic Teachings   10 marks

   (i) The Quranic concept of Knowledge.

     (a) Importance attached to Knowledge in the Quran.

     (b) Universality.

     (c) Scientific Approach.

  (ii) Quranic Commandments

     (a) The lawful

     (b) The un-lawful.

Unit–VIII : Economic Teachings of the Quran   **10 marks**

    (i) Economic activity of man.

    (ii) Private and Public Enterprise.

   (iii) Concept of Zakat and Sadaqah and its importance.

   (iv) Utilization of the Economic Resources.

Unit–IX : Introduction to Hadith   **10 marks**

    (i) Meaning of Hadith.

    (ii) Compilation of Hadith.

   (iii) Types of Hadith

Unit–X : Introduction of Fiqh :   **10 marks**

    (i) Meaning of Fiqh.

    (ii) Origin and Development of Fiqh.

   (iii) Sources of Fiqh

    (a) The Quran; (b) The Hadith. (c) The Ijma (d) Qiyas.

BOOK PRESCRIBED:

Islamic Studies for Class XII Published by Devra Books in cooperation with J & K State Board of School Education.

BOOKS SUGGESTED :

1.	M. Yosuf Islahi	Adabi – Zindagi
2.	M. Asad	Islam at the Cross Roads
3.	K. Ahmad	Basic Teachings of the Quran
4.	Pikthall	Introduction to the Quran
5.	M. Maudodi	Towards Understanding Islam
6.	Hanafi	A survey of Muslim Institutions
7.	M. Numani	Quran and You
8.	Islamic	Jurisprudance.

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 :
   Rudalf Roth, Friedrick, 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

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

34

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

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.

$$\lim_{x \to 0} \frac{1}{x}, \quad \lim_{x \to \infty} \frac{1}{x}, \quad \lim_{x \to \infty}\left(1 + \frac{1}{x}\right)^{x}, \quad \lim_{x \to 0}(1 + x)^{1/x}, \quad \lim_{x \to 0}\frac{\log(1 + x)}{x}, \quad \lim_{x \to 0}\frac{\lim e^{x} - 1}{x}$$

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.

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

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

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

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:

$\dfrac{dy}{dx} + py = q$, where p and q are functions of x and

$\dfrac{dx}{dy} + px = q$, where p and q are functions of y.

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UNIT-IV: VECTORS AND THREE-DIMENSIONAL GEOMETRY

1. Vectors

Vectors and scalars, magnitude and direction of a vector. Direction cosines/ratios of vectors. Types of vectors (equal, unit, zero, parallel and collinear vectors), position vector of a point, negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar, position vector of a point dividing a line segment in a given ratio. Scalar (dot) product of vectors, projection of a vector on a line. Vector (cross) product of vectors. Scalar triple product.

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.

STATISTICS

Max. Marks: 100   **Time allowed: 3 hrs**

Theory: 70 marks

Practical: 30 marks

Internal : 10 Marks

External : 20 Marks

Unit Wise Weightage

Unit – I	Probability-II	**08 marks**
Unit – II	Basic Designs of Experiments.	**06 marks**
Unit – III	Index Number.	**06 marks**
Unit – IV	Vital Statistics	**08 marks**
Unit – V	Regression Analysis	**06 marks**
Unit – VI	Basic Statistical Inference	**06 marks**
Unit – VII	Time Series	**06 marks**
Unit – VIII	Quality Control	**06 marks**
Unit – IX	Curve Fitting & Least Square	**06 marks**
Unit – X	Interpolation & Extrapolation	**06 marks**
Unit – XI	Computer Programming	**06 marks**

Unit-I : Probability-II   **08 marks**

Random variable; Discrete random variable and continuous random variable, Distribution function, Probability mass function, probability density function. Definition of Bernaulli distribution, Binomial distribution and Poission distribution and their mean and variance; Examples of different random experiments giving rise to random variables with these distributions.

Unit-II : Basic Designs of Experiment   **06 marks**

Definition of a designs, experimental unit, treatment Principles of design of experiments, randomization, replication and local Control. Determination of number of replications, size and shape experimental Unit, Layouts of completely Randomized Block Design, Randomized Block Design, and Lalin square Design. Practical situations where these designs can be used. Merits and demerits of CDR, RDB & LSD.

Unit-III : Index Number   **06 marks**

Introduction, Characteristics of Index numbers, uses of Index numbers, Problems in the construction of Index numbers, Notations, Price relatives, quantity relatives and value relatives. Methods of constructing Index numbers, Simple or unweighted Index numbers and its limitations. Simple average of Price relatives : method, its merits and demerits, Weighted Index numbers, Laspeyers index numbers, Paschey's Index numbers and Fishers ideal index numbers.

Unit-IV : Vital Statistics   08 marks

Meaning and nature, uses of vital statistics, methods of obtaining vital statistics, vital events, Rates of vital events, Measurements of population, mean population, measures of fertility and mortality. Crude birth rate, Crude death rate, Specific birth rate, Specific death rate. Standardized birth and death rate. General fertility rate, Specific fertility rate, Age specific fertility rate; total fertility rate.

Unit-V : Regression Analysis   06 marks

Regression analysis as the method of predicting the value of one quantitative variable from those of other quantitative variables, viz. Regression Coefficients and their properties, two regression equations, Graphing of regression lines, Angle between two lines of Regression.

Unit-VI : Basic Statistical Inference   06 marks

Introductory definitions, Statistic, Estimator, Estimates, Parameter, Parameter Space, Unbiasedness, Consistency, Efficient Estimator, Most efficient estimator, Efficiency, Sufficiency, Statistical hypothesis, Null hypothesis, Alternative hypothesis, Acceptance and Rejection regions, Types of error, Level of significance, Power of the test.

Unit-VII : Time Series   06 marks

Introduction, importance of time series, Components of time series, secular trend, seasonal variation, Cyclic variation & irregular movements. Time series models, Additive model and multiplication model, limitations of the models of time series, measurements of trend; free hand graph method: merits and demerits, Semi-average method, Moving average method: merits and demerits, methods of Least Squares, Filling of straight line: Merits and demerits.

Unit-VIII : Quality Control   06 marks

Introduction, Process control, control charts, control limits, tools for statistical quality control, Control chart for variables, X and R-charts; Critierion for detecting lack of control in X and R charts. Interpretation of X and R charts. Control charts for attributes; P-chart or control chart for fraction defective, control chart for number of defects per unit (C-chart). Application of C-Chart.

Unit-IX : Curve Fitting and Method of Least Square   06 marks

Curve fitting, straight line, Parabola, Freehand method of curve fitting. Method of least squares, normal equations, fitting of a straight line and fitting of second degree parabola. Fitting of Exponential land Geometric curves.

Unit-X : Interpolation and Extrapolation   06 marks

Finite differences, Difference formula, Difference table, The operators E and their properties. Interpolation and extrapolation with equal intervals. Graphical Method, Method of Curve fitting – Drawbacks of the method. Newton's Gregory formula for forward interpolation and back ward interpolation. Divided difference; properties, Newton's formula for unequal intervals, Relation between divided difference and ordinarily differences, LaGrange's interpolation formula for unequal intervals.

Unit-XI : Computer Programming   06 marks

Introduction to Computers and its applications in statistics, various parts of a computer, Hard disk, Monitor, Keyboard, Printer, Floppy Disks, Flow charts for mean and variance. Overview of DOS and BASIC Commands (DIR, COPY, DELETE, RENAME, LIST, RUN, SAVE, LOAD, INPUT/ OUTPUT Commands), Arithmetic expressions, Control Statements (GO TO, IF-THEN) Programme for mean and variance.

PRACTICALS   Marks : 30

(a) Internal Assessment : 10 marks

(b) External Examination : 20 marks

1. Construction of Index Numbers using unweighted index Numbers
2. Construction of Index Numbers by Laspeyers method
3. Construction of Index Numbers by Paschey's method
4. Construction of Index Numbers by Fishers method
5. Find measures of fertility and mortality
6. Calculate Age Specific Fertility rate and total Fertility rate
7. Estimation of trend values by Free hand and Moving average method
8. Estimation of trend by Fitting of a straight line
9. Construction of X and R -charts
10. Draw P-Chart and C-Chart
11. Fitting of a Straight line, parabola and Exponential Curve
12. Interpolation by using Newtons and Lagranges method.

BOOKS SUGGESTED:

1. Fundamentals of Statistics S.P. Gupta
2. Statistical Methods S.P. Gupta
3. Fundamental of Applied Statistics S.C. Gupta & V.K. Kapoor
4. Numerical Methods Jain & lyenger
5. Programming in Basic Balguruswamy

BUSINESS MATHEMATICS

Max. Marks: 100   **Time: 3 hrs**

Unit I: Introduction to Computers   **10 marks**
Computing (I)

What are computers? What they can perform and what they can not perform, role and use of computers in modern society, etc. 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 (like buying an article, multiplication of numbers, etc) Simple flow charting (decision boxes included but not loops), Easy exercises.

Computing (II)

Flow charts involving loops-algorithms for mathematical problems already studied from topics such as profit and loss, ratio and proportion, simple and compound interests, discount; HCF and LCM, etc. Easy exercise

Unit II : Statistics   **10 marks**

1. Definition of statistics
2. Organising raw data in a form in which it is more easily comprehended; Recall of frequency distribution and its graphical representation through bar diagram, Pie-charts, etc.
3. Relative frequency distribution as a tool for comparing two distributions.
4. Measure of location and dispersion as methods of summarizing the information contained in a frequency distribution. Mean and standard deviation; Median and Mean deviation about the median.
5. Methods of calculating mean, standard deviation and mean deviation.

Unit III : Partnership   **10 marks**

Investment of capital for unequal period, sharing of profit, partners salaries, interest on capital, profit sharing on the admission of a new partners/retirement of an existing partner.

Unit IV : Bill of Exchange   **10 marks**

Introduction of Bill of Exchange, Bankers discount, true discount and Bankers gain, Types of Bill of Exchange, Feature of a Bill of Exchange, Advantages of bill exchange.

Unit V : Matrices and Determinants   **10 marks**

Matrix as rectangular arrangements of numbers. Type of matrices, equality of matrices; Addition, Scalar multiplication and multiplication of matrices, linear combinations of matrices, non-commutativity and associativity of matrix, multiplication, singular and non-singular matrices; Linear equation in matrix notation, Determinants; minors cofactors of determinants, expansion of a determinant, properties and elementary transformation of determinants, application of determinants

in solution of equations and area of a triangle; Cramer's rule, adjoint and inverse of a matrix and its properties; Application of matrices in solving simultaneous equations in three variable.

Unit VI : Annuities   10 marks

Annuities and its types: present value and amount in case of (i) Ordinary annuity (ii) Annuity due, differed annuity, sinking fund.

Unit VII : Integrals   10 marks

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

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

$$\int \frac{(px+q)}{ax^2 + bx + c}dx, \int \frac{(px+q)}{\sqrt{ax^2 + bx + c}}dx, \quad \int \sqrt{x^2 \pm a^2}\, dx \quad \text{and} \quad \int \sqrt{a^2 - x^2}dx \quad \text{to be evaluated.}$$

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

Unit VIII : Application of Integrals   10 marks

Application in finding the area under simple curves, especially lines, arcs of circles/ parabolas/ ellipse (in standard form only), area between the two above said curves (the region should be clearly identifiable).

Unit IX : Differential Equations   10 marks

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:

$$\frac{dy}{dx} + P\, y = Q, \text{ where P and Q are functions of } x.$$

Unit X : Application of Calculus Commerce and Economics   10 marks

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 cost.

COMPUTER SCIENCE

Maximum Marks: 100

Theory: Marks 70   **Time: 3 hours**

Practicals: Marks 30

External : 20 Marks

Internal : 10 Marks

- **PROGRAMMING IN C++**   **Marks 30**
- **DATA STRUCTURES**   **Marks 14**
- **DATABASES AND SQL**   **Marks 08**
- **BOOLEAN LOGIC**   **Marks 08**
- **COMMUNICATION AND OPEN SOURCE CONCEPTS**   **Marks 10**

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; Destructor: 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: Deference 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 Lanuage (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   **Marks: 30**

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: **Marks 07**

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   Marks 03

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   Marks 03

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   Marks 04

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   Marks 03

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   **Time : 3 hours**

Practicals : Marks 30. External : 20 marks, Internal : 10 marks

1. NETWORKING AND OPEN STANDARDS	**Marks 10**
2. PROGRAMMING	**Marks 25**
3. RELATIONAL DATABASE MANAGEMENT SYSTEM	**Marks 30**
4. WEB APPLICATION DEVELOPMENT	**Marks 05**

UNIT 1: NETWORKING AND OPEN STANDARDS

Computer Networking : Networking - a brief overview, Identifying computers and users over a network (Domain Name, MAC 'Media Access Control' and IP address), domain name resolution, Network Topologies, Types of network – LAN, MAN, WAN, PAN; Wired Technologies - Co- Axial, Ethernet Cable, Optical Fiber; Wireless Technologies - Blue Tooth, Infrared, Microwave, Radio Link, Satellite Link; Network Devices - Hub, Switch, Repeater, Gateway - and their functions; Network security - denial of service, intrusion problems, snooping;

Open Source Concepts:

Open Source Software (OSI norms), common FOSS examples (Gnu/Linux, Firefox, Open Office), common open standards (open document format, Ogg Vorbis), Indian Language Computing: character encoding, UNICODE and indian Language, different types of fonts (open type vs true type, static vs dynamic), Entering Indian Language Text-phonetic and keymap based.

UNIT 2 : PROGRAMMING

Review of Class XI;

Modules: Modules in Visual Basic- Form Modules, Standard Modules, and Class Modules; Procedures: Procedures (General, Event, Function, Property); Control Structures: Revision of Decision Structure – IF, IF-THEN-ELSE, Select Case; Revision of Looping Structure- Do While...Loop, Do...Loop While, For...Next, For Each...Next; Functions: Concept of Functions, Defining and Use of User Defined functions, function to perform calculations, Parameterized Functions; Library Functions (System Functions) String Function : Space( ), Str( ), Right( ), Left(), Mid( ), InStr( ), Len( ), Ltrim( ), Rtrim( ), Ucase( ), Lcase( ), String( ); Numeric Function: Sgn(), Val( ), Int( ); Time-Related Function: Now( ), Time( ), Minute( ), Month( ); Miscellaneous Function: MsgBox( ), InputBox( ); Types of forms: Single Document Interface (SDI) and Multiple Document Interface (MDI); MDI Applications: Creating MDI form and Child form, Arranging Child Forms; Accessing database from ORACLE using ODBC or ADO or OLEDB to connect with database. Data Control: Accessing Data with the Data Control, Using Data-Aware Controls, Using Data Control Properties – Database Name, Exclusive, Options, Read Only, Record Source, Data Control Methods – Refresh, Update Controls, Update Record; Bound Controls: Adding Bound Text and Bound Label Controls. Data-Bound list Boxes, Grids, and Sub-Forms ADO (ActiveX Data Objects): Connection Object, Command Object, and RecordSet Object, Special ADO Properties – Connection String (using single table), Command Text,

Command Types, Cursor Locations, Cursor Types, Lock Types, Mode Types. ADO Data Control: Simple Data linking using ADO Data Control Methods, ADO Data Control Events.

UNIT 3 : RELATIONAL DATABASE MANAGEMENT SYSTEM

Review of RDBMS from Class XI

Database Fundamentals

Concept of Database Transaction, Committing a Transaction, Concept of "All or None" in a Transaction, Network Protocols Required (TCP/IP) for Data Communication, Stored Procedures, Concept of Database Fragmentation and Distributed Databases.

PL/SQL (Programming Language in SQL)

Importance of Writing Procedures, Declaring Variables : About PL/SQL, PL/SQL Block Structure. Program Constructs, Use of Variables, Handling Variables in PL/SQL, Types of Variables, Declaration, Naming Rules, Assigning Values to Variables, Initialization, and Keywords, Scalar Data types, Base Scalar Data Types, Scalar Variable Declaration, %TYPE attribute : For variable declaration, Declaring Boolean Variables, PL/SQL Record Structure, Referencing Non-PL/SQL variables, DBMS_OUTPUT.PUT_LINE; Writing Executable Statements: PL/SQL Block Syntax and Guidelines, SQL functions in Code, SQL Functions in PL/SQL, PL/SQL Functions, Data type Conversion, Nested Blocks and Variable Scope, Operators in PL/SQL, Using Bind Variables, Programming Guidelines, Determining Variable Scope, SQL Statements in PL/SQl, Retrieving data in PL/SQL, Manipulating Data using PL/SQL, Inserting Data, Updating Data, Deleting Data, Naming Conventions, Commit and Rollback Statements, SQL Cursor, and Cursor Attributes; Writing Control Structures: Controlling PL/SQL Flow of Execution, IF statements, IFTHENELSE. Statement Execution Flow, IF-THEN-ELSIF Statement Execution Flow, Building Logical Conditions, Logic Tables, Boolean Conditions, Iterative Control: LOOP Statement, Basic Loop, FOR Loop, While Loop;

Creating Procedures: Overview of Procedures, Syntax for Creating Procedures, Developing Stored Procedures and its Advantages, Creating a Stored Procedure, Procedure Parameter Modes, Creating Procedures with Parameters, IN and OUT parameters and Usage, DEFAULT Option for Parameters, Removing Stored Procedures;

Writing Cursors: Introduction to Cursors (Implicit and Explicit), Explicit Cursor Functions, Controlling Explicit Cursors, Declaring, Opening and Closing the Cursor, Fetching data from the Cursor, Explicit Cursor Attributes (% ISOPEN, % NOTFOUND, %ROWCOUNT), controlling multiple fetches, Cursors and Records, Cursor FOR Loops, Cursor FOR Loops using Sub Queries. Triggers: Types of Triggers: Row-Level Triggers, Statement Level Triggers, BEFORE and AFTER Triggers, INSTEAD of Triggers, Valid Trigger Type, Trigger Syntax, Combining Trigger Types, Enabling and Disabling Trigger, Replacing Trigger, Dropping a Trigger. Development of Data Base Applications (Application Domain): Student database for school, Employee database for a company, Library Database for Library Student database management system for school, Employee database management system for a company, Library Database management system for Library, Railway Reservation System, Hotel Reservation, Inventory Control System.

UNIT 4 : WEB APPLICATION DEVELOPMENT

Web application development: URL, Web Server, Communicating with the web server, concept of Client and Server Side. HTML based web pages covering basic tags - HTML, TITLE, BODY, H1...H6, Paragraph <P>, Line Break <BR>, Section Separator <HR>, FONT, TABLE, LIST <UL, OL>, FORM; Creating and accessing static pages using HTML and introduction to XML.

PRACTICALS

Marks 30

External : 20 marks, Internal = 10 marks

Problem Solving using Visual Basics   04 marks

Student will be given a problem to be solved using VB during practical Examination to be conducted at the end of the course.

SQL Queries   03 marks

Student will be asked to write 3 queries based on one or two tables during practical Examination to be conducted at the end of the course.

Web Application Development
        Students shall have to create a web application in HTML.   **03 marks**

Practical Record File

A practical record file is required to be created during the entire academic session. It should be duty signed by the concerned teacher on regular basis and is to be produced at the time of Final Practical Examination for evaluation. It should include the following:

- Solution of at least 15 problems using VB based IDE   **03 marks**
- At least 25 SQL queries based on one and/or two tables
- Solution of at least 2 simple problems incorporating VB Application & Database connectivity

Project File   (3+2) marks

Students in-group of 2-3 is required to work collaboratively to develop a project using Programming and Database skills learnt during the course. The project should be an application with GUI front-end based on any one of the following domains: e-Governance, e-Business and e-Learning.

Viva Voce   2 marks

Students will be asked oral questions during practical Examination to be conducted at the end of the course. The questions will be from the entire course covered in the academic session.

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	Kalidasa 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 Shakespare 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   **Time: 3 hour**

Practicals: Marks 30

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.

Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel. Elementary idea of secondary cells. Kirchoff's laws and their applications. Wheat stone bridge, meter bridge.

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. Ampere's law and its applications to infinite long straight wire, straight and toroidal solenoids.

Force on a moving charge in a uniform magnetic and electric fields. Cyclotron. Force on a current carrying conductor in a uniform magnetic field. Force between two parallel current carrying conductors-definition of ampere.

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 impedence, LC oscillations (qualitative treatment only) & LCR circuits series, Resonance, power in A.C. circuits, wattles 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 rectflier; 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.

<div align="center">Section – B</div>

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 polariods.
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.

Book Suggested: A Textbook of Physics for class XII published by NCERT, New Delhi.

CHEMISTRY

Maximum Marks: 100

Theory: Marks 70   **Time: 3 hour**

Practicals: Marks 30

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 phosphine, halides (PCl_3, $PCls$) 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 SO_2 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

Carbohdrates: 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 & harmones, 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 (KIO_3) and sodium sulphite (Na_2SO_3) using starch solution as indicator (clok reaction).

C. THERMOCHEMISTRY

Any one of the following experiments:

   i) Enthalpy of dissolution of $CuSO_4$ or KNO_3.

   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/Zn^{2+} // Cu^{2+}/ Cu with change in concentration of electrolytes ($CuSO_4$ or $ZnSO_4$) at room temperature.

E. CHROMATOGRAPHY

   i) Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of R_F values.

   ii) Separation of constituents present in an inorganic mixture containing two cations only (constituents having wide difference in R_F 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 ORANIC 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 $KMnO_4$ 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-}, $C_2O_4^{2-}$, CH_3COO^-

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

<div align="center">

SECTION A (Zoology)   **35 Marks**
</div>

Unit-I : Reproduction   **Marks 11**

   i) **Asexual Reproduction:** Uniparental, modes: binary fission, sporulation, budding, gemmule, fragmentation, regeneration.
   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 of life: Theories & evidences with special reference to Darwin & Modern Synthetic theory of evolution, Hardy – Weinberg's principal. Adaptive radiation.
   - Origin and evolution of Man.

Unit-III : Biology and Human Welfare   **Marks 07**

   - **Health and Disease:** Basic concepts of immunology, vaccines; pathogens, paracites 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.

SECTION B (Botany) — Marks: 35

Unit-I: Reproduction in Flowering Plants — Marks:07

Asexual Reproduction: Vegetative propagation in plants, micropropagation.

Sexual Reproduction: Flower structure, Development of male & female gametophytes. Pollination: types, agencies & examples, Out breeding devices. Pollen- Pistil interaction, Double fertilization, Post fertilization events, Development of endosperm, embryo, seed and fruit. Special modes: apomixis and polyembryony, significance of seed & fruit formation.

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.

Population and ecological adaptations: Population Interactions-mutualism, competition, predation, parasitism. Population attributes-growth, birth rate and death rate, age distribution.

Ecosystems: Patterns, Components, energy flow, nutrient cycling (carbon and phosphorus), decomposition and productivity. Pyramids of number, biomass, energy. Ecological succession. Ecological Services: Carbon fixation, Pollination, Oxygen release.

Biodiversity and its conservation: Threats to, and need for biodiversity conservation. Hotspots, endangered organisms, extinction, Red Data Book. Biodiversity conservation-biosphere reserves, national parks and sanctuaries.

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.

Practicals

Time: 3 Hours

Marks: 30

External: 20

Internal:10

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.

Book Prescribed: A Textbook of Biology for class XII published by NCERT, New Delhi.

BIOTECHNOLOGY

Maximum Marks: 100

Theory: Marks 70   **Time: 3 hours**

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
- 3-D Shape of Proteins
- Structure function relationship in Proteins
- Purification of Proteins
- Characterization of Proteins
- Protein based products
- Designing Proteins
- Proteomics

Unit II: Recombinant DNA Technology   Marks 15

- Introduction
- Tools of rDNA Technology
- Making Recombinant DNA
- DNA Library
- Introduction of Recombinant DNA into host cells
- Identification of recombinants
- Polymerase Chain Reaction (PCR)
- DNA Probes
- Hybridization Techniques
- DNA Sequencing
- Site-directed mutagenesis

Unit III: Genomics and Bioinformatics   Marks 10

- Introduction
- Genome Sequencing Projects
- Gene Prodiction and counting

- Genome similarity, SNP's and comparative genomics
- Functional Genomics
- History of Bioinformatics
- Sequences and Nomenclature
- Information Sources
- Analysis using Bioinformatics tools.

Cell Culture Technology

Unit IV: Microbial Culture and Applications   Marks 10

- Introduction
- Microbial Culture Techniques
- Measurement and Kinetics of microbial growth
- 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
- Applications of Cell and Tissue Culture
- Gene Transfer Methods in Plants
- Transgenic Plants with Beneficial Traits
- Diagnostics in Agriculture and Molecular Breeding
- Bio-safety of genetically modified plants

Unit VI: Animal Cell Culture and Applications   Marks 10

- Introduction
- Animal Cell Culture Techniques
- Characterisation of Cell Lines
- Scale-up of Animal Culture Process
- Applications of Animal Cell Culture
- Stem Cell Technology
- Bio-safety of genetically modified animals

PRACTICALS

Time: 3 Hours   **Marks 30**

Note: Every Student will be required to do the following experiments during the academic session.

70

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.
    c. Access the internet at www.ncbi.nlm.nih.gov or www.googlescholar.com and download 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 SKUAST-J/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

Time: 3 Hours

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 published by J and K State BOSE in collaboration with 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, pathogenecity 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 V: Introduction and history of Immunology. Immunity: specific and non specific, innate and acquired. Antigens and haptens and their characteristics. Antibody (polyclonal and monoclonal).

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).

Water: Microflora of fresh water and marine environment, Water pollution, Presumptive coliform count. Bacteriological standards of safe drinking water. Sewage Treatment. Definition of biodegradation, bioremediation, biocontrol and biosafety. .

ChapterVIII: 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   **Marks 10**

Verbal and Non -verbal, Telecommunication Skills ;Telephonic situations/ Queries Handlings, e-Telecommunication.

Unit V   ACCOUNTING   **Marks 06**

Journal, Ledger and Cash book, Trading account, Profit & Loss Account and Balance sheet.

REFERENCES:

1. Travel Agency & Tour Operations: Concepts and Principles – Jagmohan Negi.
2. Tourism Development and its Impacts – S P Bansal, Sai Printographer, New Delhi
3. Tourism and Travel Concepts and Principles-Jagmohan Negi.
4. Front office training manual by Sudhir Andrews, Tata McGraw Hills

BIOCHEMISTRY

Maximum Marks: 100

Theory: Marks 70   **Time: 3 hours**

Practicals: Marks 30 (External : 20 and Internal : 10)

Unit-I :   **Mammalian Hormones derived from lipids**   **07 marks**

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**   **07 marks**

Physiological and biochemical role of: Thyroxine (T_4 and T_3), adrenalin and nor-adrenalin, Vasopressin, ACTH, Angiotensin and Erythropoietin, Insulin, Glucagon, growth hormone, parathormone, and calcitonin.

Unit-III: **Enzymes**   **07 marks**

Introduction to a biochemical reaction. Cofactors and coenzymes. Nature and classification of enzymes, giving at least two examples in each group. Enzyme assay, unit of activity. Factors affecting enzyme activity, e.g. effect of substrate, pH, temp., activators and inhibitors. Michaelis-Menten Equation and Significance of Km.

Unit-IV: **Lipid Metabolism**   **07 marks**

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**   **07 marks**

Biosynthetic pathways for purines and pyrimidine-nucleotides. Salvage pathways. Hyper-uricemia gout and Lesch-Nyhan syndrome. Synthesis of deoxyribo nucleoside diphosphates and triphosphates.

Unit-VI: **Carbohydrate Metabolism – Part I**   **07 marks**

Interconversion of hexoses (Fructose, Galactose, Mannose). Aerobic and anaerobic glycolysis; Aspartate–Malate and a-glycero phosphate Shuttle pathways. Hexose monophosphate/Pentose Phosphate Reductive Pathway. Glucuronic acid pathway. Glycogenesis/starch synthesis and glycogenolysis.

Unit-VII: **Carbohydrate Metabolism – Part II**   **07 marks**

Citric acid / Tricarboxylic acid cycle and its amphibolic role. Electron Transport Chain and bioenergetics. Gluconeogenesis and photosynthesis : (C_3, C_4 and CAM pathways).

Unit-VIII: Metabolism of Amino acids   **07 marks**

Deamination, transamination and decarboxylation. Metabolism of amino acids with special reference to metabolic/genetic disoders related to: phenylketonuria, alkaptonuria, albinism/tyrosinosis; Maple Syrup urine disease; Homo-cystinuria, Pentosuria.Urea Cycle.

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, pocessing 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 asceptically.
– Qualitative analysis of human urine sample.
– Centrifugation : Basic principles and separation of plasma/sera.
– Colorimetrery : Beer — Lambert's Law, use of electricity/battery-operated colorimeter
– Quntitation 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

ENVIRONMENTAL SCIENCE

Maximum Marks: 100

Theory: Marks 70   **Time: 3 hours**

Practicals: Marks 30

External : Marks 20
Internal : Marks 10

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.

2. Population and Conservation of Ecology   13 marks

(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:

A textbook of Environmental Science for class XII published by J and K State Bose in collaboration with Foundation Books Pvt Limited, New Delhi.

PHYSICAL EDUCATION

Max.Marks.100   **Time: 2. 30 hrs**

Theory: 60 Marks

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

THEORY

Unit 1. 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 Fertlek, 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**

I.	Trisharanagamana (Refuge to Three Jewels)	Marks 10
II.	Panchashila	Marks 10
III.	Karma and Re-birth	Marks 10
IV.	Post Gautama Buddha Preceptors	Marks 10
V.	Buddhism and Modern World	Marks 10
VI.	Introduction to Sacred Books of Buddhism	Marks 10
VII.	Introduction to Sadalankara (Six Acharyas of Buddhism	Marks 10
VIII.	Bodhichitta	Marks 10
IX.	Paramita	Marks 10
X.	Introduction to the Buddhist Art and Architecture	Marks 10

Unit I : Trisharanagamana

   (i) Definition of Taking Refuge

  (ii) Cause for Taking Refuge

 (iii) Literal Meaning of Jewel

 (iv) Precepts Concerning Taking Refuge

  (v) Benefits of Taking Refuge

Unit II : Panchashila

  (I) Classification of Panchashila

 (II) Explanation of Panchashila

Unit III : Karma and Rebirth

   (i) Definition of Karma

  (ii) Classification of Karma

 (iii) Concept of Re-berth

Unit IV : Post Gautama Buddha Preceptors

   (i) Mahakashyapa

  (ii) Ananda

 (iii) Upagupta

 (iv) Shvenavastra

  (v) Dhidhika

(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

GEOLOGY

Max. Marks : 100

Theory: 70   **Time : 03 Hrs**

Practicals: 30

Unit I.	**GEODYNAMICS**	**Marks 12**
Unit II.	**GENERAL GEOLOGY**	**Marks 12**
Unit III.	**PALAEONTOLOGY**	**Marks 11**
Unit IV.	**MINERALOGY**	**Marks 10**
Unit V.	**ECONOMIC GEOLOGY**	**Marks 14**
Unit VI.	**STRUCTURAL GEOLOGY**	**Marks 11**

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 C^{14} 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.

  (iii) Mineral wealth of J&K State.

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, Chalcopyrite, 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:

1. Physical Geology by A. K. Dutta.
2. A textbook of Geology by P. K. Mukerjee.
3. A textbook of Geology by S. K. Chadda.
4. Structural Geology by Streff.
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 MEASURMENT & PMMC MOVEMENT		**Marks 08**
II. INSTRUMENTS & TRANSDUCERS		**Marks 08**
III. COMMUNICATION SYSTEMS		**Marks 20**
IV. NUMBER SYSTEM & LOGIC GATES		**Marks 15**
V. COMBINATIONAL LOGIC CIRCUITS		**Marks 11**
VI. FUNDAMENTALS OF COMPUTER		**Marks 08**

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.

COMMERCE STREAM

BUSINESS STUDIES

Max Marks: 100   **Time: 03 hours**

Part A: Principles and Functions of Management

Unit I: Nature and Significance of Management   Marks 07

- 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   Marks 07

- 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   Marks 05

- 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   Marks 07

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

Unit 5: Organising   Marks 10

- 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   Marks 08

- 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   Marks 10

· 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   Marks 06

- 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   Marks 12

- 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   Marks 08

- Concept of Financial Market: Money Market and its instruments.
- Capital market and types - primary and secondary market.
- Stock Exchange - Functions, Trading Procedure, NSEl, OCTEI.
- Securities and Exchange Board of India (SEBI)- Objectives and Functions.

Unit 11: Marketing Management   Marks 14

- 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   Marks 06

- Importance of consumer protection
- Consumer rights
- Consumer responsibilities
- Ways and means of consumer protection - Consumer awareness and legal redressal with reference to Consumer Protection Act.
- 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).
- Goodwill: Nature, Factors affecting and methods of valuation: Average profit, Super profit and Capitalization methods.
- *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.
- *Retirement/Death of a Partner:* Change in Profit Sharing ratio, accounting treatment of Goodwill, 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 collatoral 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 accouning 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   **Marks 15**

    1. Project Report/Survey Report   09 Marks

    2. Viva-Voce on PW /SR   03 Marks

    3. Case Study   03 Marks

Guidelines for Project Report/Survey Report.

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   03 marks

      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   **Time allowed : 3 hours**

External : 60
Internal : 40

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).

Outline	**07 Marks**
Transcription in long hand	**18 marks**
Viva-voce	**05 marks**

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:

1ˢᵗ Test	**10 marks**
2ⁿᵈ Test	**10 marks**

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   15 marks

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   10 marks

Socialization of the child, social development, Moral development

Practicals

1. Visit to a kindergarten to observe children at play and other activities. Toy making.

2. Preparation of self-help clothing and study of self-feeding equipment.

3. Visit to a book shop to study and evaluate children's books.

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

Evaluation of fabrics available in market, Evaluation of readymade garments available in market. Comparing the cost of Home/Tailor made garments.

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

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   **Time: 3 hours**

Practicals: Marks 30

Internal: 10

External: 20

Unit I : What is Home Science?   11 marks

What is Home Science? Brief review of the development of Home Science as an area of study in India; its beginning in the USA and UK. Scope of Home Science Education, its importance in women's education. The concepts of education and extension. The objectives of Home Science in relation to objectives of education in general. The inter disciplinary nature of Home Science.

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, feed back.
- 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)

समय 3 घंटे	पूर्णांक 100

पाठय क्रम एवं अंक विभाजन — अंक

क	निबंध लेखन	08
ख	काव्य भाग मानसर	24
ग	काव्य नाटक अंधा युग	24
घ	उपन्यास निर्मला	24
ड	हिंदी साहित्य का इतिहास	20

ए (आधुनिक काल-द्विवेदी युग छायावाद तथा प्रगतिवाद) काल परिचय विशेषताएं एवं कवि ज्ञान

बी भाषा राज भाषा राष्ट्रभाषा एवं सम्पर्क भाषा (अंतर महत्व एवं हिंदी में स्थान)

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 अंधा युग में से विकल्प सहित एक सप्रसंग व्याख्या संबंधी प्रश्न पूछा जाएगा।   05

6. काव्य नाटक अंधा युग में से विकल्प सहित अंक सार चरित्र-चित्रण एवं आलोचनात्मक संबंधी
   प्रश्न पूछा जाएगा।   05

7. उपन्यास निर्मला में से विकल्प सहित चरित्र-चित्रण एवं आलोचनात्मक एक प्रश्न पूछा जाएगा। 05

खण्ड (ख) (लघु उतरापेक्षी प्रश्न)

8. काव्य भाग मानसर में से कविता संबंधी 2 प्रश्न पूछे जाएंगे।   (2Q×3M=6)

9. काव्य नाटक अंधा 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 निर्मला में से 3 प्रश्न पूछे जाएंगे दो प्रश्न उपन्यास संबंधी होंगे तथा एक प्रश्न गदयांश प्रश्नोतर
    संबंधी   (3Q×3M=9)

खण्ड ग (अति लघुतरोक्षी प्रश्न केवल बारह)

12. काव्य भाग मानसर में से कवि और कविता संबंधी 3 प्रश्न पूछे जाएंगे (3Q×2M=6)

13. हिंदी साहित्य का इतिहास में से इतिहास एवं भाषा संबंधी 2 प्रश्न पूछे जाएंगे। (2Q×2M=4)

14. काव्य नाटक अंधा युग में से नाटक कार एवं काव्य नाटक संबंधी 3 प्रश्न पूछे जाएंगे। (3Q×2M=6)

15. उपन्यास निर्मला में से उपन्यास एवं उपन्यास कार संबंधी 4 प्रश्न पूछे जाएंगे (4Q×2M=8)

खण्ड घ

वस्तुनिष्ठ प्रश्न केवल

16. (क) काव्य भाग मानसर में से दो प्रश्न पूछे जाएंगे (2Q×1M=2)

(आ) काव्य भाग अंधा युग में से दो प्रश्न पूछे जाएंगे (2Q×1M=2)

(इ) उपन्यास निर्मला में से दो प्रश्न पूछे जाएंगे (2Q×1M=2)

(ई) हिन्दी साहित्य का इतिहास में से दो प्रश्न पूछे जाएंगे (2Q×1M=2)

पाठ्यक्रम में निर्धारित पुस्तक

1. काव्य भाग '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 'निर्मला' लेख उपन्यासकार सम्राट मुंशी प्रेमचंद प्रकाशन कला मंदिर दिल्ली द्वारा

नोट- उपन्यास निर्मला में से सप्रसंग व्याख्या से संबंधित कोई प्रश्न नहीं पूछा जाएगा।

नोट- परीक्षा में प्रश्न-पत्र निर्माण हेतु मार्गदर्शन

प्र. 1	8 अंक	08 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	08 अंक	
	30 प्रश्न	100 अंक	

110

PUNJABI

1. ਪੁਸਤਕ 'ਕਾਵਿ ਪ੍ਰਵਾਹ' ਵਿੱਚੋਂ — 30 Marks

2. ਪੁਸਤਕ 'ਚੋਣਵੀਆਂ ਪੰਜਾਬੀ ਕਹਾਣੀਆਂ' ਵਿੱਚੋਂ — 26 Marks

3. ਪੁਸਤਕ 'ਆਰਸੀ' ਵਿੱਚੋਂ — 26 Marks

4. ਵਿਆਕਰਨਕ ਭਾਗ — 18 Marks

   (i)   'ਕਾਵਿ ਪ੍ਰਵਾਹ' ਪੁਸਤਕ ਵਿੱਚੋਂ ਇਹਨਾਂ ਕਵੀਆਂ ਦੀਆਂ ਕਵਿਤਾਵਾਂ ਅਤੇ ਜੀਵਨੀਆਂ ਹਨ।

       (ੳ)   ਭਾਈ ਵੀਰ ਸਿੰਘ

       (ਅ)   ਪ੍ਰੋ. ਪੂਰਨ ਸਿੰਘ

       (ੲ)   ਪ੍ਰੋ. ਮੋਹਨ ਸਿੰਘ

       (ਸ)   ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ

       (ਹ)   ਪਿਆਰਾ ਸਿੰਘ ਸਹਿਰਾਈ।

   (ii)   'ਚੋਣਵੀਆਂ ਪੰਜਾਬੀ ਕਹਾਣੀਆਂ' ਪੁਸਤਕ ਦੀਆਂ 13 ਕਹਾਣੀਆਂ ਵਿੱਚੋਂ ਹੇਠ ਲਿਖੀਆਂ 3 ਕਹਾਣੀਆਂ (Non-Evaluative) ਹਨ।

       (ੳ)   ਸਫ਼ਰ

       (ਅ)   ਕੇ ਨਹੀਂ ਲਿਖਣੀ

       (ੲ)   ਸੜਕ ਵਾਪਸ ਜਾਂਦੀ ਹੈ।

   (iii)   'ਆਰਸੀ' (ਸਵੈਜੀਵਨੀ) ਪ੍ਰਿੰ. ਤੇਜਾ ਸਿੰਘ।

   (iv)   ਵਿਆਕਰਨ

       (1)   ਲੇਖ-ਰਚਨਾ

       (2)   ਬਹੁਆਰਥਕ ਸ਼ਬਦ, ਉਲਟ-ਭਾਵੀ ਸ਼ਬਦ, ਸ਼ੁੱਧ ਸਰੂਪ ਵਾਲੇ ਸ਼ਬਦ।

Books Prescribed

1. ਕਾਵਿ ਪ੍ਰਵਾਹ (ਆਧੁਨਿਕ-ਕਾਵਿ) ਸੰਪਾਦਕ ਦੀਵਾਨ ਸਿੰਘ, ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨਿਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

2. ਚੋਣਵੀਆਂ ਪੰਜਾਬੀ ਕਹਾਣੀਆਂ, ਸੰਪਾਦਕ ਅਮਰੀਕ ਸਿੰਘ। ਜੇ ਐਂਡ ਕੇ ਕਲਚਰਲ ਅਕੈਡਮੀ, ਜੰਮੂ।

3. ਆਰਸੀ (ਸਵੈਜੀਵਨੀ) ਪ੍ਰਿੰ. ਤੇਜਾ ਸਿੰਘ, ਕਸਤੂਰੀ ਲਾਲ ਐਂਡ ਸੰਨਜ਼, ਅੰਮ੍ਰਿਤਸਰ।

4. ਪੰਜਾਬੀ ਵਿਆਕਰਨ ਅਤੇ ਲੇਖ ਚਰਚਨਾ। by ਨਰਿੰਦਰ ਸਿੰਘ 'ਦੁੱਗਲ'।

SCHEME OF ASSESSMENT

Long Answer Type Questions

1. ਕਾਵਿ-ਪ੍ਰਵਾਹ ਪੁਸਤਕ 'ਚੋਂ ਇੱਕ ਬੰਦ ਦੀ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ ਕਰੋ (ਕੋਈ ਦੋ ਚੋਂ ਇੱਕ)।   05

2. ਕਾਵਿ-ਪ੍ਰਵਾਹ ਪੁਸਤਕ 'ਚੋਂ ਇੱਕ ਕਵਿਤਾ ਦਾ ਸਾਰ (ਕੋਈ ਤਿੰਨ ਚੋਂ ਇੱਕ)   05

3. ਕਾਵਿ-ਪ੍ਰਵਾਹ ਪੁਸਤਕ 'ਚੋ ਇੱਕ ਕਵੀ ਦੀ ਜੀਵਨੀ (ਕੋਈ ਦੋ ਚੋਂ ਇੱਕ)   05

4. ਚੋਣਵੀਆਂ ਪੰਜਾਬੀ ਕਹਾਣੀਆਂ ਪੁਸਤਕ 'ਚੋਂ – ਕਹਾਣੀ ਉੱਤੇ ਚਰਨਾ ਸੰਬੰਧੀ ਪ੍ਰਸ਼ਨ। (ਕੋਈ ਦੋ ਚੋਂ ਇੱਕ) 05

5. ਚੋਣਵੀਆਂ ਪੰਜਾਬੀ ਕਹਾਣੀਆਂ ਪੁਸਤਕ 'ਚੋਂ – ਪਾਤਰ ਚਿਤਰਣ ਸੰਬੰਧੀ ਪ੍ਰਸ਼ਨ। (ਕੋਈ ਤਿੰਨਾਂ ਚੋਂ ਇੱਕ)   05

6. 'ਆਰਸੀ' ਪੁਸਤਕ 'ਚੋਂ – ਇੱਕ ਵਾਰਤਕ – ਟੋਟੇ ਦੀ ਪ੍ਰਸੰਗ ਦੱਸ ਕੇ ਵਿਆਖਿਆ। (ਕੋਈ ਦੋ ਚੋਂ ਇੱਕ)   05

7. ਆਰਸੀ ਪੁਸਤਕ 'ਚੋਂ ਕਿਸੇ ਇੱਕ ਲੇਖ ਉੱਤੇ ਨੋਟ। (ਕੋਈ ਦੋ ਚੋਂ ਇੱਕ)   05

8. ਵਿਆਕਰਣ 'ਚੋਂ ਲੇਖ-ਰਚਨਾ (Essays) (ਕੋਈ ਤਿੰਨ ਚੋਂ ਇੱਕ)   05

Short Answer Type Questions

9. ਕਾਵਿ-ਪ੍ਰਵਾਹ ਪੁਸਤਕ 'ਚੋ ਕੋਈ ਤਿੰਨ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। (ਹਰ ਪ੍ਰਸ਼ਨ ਦੇ ਅੰਕ 3 ਹਨ) $3 \times 3 = 09$

ਚੋਣਵੀਆਂ ਪੰਜਾਬੀ ਕਹਾਣੀਆਂ ਪੁਸਤਕ 'ਚੋਂ ਤਿੰਨ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। (ਹਰ ਪ੍ਰਸ਼ਨ ਦੇ ਅੰਕ 3 ਹਨ)

$3 \times 3 = 09$

10. ਆਰਸੀ ਪੁਸਤਕ 'ਚੋਂ ਤਿੰਨ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। (ਹਰ ਪ੍ਰਸ਼ਨ ਦੇ ਅੰਕ 2 ਹਨ) $3 \times 3 = 09$

ਵਿਆਕਰਨ ਵਿਚੋਂ – ਬਹੁਆਰਥਕ ਸ਼ਬਦ, ਉਲਟੇ ਸ਼ਬਦ ਅਤੇ ਸ਼ੁੱਧ ਕਰਨੇ ਲਿਖੇ ਆਦਿ। $3 \times 3 = 09$

Very Short Answer Type Questions

ਕਾਵਿ ਪ੍ਰਵਾਹ ਪੁਸਤਕ 'ਚੋਂ ਕੋਈ ਦੋ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। (ਹਰ ਪ੍ਰਸ਼ਨ ਦੇ ਅੰਕ 2 ਹਨ) $2 \times 2 = 04$

ਚੋਣਵੀਆਂ ਪੰਜਾਬੀ ਕਹਾਣੀਆਂ ਪੁਸਤਕ 'ਚੋਂ ਕੋਈ ਦੋ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। (ਹਰ ਪ੍ਰਸ਼ਨ ਦੇ ਅੰਕ 2 ਹਨ)

$2 \times 2 = 04$

11. ਆਰਸੀ ਪੁਸਤਕ 'ਚੋਂ ਕੋਈ ਦੋ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। (ਹਰ ਪ੍ਰਸ਼ਨ ਦੇ ਅੰਕ 2 ਹਨ) $2 \times 2 = 04$

ਵਿਆਕਰਨ 'ਚੋਂ ਕੋਈ ਦੋ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। (ਹਰ ਪ੍ਰਸ਼ਨ ਦੇ ਅੰਕ 2 ਹਨ) $2 \times 2 = 04$

Multiple Choice Type Questions

ਕਾਵਿ ਪ੍ਰਵਾਹ ਪੁਸਤਕ 'ਚੋਂ ਦੋ ਕਰਨੇ ਹਨ। $1 + 1 = 02$

ਚੋਣਵੀਆਂ ਪੰਜਾਬੀ ਕਹਾਣੀਆਂ ਪੁਸਤਕ 'ਚੋਂ ਤਿੰਨ ਕਰਨੇ ਹਨ। $1 + 1 + 1 = 03$

ਆਰਸੀ ਪੁਸਤਕ 'ਚੋਂ ਤਿੰਨ ਕਰਨੇ ਹਨ। $1 + 1 + 1 = 03$

Total = 100 Marks

DOGRI

प्र 1 'डोगरी कविता लेख संग्रैह दे ''पद्य-भाग'' थमा कुसै

　क) इक पद्यांश दी प्रसंग समेत व्याख्या (आन्तरिक विकल्प समेत)　　　　　　5

　ख) डोगरी कविता लेख संग्रैह 'वे' 'गद्य-भाग' थमां कुसै इक गद्यांश दी प्रसंग समेत

　　व्याख्या (आन्तरिक विकल्प समेत)　　　　　　　　　　　　　　5

　ग) ''शानो उपन्यास'' थंमा इस पैहरे दी प्रसंग व्याख्या

　　(अन्दरूनी विकल्प समेत)　　　　　　　　　　　　　　　　5

प्र 2 क) कुसै इस कवता दां जीवन ते सहित्यक परिचे (अन्दरूनी विकल्प समेत)　　5

　ख) कुसै इस कवता दा सार ते निचोड़ (अन्दरूनी विकल्प समेत)　　　　5

　　(क-ख: डोगरी कविता लेख संग्रैह)

　ग) कुसै इस निबन्धकार दा जीवन ते सहित्यक परिचे (अन्दरूनी विकल्प समेत)　　5

　　(डोगरी कवता लेख संग्रैह)

　घ) पुराने कविये दी लेखन कला ते उंदी खास विशेषता (कुसै इक कवि दा) (कवि 1. देवी दित्ता
　　2. गंगाराम 3. रामधान ते 4. लक्खू)　　　　　　　　　　　5

लौहके जवाब

प्र 3 डोगरी कविता लेख संग्रैह दे पद्य भाग थमा

　क) 4 प्रश्न　　　　　　　　　　　　　　　　　　　3+3+3+3=12

　ख) डोगरी कविता लेख संग्रैह दे गद्य भाग थमां

　　3 प्रश्न　　　　　　　　　　　　　　　　　　　3+3+3=9

　ग) शानो उपन्यास दी पाठ्य सामग्री थंमा 3 प्रश्न　　　　　　　3+3+3=9

मते लौहके उत्तर

प्र 4) डोगरी सहित्य दे इतिहास दी पाठ्य सामग्री

　क) उपन्यास ते नाटक दी विकास यात्रा थमां दो प्रश्न　　　　　　2+2=4

　ख) डोगरी साहित्य दे इतिहास दी पाठ्य सामग्री थंमा गजल दी विकास यात्रा पर प्रश्न　　2

　ग) शानो उपन्यास दी पाठ्य सामग्री थंमा 3 प्रश्न　　　　　　2+2+2=6

　घ) डोगरी कवता लेख गद्य थंमा 3 प्रश्न　　　　　　　　2+2+2=6

　ड़) डोगरी कवता लेख संग्रैह दे पद्य भाग थंमा　　　　　　　　8

वस्तुनिष्ठ प्रश्न

क) डोगरी कविता संग्रैह   1+1+1=3

     पद्य ते गद्य भाग

ख) शानो उपन्यास थंमा   3

ग) ''डोगरी सहित्य दा इतिहास'' थंमा उपन्यास ते नाटक दी विकास यात्र ते

     पुरानी कविता दे कवि:   3

     1. देवी दित्ता   2. गंगा राम

     3. रामधान ते   4. लक्खू थंमा

निर्धारत पुस्तकां

1. डोगरी कविता लेख संग्रैह-बलदेव सिंह

2. शानों उपन्यास – नरेन्द्र खजूरिया

3. डोगरी सहित्य दा इतिहास – जितेन्द्र उधमपूरी

संस्कृत (SANSKRIT)

प्र 1   09 वस्तुनिष्ठ प्रश्न

क) 3 प्रश्न 'प्रतिमा नाटक से   3

ख) 2 प्रश्न संस्कृत सहित्य 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 उत्पति पर एक लघु टिप्पणी, अथवा रामायण तथा महाभारत महाकाव्य का संक्षित वर्णन एवं संस्कृत साहित्य का महत्व। (आन्तरिक विकल्प सहित)   5

ख) शूद्रक, अश्वघोष तथा हर्ष नाटककारों में से किसी एक नाटककार के जीवन तथा उसकी कृतियों का संक्षिप्त वर्णन (आंतरिक विकल्प सहित)   4

ग) दण्डी, सबनधु तथा बाणभट्ट लेखकों में से किसी एक गद्यकार के जीवन तथा उसकी कृतियों का संक्षिप्त परिचय (आन्तरिक विकल्प सहित)   4

प्र 3 'प्रतिमानाटकम्' में से किन्ही तीन श्लोकों की प्रसंग सहित व्याख्या।

प्रत्येक श्लोक अपने आप में पूर्ण होना चाहिए। श्लोकों अथवा दोनों का संस्कृत से हिन्दी अनुवाद (आन्तरिक विकल्प सहित)   6+6+6=18

प्र 4 'प्रतिमानाटकम्' में से किन्ही दो गद्यांशों, श्लोकों अथवा दोनों का संस्कृत से हिन्दी अनुवाद (आन्तरिक विकल्प सहित)   4+4=8

प्र 5 'प्रतिमानाटक' के पाठ्यविषय से सम्बन्धित एक प्रश्न:–

चरित्र–चित्रण 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 की सप्रसंग व्याख्या   5+5=10

एक श्लोक 1 से 15 में से तथा एक श्लोक 16 से 30 श्लोकों में से हो।

(प्रत्येक श्लोक आन्तरिक विकल्प सहित)

प्र 7 'मेघदूत' के चार श्लोको का हिन्दी में अनुवाद।

2 श्लोक 1 से 17 में से हो तथा 2 श्लोक 18 से 35 में से हों।   3+3+3+3=12

प्र 8 'मेघदूत' से पाठ्य–विषय संबंधी एक प्रश्न गीतिकाव्यों में मेघदूत का स्थान अथवा मेघ के जाने वाले मार्ग का वर्णन अथवा मेघदूत में प्राकृतिक वर्णन (आन्तरिक विकल्प सहित)   5

प्र 9 व्याकरण:–

क) 1. हल संधि, विरार्ग संधि   2+2=4

2. हल संधिच्छेद (आन्तरिक विकल्प सहित)

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

राजन्, श्वन्, विद्वस् चन्द्रमस्   3+3=6

2. दो सर्वनाम शब्दों की रुपावली तीनों लिंगों में:

युष्मद् अस्मद् तथा तद् (आन्तरिक विकल्प सहित)

ग) धातुओं के क्रियारुप (केवल परस्मैपद)

दिवादिगण: नश् नृत् तथा भ्रम्

(दो धातु प्रत्येक गण से बहुविकल्प सहित)   2+2=4

ध) कृदन्त प्रत्यय: तुमुनं: क्त्वा, ल्यप् अनीयर, यत्।

(कोई तीन प्रत्यय बहुविकल्प)   3

ड़) अव्यय का सामान्य परिचय उदाहरण सहित   1

व) समास-बहुब्रीहि और अव्ययीभाव (प्रत्येक समास का एक-एक उदाहरण आन्तरिक विकल्प सहित)   2

नोट: प्रतिमानाटक के आखिरी तीन अंक (5,6,7)   Non-evaluative

PERSIAN

Maximum Marks: 100   **Time : 3 Hours.**

There shall be one theory paper of 100 marks and 3 hours duration

1. Prose portion of the textbook prescribed   **35**
2. History of Persian literature   **15**
3. Poetry portion of the text prescribed   **30**
4. Grammar   **20**
5. Following figures of thoughts and words

استعاره، ابہام، تجایل عارفانہ با تجرید، تشبیہ حسن تعلیل، نضبہ منثر، حیرامانة الطبع، اشتقاق با تجنیس سبا، فتنہ الاعداد، اضافت، نظار یا مترجیع

Scheme of Assessment

1. Explanation in Urdu or English of two stanza out of three set from the poetry of the poets prescribed in the syllabi.   **10 marks**

2. Translation in Urdu or English of two stanzas out of three set from the poetry of the poets prescribed in the syllabi (other than those set in Q.1)   **10 marks**

3. a. Life sketch of any one of the prescribed poets   **05 marks**

    b. Literary contribution of any one poet other than (a) above from the prescribed poet.

                                                                                        05 marks

روحی، سعدی شیرازی، مولانا فریدالدین حطار، معنوی بلخی

4. Questions on applied Grammar (study of tenses etc)
    a. Figures of thought and concepts   **08 marks**
    b. Usage of any five proverbs   **05 marks**

5. One objective type question consisting of 12 MCQs based on the prescribed text and textual material.   **12 marks**

6. Translation is Urdu or English of any three passages of the two set from the selections prescribed in the syllabi.   **10 marks**

7. Explanation with reference to context in Urdu or English any one out of the two passages included in the course.   **10 marks**

8. A question with alternative choice on history of Persian literature.   **10 marks**

9. Translation in Persian of   **15 marks**

    Given Urdu passage of atleast five sentences

    Given sum and substance/central idea of a lesson in Urdu.

Book Prescribed

1. Bostan-i-sukhan
2. History of Persian literature (Samnaid period) by Dr. Razazada Shafaq translated into Urdu by Syed Muberiz-ud-din Rifat

ARABIC

Maximum Marks: 100   **Time : 3 Hours.**

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**

Part-IV (Grammar)   30 Marks

Question on Applied Grammar.

The topics are:

آداب الفعل الثلاثي المجرد - لم - لؤا صب الغ ۔آ
ه - حروف الجر - آداب الفعل الرباعي المجرد - البر آب
١-الا فعال ناقصة - المشتقات اسم الفاعل - اسم المفعول
٢-التوابع اسم الصفة - اسم التفضيل ٣-الاعراب
الحروف المشبهة بالفعل ۔

☆ شاملِ نصاب شعراء میں سے کسی ایک کی زندگی اور ادبی کارناموں پر ۱۵۰ سے لے کر ۲۰۰ الفاظ تک کا نوٹ ۔

.... نمبرات ۴

☆ شاملِ نصاب نظموں میں سے دیے گئے دو نظموں میں سے کسی ایک کا تنقیدی جائزہ یا خلاصہ ۔ ۱۵۰ الفاظ سے لے کر

۲۰۰ الفاظ تک ۔ .... نمبرات ۴

☆ شاملِ نصاب تین شعری اصناف میں سے کسی ایک پر ۱۵۰ سے لے کر ۲۰۰ الفاظ تک کا نوٹ ۔

.... نمبرات ۴

☆ دیے گئے چھ شعری اصطلاحات (مثلاً تشبیہ، استعارہ، علامت، پیکر وغیرہ) میں سے تین پر مختصر نوٹ ۔   یا

منظومات کے آخر پر دیے گئے مختصر چھ مشقی سوالات میں سے تین کے جوابات ۔

نمبرات .... ۲+۲+۲=۶

☆ منظومات کے تناظر میں پوچھے گئے نہایت ہی تین مختصر جواب طلب سوالات ۔

نمبرات .... ۱+۱+۱=۳

(کل نمبرات ۲۵)

حصہ ج .... (تحریری و تخلیقی کام)

☆ دیے گئے چار اشاراتی اقتباسات میں سے کسی ایک پر ۲۰۰ سے ۲۵۰ الفاظ تک کا مضمون تحریر کرنا ۔

.... نمبرات ۱۰

☆ دیے گئے عنوانات میں سے کسی ایک پر چھٹی یا درخواست لکھنا ۔ .... نمبرات ۸

☆ دیے گئے تین عنوان میں سے کسی ایک پر اخباری رپورٹ، تشہیری پیغام، یا کسی میٹنگ کی کاروائی ۱۵۰ سے

۲۰۰ الفاظ میں لکھنا ۔ .... نمبرات ۷

(کل نمبرات ۲۵)

حصہ د .... گرائمر

☆ بہارستانِ اردو .... اردو کی بارہویں کتاب میں شامل اسباق اور منظومات کے آخر پر دیے گئے گرائمر سے متعلق

پندرہ سوالات میں سے دس کے جوابات لکھنا ۔

.... نمبرات ۱+۱+۲+۲+۲+۳+۳+۳+۴+۴=۲۵

(کل نمبرات ۲۵)

اُردو

طلبہ کو 'بہارستانِ اردو' اردو کی بارہویں کتاب میں شامل سبھی نثری اسباق اور منظومات پڑھنے ہوں گے۔

امتحان میں شاملِ کتاب نثری اسباق کے حوالے سے ۲۵ نمبرات کے سوالات پوچھے جائیں گے جب کہ منظومات کے حوالے سے بھی ۲۵ نمبرات کے سوال پوچھے جائیں گے۔

طلبہ کی تحریری اور تخلیقی صلاحیتوں کو جانچنے کے لیے ۲۵ نمبرات کے سوالات پوچھے جائیں گے جب کہ گرائمر کے لیے ۲۵ نمبرات ہوں گے۔

امتحانی پرچہ چار حصوں پر مشتمل ہوگا۔ ہر حصے کے خدوخال کچھ اس طرح کے ہوں گے۔

حصہ الف .... نثر

☆ نثری اسباق سے نکالے گئے دو مختصر اقتباسات میں سے مضمون اور مصنف کا حوالہ دے کر ایک کی تشریح کرنا۔ .... نمبرات ۴

☆ نثری اسباق سے لیے گئے دو اقتباسات میں سے کسی ایک کے بارے میں پوچھے گئے تین سوالات کا مختصر جواب لکھنا۔ نمبرات ۲+۲+۱=۵

☆ دیے گئے دو اسباق میں سے کسی ایک کا خلاصہ یا تنقیدی جائزہ ۱۵۰ سے لے کر ۲۰۰ الفاظ تک تحریر کرنا۔ .... نمبرات ۵

☆ اسباق کے آخر پر دیے گئے سوالات میں سے نکالے گئے چار سوالات میں سے دو کا ۱۰۰ الفاظ تک کا مختصر جواب لکھنا۔ .... نمبرات ۲+۲=۴

☆ شاملِ کتاب تین نثر نگاروں میں سے کسی ایک کی زندگی اور ادبی کارناموں پر مختصر نوٹ۔ یا شاملِ کتاب دو نثری اصناف میں سے کسی ایک پر مختصر نوٹ۔ .... نمبرات ۴

☆ تین انتہائی مختصر سوالات جو شاملِ کتاب نثری اسباق سے متعلق ہوں گے۔ .... نمبرات ۳

(کل نمبرات ۲۵)

حصہ ب .... شاعری

☆ نصابی کتاب میں شامل منظومات میں سے لیے گئے آٹھ اشعار میں سے شاعر کا حوالہ دے کر چار کی تشریح۔ .... نمبرات ۴

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حصہ ب .... شاعری

☆ کتابہ منز کڈنہ آمتیہ اُٹھو شعرو منز شاعرِ ہِندِ وقُتھ ژورن ہِنز تشریح۔ ....۴ نمبر

☆ کتابہ منز شامل شاعرو منز أکہ ہِنز زِندگی پیٹھ نوٹ۔ یا

یا کنہ شعری صنفہ متعلق مختصر نوٹ۔ زیٚکھر 150 تا 200 لفظن تام۔ ....۴ نمبر

☆ کتابہ منز شامل منظوماتن ہِندِس أخرس پیٹھ دِنہ آمتیہ شیو مشقی سوالو منز مَن ہُند جواب۔ زیٚکھر 100 پیٹھہ 150 لفظن تام۔ ....3+3+3=9 نمبر

☆ أٹھ سبُتھ چھہ موخصر سوال

1+1+1+1+1+1+1+1=8 نمبر

حصہ ج .... تخلیقی تہ تحریری سوال

☆ تریہ اشاراتی خاکو منز أکس پیٹھ 200 پیٹھہ 250 لفظن ہُند مضمون۔ ....10 نمبر

☆ چٹھی یا درخاس۔ ....8 نمبر

☆ اخباری رپورٹ، مینٹنگہ ہِنز کاروائی، پوسٹر یا اشتہار لیٚکھُن۔ 7 نمبر

حصہ د .... گرامر

☆ نہمہ جماژہ ہِنز کاشر کتابہ منز شامل پتہ کنہ دِنہ آمژن مشقن ہِندِ حوالہ گرامر۔

15 سوالو منز 10 ہن سوالن ہِندِ جواب۔

4+4+3+3+3+2+2+2+1+1=25

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کأشُر

☆ دی جموں اینڈ کشمیر سٹیٹ بورڈ آف سکول ایجوکیشنکہ طرفہ شائع کرنہ آمہ "کأشُر کِتاب" نِمہ جماأزا پتھ چھے گُلہم کِتاب پرٔ نٔ ضروٗری۔ امتحانس مٔنزٖ ین سوال نیمہ حسابہ پرٔ ژھِنہ۔

☆ نثری سبقن ہِندٕ حوالہ پٕن 25 ہٕن نمبرن ہِندٕ سوال پرٔ ژھِنہ۔

☆ کِتابہ مٔنز شأمٕل شأعری ہِندٕ حوالہ پتہ پٕن 25 ہٕن نمبرن ہِندٕ سوال پرٔ ژھِنہ۔

☆ بچن ہٕنزٕ تحریری تہ تخلیقی صلأ حیٕٹ بڈھٕ کڈنہ باپتھ پٕن 25 ہٕن نمبرن ہِندٕ سوال پرٔ ژھِنہ۔

☆ گرامرس مُتعلٕق تہ پٕن 25 ہٕن نمبرن ہِندٕ سوال پرٔ ژھِنہ۔

☆ سوالنامہ آسہ ژدٕن حصن پٕٹھ مشتمل۔ الف۔ ب۔ ج۔ د

حصہ الف .... نثر

☆ سبقٕک تہ لِکھأری ہِندٕ حوالہ سان دِنہ آمتٕو دو یونثری اقتباسومٔنز اپچ تشریح۔ .... 5 نمبر

☆ گنہ سبقہ مٔنز کڈنہ آمتہ أ ٕکِس اقتباس مُتعلٕق پرٔ ژھِنہ آمتٕمن تٔرن سوالن ہُند جواب۔ .... 1+2+2=5 نمبر

☆ گنہ سبقٕک خلاصہ، تنقیدی جأیزہ یا کأنسہ کردارس مُتعلٕق نوٹ ۔ زٔچھر 150 پٕٹھہ 200 لفظن تام۔ .... 5 نمبر

☆ سبقن پتہ کنہ دِنہ آمتٕو ژور مشقی سوالومٔنز دوٗن ہُند جواب۔ زٔچھر 100 پٕٹھہ 150 لفظن تام۔ .... 3+3=6 نمبر

☆ کِتابہ مٔنز شأمٕل تٔرٕ یونثر نگارو مٔنز أ کٕ سٕنز زندگی ہِندٕ حالات تہ ادبی کارنامہ۔ .... 4 نمبر

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སྒྲ་ཊེ་འཛིན་སྐྱ་བཅུ་གཉིས་པའི་སློབ་ཚན།

སློབ་དེབ་གཤེན་ནུའི་ལམ་གྱུར་རྒྱན་ལེག་གཉིས་པ།

སྤྱི་ལམད། ༡༠༠		དུས་ཡུན་ཆུ་ཚོད། ༣
ཀ)	ཚིགས་ལྷུག	༣༠
ཁ)	ཚིགས་བཅད།	༣༠
ག)	བདེ་སྤྱོད་དང་སྒྲུན་དག	༨༠

ཀ) ཚིགས་ལྷུག

༡ མཉན་ཡོད་ནས་ཁྲིམ་བདག་ཟས་བྲིན་གྱི་བུ་མོ་མ་ག་ཏུ་བཟང་མོ་ཞེས་སོ་གགས།

༢ ཁྱིའུ་སྨན་ཆེན་པོ་ཞེས་སོ་གགས།

༣ རྒྱན་པོ་མེའུ་སྦྲང་ཁ་བ་ར་ཞེས་སོ་གགས།

༤   སྤྱིན་སྐྱུ་ར་རའི་རྒྱུད་དུ་བྲགས་པའི་རྒྱལ་རིགས་ཞེས་སོ་གགས།

༥ སྤྱོད་བྱུང་ཕ་མ་གཉིས་ཡོད་པ་ཞེས་སོ་གགས།

༦ སྤྱན་བྱུང་ཨ་སྐྱེས་ཤིག་ཟས་ཀྱི་ཕྱིར་ཕྱོགས་ཀུན་ཏུ་གཅུལ་བ་ན་ཞེས་སོ་གགས།

ཁ) ཚིགས་བཅད།

༡ སྐྱེ་བོ་ཡོན་ཏན་ཡོད་མེད་པས། ཞེས་པ་ནས། ཡོན་ཏན་ལྡན་ན་སྐྱེ་བོ་ཀུན། ཞེས་པའི་བར།

༢ ཡོན་ཏན་སྐྱོན་གཉིས་སུས་ཀྱང་གསལ། ཞེས་པ་ནས། ལེགས་བཤད་བྱིས་པ་དག་ལས་ཀྱང་། ཞེས་པའི་བར།

༣ ཧྲག་ཏུ་དམ་པའི་ཡོན་ཏན་རྣམས། ཞེས་པ་ནས། དམ་པའི་ཡོན་ཏན་སྣས་གྱུར་གྱུང་། ཞེས་པའི་
བར།

༤ སྐྱེ་བོ་དན་པ་འཕྱུར་ཐོབ་གྱུང་། ཞེས་པ་ནས། བླུན་པོའི་དབུས་ན་དགའ་ཞིང་སྟེ། ཞེས་པའི་བར།

༥ སྨྱོན་རྣམས་འབད་པས་འཇིན་བྱེད་ཅིང་། ཞེས་པ་ནས། སྐྱེ་བོ་དན་པའི་ཚོགས་ནང་། ཞེས་པའི་
བར།

གོ། བརྗོད་སྡུད་དང་སྐྱུན་ངག

༡ སྐོར་རྒྱུན་གྱི་རོ་བོ་དང་དབྱེ་བ། ༢ འགོག་རྒྱུན་གྱི་དོན་དང་དབྱེ་བ། ༣ དོན་གཞན་བཀོད་
པའི་རྒྱུན་གྱི་རོ་བོ་དང་དབྱེ་བ། ༤ ལྷོག་པ་ཅན་རྒྱུན་གྱི་མཚོན་ཉིད་དང་དབྱེ་བ། ༥ ཚིག་དགའ་
བ་བཅུའི་དོན་བྲིས་ཏེ་བརྗོད་པ་བྲོ་རྒྱུ།

༦ མཚོན་བརྗོད་ལས། ས་གཞི། ལྡང་སྟོང་། ཆངས་པ། འཇམ་པའི་དབྱངས། ཀྲ། ཀྲི།
མེ། ཀྱུ། བཀྲ་ཤིས།

༧ བདད་པ་ཞིག་འབྲི་རྒྱུ། ལ་དགས་ཀྱི་ལོ་གསར། ང་ཡི་སྐྱེ་ཡུལ། ཁོར་ཡུག་སྲུང་སྐྱོབ་སྐོར།
ང་ཡི་དགེ་རྒན།