RATIONALISED AND REVISED SYLLABI

Class-11th

With effect from

2023-24

For

UTs of J&K and Ladakh

The Jammu and Kashmir Board of School Education

Rehari Colony, Jammu / Bemina, Srinagar

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GENERAL ENGLISH

CLASS–XI	TIME: 3 HOURS
MAX MARKS: 100	80 (THEORY) +20 (INTERNAL ASSESSMENT)

PRESCRIBED BOOKS

1. *Hornbill*: Textbook in English for Class XI(Core Course) published by NCERT, New Delhi
   1. The Portrait of a Lady
   2. A Photograph
   3. We're Not Afraid to Die ... If We Can All Be Together
   4. Discovering Tut: The Saga Continues
   5. The Laburnum Top
   6. The Voice of The Rain
   7. The Ailing Planet: The Green Movement's Role
   8. Childhood
   9. The Adventure
   10. Silk Road
   11. Father to Son

2. *Snapshots*: Supplementary Reader in English for Class XI (Core Course) published by NCERT, New Delhi
   1. The Summer of the Beautiful White Horse
   2. The Address
   3. Mother's Day
   4. Birth
   5. The Tale of Melon City

SCHEME OF ASSESSMENT

Q No	DESCRIPTION	Weightage
SECTION A: READING COMPREHENSION		20 marks
1	One unseen passage (400-500 words) for note-making (5 marks), summarizing (4 marks) and providing a title (1 mark) to the summary.	10 marks
2	One unseen prose passage (400-500 words) followed by ten objective type questions including MCQ's, fill-ups, true/false, yes/no to assess comprehension, interpretation and inference.	1x10=10 Marks
SECTION B: WRITING SKILLS AND GRAMMAR		30 marks
3	One out of two questions on notice/poster/advertisements (30-50 words).	4 marks
4	One out of two questions on letter writing (business or official letters for making enquiries, registering complaints, asking for and giving information, placing orders and sending replies; letters to the editor givingsuggestions/opinions on an issue; letters to the school or college authorities, regarding admissions, school issues, requirements/suitability of courses, etc.) (120-150 words). Address: **1 mark** Salutation: **1 mark** Body: **3 Marks** Closing: **1 Mark**	6 marks
5	One question on writing a personal email to a friend/relative/etc. (50-80words)	4 marks
6	One out of two questions on article/speech/ report/personal narrative/debatewriting. (200-250 words)	8 marks
7	One passage (100-150 words) for assessing through error correction the following items: determiners, tenses, punctuation, modals, conjunctions and prepositions (8 items).	8 marks
SECTION C: Literature		30 marks
8	a) One poetic passage from the prescribed textbooks followed by four objective type questions on context, comprehension, poetic devices, theme, etc. (4×1=4 marks) b) Two out of three short answer type questions on prescribed poems other than included at a) above based on poetic devices, theme, global comprehension to be answered in 40-50 words. (2x3=6 marks)	10 marks
9	Three out of five short answer type questions from *Hornbill* based on proselessons to assess inference and critical thinking (40-50 words each)	3 x 3 = 9 Marks
10	One out of two long answer type questions from *Snapshots* based on prose lessons to assess inference, critical thinking and appreciation, global comprehension, theme, style and extrapolation beyond the texts. Questions to elicit creative responses and ability to form opinions. (150-200words)	6 marks
11	One out of two long answer type questions from the play based on inference, theme, characterization, setting, plot, literary devices and critical thinking. (120-150words)	5 marks

INTERNAL ASSESSMENT

Assessment of Listening and Speaking Skills

Assessment of Listening and Speaking Skills will be for 20 marks. Practice and assessment is to be based on the activities included in the prescribed textbooks and by taking recourse to various resources and techniques available in the school.

INTERNAL ASSESSMENT

Assessment of Listening Skills	05 marks.
Assessment of Speaking Skills	05 Marks
Project Work	10 Marks

Suggested Reading

For grammar, teachers and students can refer to any standard grammar textbook for furtherreading and clarification of concepts. Some of the books include:

- *English Grammar in Use by Raymond Murphy published (Cambridge UniversityPress)*
- *Oxford Practice Grammar by John Eastwood published (Oxford University Press)*
- *A Practical English Grammar by Thomson and Martinet (Oxford University Press)*
- *High School English Grammar by Wren and Martin (S Chand Publishing)*

Question Paper Design

General English XI Marks: 80+20=100

Section	Competencies	Total marks
Comprehension	Conceptual understanding, decoding,Analyzing, inferring, interpreting, appreciation, literary, conventions and vocabulary, summarizing and using appropriate format/s	20 Marks
Writing Skills	Reasoning, appropriacy of style and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity	30 Marks
Literature Textbook and Supplementary Reader	Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency	30 Marks
	TOTAL	80 Marks
Assessment of Listening and Speaking Skills		20 Marks
	GRAND TOTAL	100 Marks

HISTORY

Maximum Marks: 100 **Time: 3 hrs**
Theory: 80 Marks **Project work: 20 marks**

Section A: Early Societies 10 Marks

1. Early Cities.
   Focus: Iraq 3 Millennium B.C

a) Growth of towns.
b) Nature of early urban societies.
c) Historians debate of uses of writing

Section B: Empires 20 Marks

2. An empire across three continents.
   Focus: Roman Empire, 27 B.C to AD 600.

a) Political evolution.
b) Economic expansion.
c) Religion.
d) Late Antiquity.
e) Debate on the institution of slavery.

3. Nomadic Empires.
   Focus: The Mongol, 13th to14thCentury.

a) The nature of nomadism.
b) Formation of empires.
c) Conquests and relations with other states.
d) Historians' view on nomadic societies and state formation.

Section C: Changing Traditions 20 Marks

4. **The Three orders.**
   Focus: Western Europe, 13th to16thCentury.

a) Feudal society and economy.
b) Formation of states.
c) Church and society.
d) Historians' view on decline of feudalism.

5. **Changing Cultural traditions.**
   Focus: Europe14thto17thCentury.

a) New idea and new trends in literature and arts.
b) Relationship with earlier ideas.

c) The contribution of the West Asia.
d) Historians' viewpoints on the validity of the notion 'European Renaissance'.

Section D: Paths to Modernization. 25 Marks

6. Displacing indigenous People
   Focus: North America and Australia, 18th to 20th Century.
a) European colonists in North America and Australia.
b) Formation of white settler societies.
c) Displacement and repression of local people.
d) Historians' viewpoints on the impact of European settlement on indigenous population.

7. Paths to Modernization.
   Focus: East Asia, late 19thand20thCentury.
a) Militarization and economic growth in Japan.
b) China and the communist alternative.
c) Historians' debate on the meaning of modernization.

Maps related to places/ cities mentioned in the above chapters 05 Marks

Scheme of Assessment (Theory)

Question paper contains six sections namely

1. **Section –A** contains 10 (Objective Type Questions/MCQs) of 1 markeach. 1x10= 10 marks
2. **Section- B** contains 6 Very Short Answer Type Questions of 2 marks each to be answered in20 to 30 words. 2 x 6 = 12 marks
3. **Section – C** contains 6 Short Answer type questions of 4 marks each to be answered in 100to 150 words. 4x 6 = 24 marks
4. **Section - D** contains 3 Long Answer type questions of 8 marks each to be answered in 150to 200 words. 8 x 3 = 24 marks
5. **Section – E** contains 1 Passage, having one question of 1 mark and two questions of 2 mark each to be answered in 20 to 30 = 5 marks
6. **Section – F** contains Map work of 5 marks.

Note: The paper setter shall incorporate Higher Order Thinking Skills (HOTS) questions apart from knowledge, memory and application based questions.

PROJECT WORK: 20 Marks

For the purpose of project work, the following topics are suggested: -

I. Archaeological sites in Jammu & Kashmir
II. Historical monuments of Jammu & Kashmir i.e., Palaces, Forts, Buildings etc.
III. Arts and Crafts in Jammu & Kashmir like Basohli painting, calligraphy, paper mache etc.
IV. Description of Dogra Dynasty i.e., List of rulers from Maharaja Gulab Singh to Maharaja Hari Singh
V. Culture and Heritage of Jammu and Kashmir i.e., description about fairs, melas, festivals, languages, traditions etc.

Scheme of Evaluation for Project Work as per following

1. Project Synopsis	02 Marks
2. Data/ Statistical Analysis/ Map work	03 Marks
3. Visual/ Overall Presentation Work	05 Marks
4. Analysis/ Explanation & Interpretation	05 Marks
5. Bibliography	01 Mark
6. Viva-Voce	04 Marks

BOOK PRESCRIBED:

1. *Themes in World History, Published by NCERT New Delhi.*

ECONOMICS

Maximum Marks: 100
Theory: 80 Marks

Time: 3 hrs
(Project: 20 Marks)

Units		Marks
Part A	**Statistics for Economics**	
	Introduction	05
	Collection, Organisation and Presentation of Data	10
	Statistical Tools and Interpretation	25
		40
Part B	**Indian Economic Development**	
	Development Experience (1947-90) and EconomicReforms (LPG)	12
	Current Challenges facing Indian Economy	20
	Development Experience of India–A Comparison with neighbours	08
	Theory Paper (40+40 = 80 Marks)	**40**
Part C	**Project Work**	20

Part A: Statistics for Economics

Unit 01: Introduction

- Economics- concept and scope
- Meaning, scope, functions and importance of statistics in Economics
- Research design, research objectives and sampling (probability and non-probability type)

Unit 02: Collection, Organisation and Presentation of data

- **Collection of data**-sources of data-primary and secondary; data collection methods and techniques (Questionnaire, Interview, Case Study and Surveys).Census of India & National Sample Survey Organisation.

- **Organisation of Data**:

  Meaning and types of variables; Frequency Distribution.

  Presentation of Data: Tabular Presentation and Diagrammatic Presentation of Data:

  (i) Geometric forms (bar diagrams and pie diagrams),

  (ii) Frequency diagrams (histogram, polygon and ogive) and

(iii) Arithmetic line graphs (time series graph)

Unit 03: Statistical Tools and Interpretation

- Measures of Central Tendency- arithmetic mean, median and mode
- Correlation – meaning and properties, scatter diagram; measures of correlation - Karl Pearson's method (two variables ungrouped data) Spearman's rankcorrelation (Non-Repeated Ranks and Repeated Ranks).
- Introduction to Index Numbers - meaning, types - Wholesale Price Index, Consumer Price Index and index of industrial production, uses of index numbers;Inflation and Index Numbers, Simple Aggregative Method.

Part B: Indian Economic Development

Unit 4: Development Experience (1947-90) and Economic Reforms since 1991:

- A brief introduction of the state of Indian economy on the eve ofindependence;
- Indian economic systems
- Common goals of Five-Year Plans; NITI Aayog- Overview
- Main features problems and policies of agriculture (institutional aspects and new agricultural strategy), industry (IPR 1956; SSI – role & importance) and foreign trade.
- Economic Reforms since 1991 - Features and appraisals of liberalization, globalization and privatization (LPG policy)
- Concepts of demonetization and GST

Unit 5: Current challenges facing Indian Economy

- Human Capital Formation: How people become resource; Role of human capitalin economic development; Growth of Education Sector in India
- Rural development: Key issues - credit and marketing - role of cooperatives;agricultural diversification; alternative farming - organic farming

- Employment: Growth and changes in work force participation rate in formal andinformal sectors; problems and policies
- Sustainable Economic Development: Meaning, Effects of EconomicDevelopment on Resources and Environment, including global warming
- Seventeen Development Goals – an overview

Unit 6: Development Experience of India

A comparison with neighbours

- India and Pakistan
- India and China

(Issues: economic growth, population, sectoral development and other Human Development Indicators)

Scheme of Assessment (Theory)

Question paper contains four sections namely

1. **Section –A** contains 10 (Objective Type Question/Multiple Choice Questions) of 1 mark each. 1x10= 10 marks
2. **Section- B** contains 10 Very Short Answer Type Questions of 2 marks each to be answered in 20 to 30 words. 2 x 10 = 20 marks
3. **Section – C** contains 8 Short Answer type questions of 4 marks each to be answered in 100 to 150 words. 4x 8 = 32 marks
4. **Section - D** contains 3 Long Answer type questions of 6 marks each to be answered in 150 to 200 words. 6 x 3 = 18 marks

Note: The paper setter shall incorporate Higher Order Thinking Skills (HOTS) questions apart from knowledge, memory and application based questions.

Part C (Project Work= 20 Marks)

The students will do the project on the themes, which have primary data, secondary data or both. Case studies of a few organization/ outlets may also be encouraged. Some of theexamples of the projects are as follows:

a. Tourism sector in Jammu and Kashmir
b. Agricultural sector in Jammu and Kashmir (horticulture, apiculture andfloriculture, etc.)
c. Livestock sector in Jammu and Kashmir
d. Rural development schemes in India and Jammu and Kashmir
e. Financial Literacy
f. Economics in curriculum at schools and colleges.

Guidelines for Project Work in Economics (Class XI)

The objective of the project work is to enable learners to:

g. Probe deeper into theoretical concepts learnt in classes XI
h. Analyse and evaluate real world economic scenarios using theoretical constructsand arguments
i. Demonstrate the learning of economic theory
j. Follow up aspects of economics in which learners have interest
k. Develop the communication skills to argue logically
l. The project work will be a mini study to sensitize the students to inculcateresearch aptitude.
m. It is advisable to conduct the project work within the district. The students maydo Field Visits/ Industrial Tours/ Market Visits, etc.

The expectations of the project work are:

1. The teacher will divide the students in groups. Each group will comprise five students or less depending on the number of students in the class. Separate topics shall be assigned to each group.
2. Learners will complete only ONE project in each academic session.
3. Project should be of 2500-5000 words (excluding diagrams & graphs) neatly typed on A4 format.
4. The learners will maintain a proper reference and bibliography.

Role of the teacher:

The teacher plays a critical role in developing thinking skills based on objectives, research methodology, collection of data etc. of the learners.

Besides a teacher should:

i. Help each group to select a topic based on recently published extracts from the news media, government policies, RBI bulletin, NITI Aayog reports, IMF/World Bank reports etc., after detailed discussions and deliberations ofthe topic apart from J&K economy

ii. Play the role of a facilitator and supervisor to monitor the project work of the learner through regular discussions and presentations.

iii. Guide the research work in terms of sources for the relevant data

iv. Educate learners about plagiarism and the importance of quoting the source of the information to ensure authenticity of research work

v. Prepare learners for the presentation of the project work

vi. The teacher will narrow down the scope and the practicability of the project work in accordance with the research objectives and questions of the study. The teacher will sensitise students about MLA and APA style of referencing

Format of the project:

Learners may work upon the following steps as suggested below:

1. Choose a title/topic
2. Research design
3. Research objectives / questions
4. Methodology
5. Sampling
6. Data collection technique
7. Analysis of data
8. Presentation and interpretation of data
9. Draw the relevant conclusion
10. Future scope of the study

Expected Checklist:

- Introduction of topic/title
- Identifying the causes, consequences and/or remedies
- Various stakeholders and effect on each of them
- Advantages and disadvantages of situations or issues identified

- Short-term and long-term implications of economic strategies suggested in thecourse of research
- Validity, reliability, appropriateness and relevance of data used for researchwork and for presentation in the project file
- Presentation and writing that is precise and coherent in project file
- Citation of the materials referred to, in the file in footnotes, resources section,bibliography etc.

Mode of presentation/submission of the Project:

At the beginning, middle and the end of the project work, each group will present the research topic, introduction, objectives, methodology, etc. in the form of power point presentations and incorporate all the relevant suggestions in the final Project File tothe teacher/internal examiner. The objective of presenting the project work is to learn from feedback, suggestions, etc. and engage in thorough discussions to develop critical thinking and better insight. The Internal Examiner should ensure that the studysubmitted by the learners is their own original work. In case of any doubt, authenticityshould be checked and verified.

Marking Scheme:

Marks are suggested to be given as –

1. Project work		15 marks
(i)	Statement of problem	03 marks
(ii)	Methodology	04 marks
(iii)	Data analysis	04 marks
(iv)	Conclusion	02 marks
(v)	References	02 marks
2. Viva-Voice based on the Project work		03marks
3. Attendance		02 marks

BOOKS PRESCRIBED:

1. *Statistics for Economics by NCERT, New Delhi*
2. *Indian Economic Development by NCERT, New Delhi*

GEOGRAPHY

M.Marks:100 Time: 3 hrs

Theory: 70 marks Practical: 30 marks

A. Fundamentals of Physical Geography

Unit I: Geography as a Discipline 5 marks

- Geography as an integrating discipline, as a science of spatial attributes;
- Branches of geography importance of physical geography.

Unit II: The Earth 5 marks

- Origin and evolution of the earth; interior of the earth Wegener's continental drift theory and plate tectonics; Earthquakes and volcanoes;

Unit III: Land Forms 7 marks

- Land forms and their evolution
- Geomorphic processes–weathering, mass wasting, erosion and deposition; soils–formation

Unit IV: Climate 13 marks

- Atmosphere–compositions and structure, elements of weather and climate;
- Insulation–angle of incidence and distribution; heat budget of the earth-heating and cooling of atmosphere (conduction, convection, terrestrial radiation, advection); temperature – factors controlling temperature; distribution of temperature- horizontal and vertical; inversion of temperature.
- Pressure – pressure belts; winds – planetary seasonal and local, air masses and fronts; tropical and extra tropical cyclones;
- Precipitation–evaporation; condensation–dew, frost, fog, mist and cloud; rainfall–types and world distribution;
- World – climates – classification (Koeppen); greenhouses effect, global warming and climatic changes.

Unit V: Water (Oceans) 5 marks

- Hydrological Cycle
- Oceans–submarine relief; distribution of temperature and salinity; movements of ocean water waves, tides and currents.

B. India–Physical Environment.

Unit VI: Introduction 5 marks

- Location–space relations and India's place in the worlds.

Unit VII: Physiography 7 marks

- Structure and Relief;
- Drainage system; concept and watersheds; the Himalayan and the Peninsular;
- Physiographic divisions.

Unit VIII: Climate, Vegetation and Soil 14 marks

- Weather and Climate–spatial and temporal distribution of temperature, pressure, winds and rainfall, Indian monsoons, mechanism, onset and variability – spatial and temporal; climatic types;
- Natural vegetation – forest types and distribution; wild life; conservation; biosphere reserves;

Unit IX: Natural Hazards and Disasters: Causes, Consequences and Management (One case study to be introduced for each tropic). 9 marks

- Floods and droughts
- Earthquakes and Tsunami
- Cyclones
- Landslides

Scheme of Assessment (Theory)

Question paper contains four sections namely

1. **Section –A** contains 10 (Objective Type Question/Multiple Choice Questions) of 1 mark each. 1x10= 10 marks
2. **Section- B** contains 9 Very Short Answer Type Questions of 2 marks each to be answered in 20 to 30 words. 2 x 9 = 18 marks
3. **Section – C** contains 9 Short Answer type questions of 3 marks each to be answered in 100 to 150 words. 3 x 9 = 27 marks
4. **Section - D** contains 3 Long Answer type questions of 5 marks each to be answered in 150 to 200 words. 5 x 3 = 15 marks

Note: The paper setter shall incorporate Higher Order Thinking Skills (HOTS) questions apart from knowledge, memory and application-based questions.

C. Practical Work 30 Marks

(Internal: 10 Marks, External: 20 Marks)

Unit I: Fundamentals of Maps 08 marks

Maps–types, scales–types construction of linear scales, measuring distance finding

Direction and

Use of symbols;

- Latitude, Longitude and time;
- Map projection–typology, construction and properties of conical with one standard parallel and Mercator's projection.

Unit II: Topographic and Weather Maps 09 marks

- Study of topographic maps (1:50,000 or 1;25,000 Survey of India Maps): contour cross section and identification and landforms–slopes hills, valleys, waterfalls, cliff; distribution of settlements;

Practical Record Book and Viva-Voce **03 Marks**

BOOKS PRESCRIBED

1. *Fundamentals of Physical Geography, Published by NCERT New Delhi.*
2. *Practical in Geography, Published by NCERT New Delhi*

POLITICAL SCIENCE

M.Marks:100 Time: 3 hrs
Theory: 80 marks Practical: 20 marks

PART A: Indian Constitution at work

Unit: I

1. **Making of the constitution:** Why do we need constitution? What does a constitution do? Who made our constitution? How did the country's partition affect the working of the constituent assembly? What were the sources of constitutions. **3 marks**

2. **Fundamental Rights:** Why do we need for a bill of rights in the constitution? What are the fundamental rights provided by the constitution? Why was the right of the property removed from fundamental rights? How have the interpretation by the courts influenced Fundamental Rights? How has provision of Fundamental Rights provided the basis for civil liberties movement in India? What are the fundamental Duties? **5 marks**

3. **System of representational democracy:** What are the different methods of election? How do these methods affect parties and politics? Why was the post system chosen in India? What have been the effects of this system? Why is there a system of reserved seats? What are the provisions to ensure free and fair elections? What does the Election Commission do? **6 marks**

Unit II

4. **Executive in a parliamentary system:** Why are parliamentary system chosen over other forms of government? Why does the parliamentary system need a constitutional head? How are the Prime Minister and the Chief Ministers elected? What are the formal and real powers of the President of India? What are the powers of Prime Minister or the Chief Ministers and the Council of Ministers? What are the powers of the Governor? **4 marks**

5. **Legislature at the central and state level:** Why does the Parliament of India have two Houses? How are the parliament and the state Assembles constituted? What are the powers of the Rajya Sabha and Lok Sabha? How are the laws passed? How the executive is made accountable? What are the constitutional means to prevent defection? **4 Marks**

6. **Judiciary:** What is the rule of law? Why do we need an independent judiciary? What are the provisions that ensure the independence of judiciary in India? How are judges appointed? What are the powers of the Supreme Court and the High Court's? How do they use their powers for public interest? **4 Marks**

Unit III

7. **Federalism:** What is Federalism? How does federalism ensure accommodation of diversities? In which ways is the Indian constitution federal? In which ways does the constitution strengthen the centre? Why are there special provisions for some states and areas? **6 Marks**

8. **Local Government:** Why do we need decentralization of powers? What has been the status of local government in the constitution? What are the basic features of rural and urban local governments? Why has been the effect of giving constitutional status to local governments? **4 Marks**

Unit IV

9. **Political philosophy underlying the constitution:** What are the core provisions of the constitution? What are the visions underlying these core provisions? How are these shaped by modern Indian political thought? **2 Marks**

10. **Constitution as a living document:** How has the constitution changed since its inception? What further changes are being debated? What has the working of democracy done to the constitution? **2 Marks**

PART B: Political Theory

Unit V

11. **Introduction to Political Theory:** What is Politics? Do we find politics in seemingly non-political domain? Can political argument be resolved through reasoning? Why do we need political theory? **4 Marks**

12. **Freedom:** Why is freedom? What are reasonable constrains on individual liberty? How are limits defined? **6 Marks**

13. **Equality:** Do all differences involve in equality? Does equality simply say oneness? What are the major forms of inequality? How can equality be realized? **6 Marks**

Unit VI

14. **Social Justice:** Is justice all about fairness? What is the relationship between justice and equality? What are the different forms of injustice? In which ways can justice be secured? **6 marks**

15. **Rights:** How is a right different from any claim? What are the major kinds of right claims? How do we resolve a conflict between individual and community rights? How does the state enable and obstruct rights? **4 Marks**

16. **Citizenship:** Who is a citizen? What are relevant grounds for inclusion and exclusion? How are new claims to citizenship negotiated? Can we have a global citizenship? **4 Marks**

Unit VII

17. **Nationalism:** How are the boundaries of a nation defined? Must every nation have a state? What demands can a nation make of its citizens? What is the basis of the right to self-determination? **4 Marks**

18. **Secularism:** What is secularism? Which domains of life does it relate to? What is a secular state? Why do we need secular state in modern life? Is secularism suitable for India? **6 Marks**

Scheme of Assessment (Theory)

Question paper contains five sections namely

1. **Section –A** contains 10 (Objective Type Question/Multiple Choice Questions) of 1 mark each. 1x10= 10 marks
2. **Section- B** contains 9 Very Short Answer Type Questions of 2 marks each to be answered in20 to 30 words. 2 x 9 = 18 marks
3. **Section – C** contains 7 Short Answer type questions of 4 marks each to be answered in 100 to 150 words. 4 x 7 = 28 marks
4. **Section - D** contains 1 Passage having three questions of 2 marks each to be answered in 20 to 30 words. 2 x 3 = 6 marks
5. **Section - E** contains 3 Long Answer type questions of 6 marks each to be answered in 150 to 200 words. 6 x 3 = 18 marks

   Note: The paper setter shall incorporate Higher Order Thinking Skills (HOTS) questions apart from knowledge, memory and application based questions.

Project work (Internal) **20 marks**

List of Suggested Topics

1. Making of the Constitution.
2. Elections in India.
3. Working of the Indian Judiciary System.
4. Social Justice: Are ethics followed in Indian Politics
5. Human Rights Act and its gratification in India.
6. Political impact on Indian Legislation.

BOOKS PRESCRIBED

1. *Political Theory, Published by NCERT New Delhi*
2. *Indian Constitution at work, Published by NCERT New Delhi.*

PSYCHOLOGY

M.Marks:100 Time: 3 hrs
Theory: 70 Marks Practical: 30 Marks

UNIT –I INTRODUCITON TO PSYCHOLOGY

- Nature and scope of Psychology.
- Brief historical background of Psychology.
- Branches of Psychology: Educational, Social, Abnormal, Experimental, Clinical, Industrial Land Cognitive Psychology.
- Schools of thought in Psychology: Structuralism, Functionalism, Behaviourism and Psychoanalysis. **9 marks**

UNIT –II METHODS IN PSYCHOLOGY

- Observation, Experimental, Survey & Case Study method.
- Psychological Testing and its characteristics: Reliability &validity. **9 marks**

UNIT –III HUMAN DEVELOPMENT

- Meaning of growth and development.
- Factors influencing development.
- Overview of development stages: Infancy, Childhood, Adolescence, Adulthood and Old Age. **9 marks**

UNIT –IV SENSORY, ATTENTIONAL AND PERCEPTUAL PROCESSES

- Meaning of Sensation, Attention and Perception.
- Laws of perceptual organization.
- Attentional processes Selective and Sustained Attention, Illusions.
- Sense Modalities **8 marks**

UNIT– V LEARNING

- Meaning and characteristics of Learning.
- Classical and Operant Learning, Observational Learning, Verbal Learning, Skill learning.
- Factors facilitating Learning. **9 marks**

UNIT–VI MEMORY AND FORGETTING

- Meaning of Memory & its components.
- Levels of processing: Sensory memory, Short-term memory, Long-term memory.
- Forgetting, Nature of Forgetting, Theories of Forgetting (Trace decay, Interference, Retrieval failure). **9 marks**

UNIT–VII THINKING AND LANGUAGE

- Nature of thinking.
- Process of thinking, Reasoning, Problem solving and Decision making.
- Nature and process of creative thinking.
- Thought and Language, Development of Language and Language use. **8 marks**

UNIT –VIII MOTIVATION

- Meaning, Cycle of motivation.
- Psycho-social motives: Achievement, Affiliation and Power. Maslow's Hierarchy of needs. **4 marks**

UNIT–IX EMOTIONS

- ☐ Meaning of emotion and its characteristics.
- ☐ Theories of emotion: James-Lange Theory, Cannon-Bard Theory.
- ☐ Emotional reactions: Happiness, Optimism, Anger and Fear. **5 marks**

Scheme of Assessment (Theory)

Question paper contains four sections namely

1. **Section –A** contains 10 (Objective Type Question/Multiple Choice Questions) of 1 mark each. 1x10= 10 marks
2. **Section- B** contains 9 Very Short Answer Type Questions of 2 marks each to be answered in 20 to 30 words. 2 x 9 = 18 marks
3. **Section – C** contains 9 Short Answer type questions of 3 marks each to be answered in 100 to 150 words. 3 x 9 = 27 marks
4. **Section - D** contains 3 Long Answer type questions of 5 marks each to be answered in 150 to 200 words. 5 x 3 = 15 marks

Note: The paper setter shall incorporate Higher Order Thinking Skills (HOTS) questions apart from knowledge, memory and application based questions.

PRACTICALS (External= 20 Marks/Internal = 10 marks) **30 marks**

List of Practicals

- ☐ Job Satisfaction
- ☐ An Experiment related to STM/Divided Attention.
- ☐ Attention
- ☐ Forgetting
- ☐ Achievement motivation
- ☐ Happiness
- ☐ Reasoning
- ☐ Survey Method

Distribution of Marks

Internal written	05 Marks
Viva-Voce	05 Marks
External Written (02 Practicals)	10 Marks
Viva-Voce	05 Marks
File	05 Marks

BOOKS PRESCRIBED

1. *Introduction to Psychology, Published by NCERT, New Delhi.*

SOCIOLOGY

Maximum Marks: 100 **Time: 3 hrs**
Theory: 80 Marks **Practical: 20 Marks**

Unit I: Introduction to Sociology **8 Marks**

- ☐ Concept of Sociology: Nature and Subject-Matter.
- ☐ Emergence of Sociology: Enlightenment, Industrial Revolution, French Revolution.
- ☐ Society: Concept, Structure, function & types. Society: Functional and Conflict Perspective.

Unit II: Basic Concepts **8 Marks**

- ☐ Social Groups: Concept and Nature, Primary, Secondary and Reference groups.
- ☐ Social Stratification: Concept and Nature, Caste & Class.
- ☐ Social Control: Concept and Nature, Agencies of Social Control.
- ☐ Status and Role: Concept and Nature, Types of Status and Role.

Unit III: Social Institutions–I **12 Marks**

- ☐ Concept and Definition of Social Institution.
- ☐ Family: Structure and Functions.
- ☐ Marriage: Concept and Types of Marriage.
- ☐ Kinship: Concept Terminologies, Types & Rules.
- ☐ Religion: Concept, Role and Functions.
- ☐ Education: Role and Functions.
- ☐ Polity: State, Sovereignty, Legislature, Executive, Judiciary.
- ☐ Economy: Concept and Nature, Jajmani system, Socialistic & Capitalistic System.

Unit IV: Culture and Society **8 marks**

- ☐ Culture: Concept and Dimensions.
- ☐ Values, Norms, Folkways, Customs.
- ☐ Socialization: Agencies of Socialization.
- ☐ Pluralistic and Culture Ethos-With special reference to J&K.

Unit V: Doing Sociology **6 Marks**

- ☐ Research concepts and its importance in daily life.
- ☐ Research process and Research design.
- ☐ Research methods: Qualitative and quantitative (objectivity and subjectivity).
- ☐ Techniques of data collection: Survey, Case Study, Observation, Questionnaire.

Unit VI: Classical Sociological Thought **8 Marks**

- ☐ August Comte: Law of three-Stages.
- ☐ Karl Marx: Class and Class Struggle.
- ☐ Emile Durkheim: Social Fact-Suicide.
- ☐ Max Weber: Religion.

Unit VII: Indian Sociological Thought **6 Marks**

- ☐ G. S. Ghurye: Caste and Race in India.
- ☐ D. P. Mukherjee: Tradition and Modernity.
- ☐ M. N. Srinivas: Sanskritisation.
- ☐ Imtiyaz Ahmad: Arshafization and Ajlarfization.

Unit VIII: Social Structure and Processes in Indian Society **8 Marks**

- ☐ Social Structure: Concept
- ☐ Social Processes: Concept, Nature &Types.
- ☐ Cooperation, Division of labour.
- ☐ Conflict and Competition.

Unit IX: Social Change **8 Marks**

- ☐ Social Change: Conflict mode land Evolutionary model.
- ☐ Social Order: Deviance and Conformity.
- ☐ Social Change in Rural society (Structural & Functional).
- ☐ Social Change in Urban Society (Structural & Functional).

Unit X: Environment and Society **8 Marks**

- ☐ Ecology and Social Environment (Relationship).
- ☐ Preservation of water bodies and their significance with special reference to J&K Dal Lake, Wullar, Jhelum, Tawi and Mansar.
- ☐ Deforestation and its impact on society.
- ☐ Social response to Natural Disaster Earthquake, Floods (J&K).

Scheme of Assessment (Theory)

Question paper contains four sections namely

1. **Section –A** contains 10 (Objective Type Question/Multiple Choice Questions) of 1 mark each. 1x10= 10 marks
2. **Section- B** contains 10 Very Short Answer Type Questions of 2 marks each to be answered in20 to 30 words. 2 x 10 = 20 marks
3. **Section – C** contains 8 Short Answer type questions of 4 marks each to be answered in 100 to 150 words. 4x 8 = 32 marks
4. **Section - D** contains 3 Long Answer type questions of 6 marks each to be answered in 150to 200 words. 6 x 3 = 18 marks

Note: The paper setter shall incorporate Higher Order Thinking Skills (HOTS) questions apart from knowledge, memory and application based questions.

Practical Examination **Marks: 20** **Time allotted 3 Hours**
External: 15 Marks **Internal: 5 Marks**

INTERNAL

(A) Project (undertaken during the academic year at school level) 5 Marks

i.	Statement of the Problem	1.5 Marks
ii.	Methodology/Technique	1.5 Marks
iii.	Conclusion	2 Marks

EXTERNAL

(B) Viva-Voce based on the project 5 Marks

(C) Research Design	10 Marks
i. Overall Format	2 Marks
ii. Research Question	2 Marks
iii. Choice of Techniques	2 Marks
iv. Detailed Procedure	2 Marks
v. Limitation of above Technique	2 Marks

B and C can be administered on the day of the External Examination.

BOOKS PRESCRIBED

1. *Introducing Sociology of Class XI published by NCERT, New Delhi.*
2. *Understanding Society: A textbook of Class XI published by NCERT, New Delhi.*

MATHEMATICS

Maximum Marks: 100 **Time: 3 hrs**
Theory: 80 Marks **Project Work: 20 Marks**

No.	Units	Marks
I.	Sets and Functions	23
II.	Algebra	25
III.	Coordinate Geometry	12
IV.	Calculus	08
V.	Statistics and Probability	12
	Total	80
	Internal Assessment	20

Unit-I Sets and Functions

1. Sets

Sets and their representations, Empty set, Finite and Infinite sets, Equal sets, Subsets, Subsets of a set of real number especially intervals (with notations). Universal set. Venn diagrams. Union and Intersection of sets. Difference of sets. Complement of a set. Properties of Complement.

2. Relations and Functions.

Ordered pairs. Cartesian product of sets. Number of elements in the Cartesian product of two finite sets. Cartesian product of the set of reals with itself (upto R x R x R). Definition of relation, pictorial diagrams, domain, co-domain and range of a relation. Function as a special type of relation. Pictorial representation of a function, domain, co-domain and range of a function. Real valued functions, domain and range of these functions, constant, identity, polynomial, rational, modulus, signum, exponential, logarithmic and greatest integer functions, with their graphs. Sum, difference, product and quotients of functions.

3. Trigonometric Functions

Positive and negative angles. Measuring angles in radians and in degrees and conversion from one measure to another. Definition of trigonometric functions with the help of unit circle. Truth of the identity $\sin^2 x + \cos^2 x = 1$, for all x. Signs of trigonometric functions. Domain and range of trigonometric functions and their graphs. Expressing $\sin(x \pm y)$ and $\cos(x \pm y)$ in terms of sinx, siny, cosx & cosy and their simple applications. Deducing identities like the following:

$$\tan(x \pm y) = \frac{\tan x \pm \tan y}{1 \mp \tan x \tan y}, \cot(x \pm y) = \frac{\cot x \cot y \mp 1}{\cot y \pm \cot x},$$

$$\sin x + \sin y = 2\sin\frac{x+y}{2}\cos\frac{x-y}{2}, \cos x + \cos y = 2\cos\frac{x+y}{2}\cos\frac{x-y}{2},$$

$$\sin x - \sin y = 2\cos\frac{x+y}{2}\sin\frac{x-y}{2}, \cos x - \cos y = -2\sin\frac{x+y}{2}\sin\frac{x-y}{2}.$$

Identities related to sin 2x, cos 2x, tan 2x, sin 3x, cos 3x and tan 3x. General solution of trigonometric equations of the type sin θ = sin α, cos θ = cos α and tan θ = tan α. Proofs and simple applications of sine and cosine formulae.

Unit –II Algebra

1. Complex Numbers and Quadratic Equations

Need for complex numbers, especially $\sqrt{-1}$, to be motivated by inability to solve some of the quadratic equations. Algebraic properties of complex numbers. Argand plane

2. Linear Inequalities

Linear inequalities. Algebraic solutions of linear inequalities in one variable and their representation on the number line.

3. Permutations and Combinations

Fundamental principle of counting. Factorial *n*. (n!) Permutations and combinations, derivation of Formulae for ${}^{n}Pr$ and ${}^{n}Cr$ and their connections, simple applications.

4. Binomial Theorem

Historical perspective, statement and proof of the binomial theorem for positive integral indices. Pascal's triangle, simple applications.

5. Sequence and Series

Sequence and Series. Arithmetic Mean (A.M.) Geometric Progression (G.P.), general term of a G.P., sum of *n* terms of a G.P., infinite G.P. and its sum, geometric mean (G.M.), relation between A.M. and G.M.

Unit-III: Coordinate Geometry

1. Straight Lines

Brief recall of two-dimensional geometry from earlier classes. Slope of a line and angle between two lines. Various forms of equations of a line: parallel to axis, point -slope form, slope-intercept form, two-point form, intercept form, Distance of a point from a line.

2. Conic Section

Sections of a cone: circles, ellipse, parabola, hyperbola, a point, a straight line and a pair of intersecting lines as a degenerated case of a conic section. Standard equations and simple properties of parabola, ellipse and hyperbola. Standard equation of a circle.

3. Introduction to Three-dimensional Geometry

Coordinate axes and coordinate planes in three dimensions. Coordinates of a point.

Distance between two points.

Unit-IV: Calculus

1. Limits and Derivatives

Derivative introduced as rate of change both as that of distance function and geometrically. Intuitive idea of limit. Limits of polynomials and rational functions trigonometric, exponential and logarithmic functions. Definition of derivative relates it to scope of tangent of the curve, derivative of sum, difference, product and quotient of functions. Derivatives of polynomial and trigonometric functions.

Unit-V Statistics and Probability

1. Statistics

Measures of Dispersion: Range, Mean deviation, variance and standard deviation of Ungrouped/grouped data.

2. Probability

Events; occurrence of events, 'not', 'and' and 'or' events, exhaustive events, mutually exclusive events, Axiomatic (set theoretic) probability, connections with other theories of earlier classes. Probability of an event, probability of 'not', 'and' and 'or' events

Scheme of Assessment (Theory)

Question paper contains four sections namely

1. **Section –A** contains 10 (Objective Type Question/Multiple Choice Questions) of 1 mark each. 1x10= 10 marks
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4. **Section - D** contains 3 Long Answer type questions of 6 marks each to be answered in 150to 200 words. 6 x 3 = 18 marks

Note: The paper setter shall incorporate Higher Order Thinking Skills (HOTS) questions apart from knowledge, memory and application based questions.

INTERNAL ASSESSMENT	20 MARKS
Periodic Tests (Best 2 out of 3 tests conducted)	10 Marks
Mathematics Activities	10 Marks

Note: For activities NCERT Lab Manual may be referred.

Conduct of Periodic Tests:

Periodic Test is a Pen and Paper assessment which is to be conducted by the

respective subject teacher. The format of periodic test must have questions items with a balance mix, such as, very short answer (VSA), short answer (SA) and long answer (LA) to effectively assess the knowledge, understanding, application, skills, analysis, evaluation and synthesis. Depending on the nature of subject, the subject teacher will have the liberty of incorporating any other types of questions too. The modalities of the PT are as follows:

a) **Mode:** The periodic test is to be taken in the form of pen-paper test.

b) **Schedule:** In the entire Academic Year, three Periodic Tests in Mathematics subject may be conducted as follows:

Test	Pre-Mid-term (PT-I)	Mid-Term (PT-II)	Post Mid-Term (PT-III)
Tentative Month	July-August	November	December-January

This is only a suggestive schedule and schools may conduct periodic tests as per their convenience. The winter bound schools would develop their own schedule with similar time gaps between two consecutive tests.

c) **Average of Marks**: Once schools complete the conduct of all the three periodic tests, they will convert the Weightage of each of the three tests into ten marks each for identifying best two tests. The best two will be taken into consideration and the average of the two shall be taken as the final marks for PT.

d) The school will ensure simple documentation to keep a record of performance.

e) **Sharing of Feedback/Performance**: The students' achievement in each test must be shared with the students and their parents to give them an overview of the level of learning that has taken place during different periods. Feedback will help parents formulate interventions (conducive ambience, support materials, motivation and morale-boosting) to further enhance learning. A teacher, while sharing the feedback with student or parent, should be empathetic, non- judgmental and motivating

f) Assessment of Activity Work:
Throughout the year activities shall be performed by the students from the activitiesgiven in the NCERT Laboratory Manual for the respective class (XI or XII). A record of the same may be kept by the student. A year end test on the activity may be conducted.

The Weightage is as under:

- The activities performed by the student throughout the year and record keeping: 5 marks
- Assessment of the activity performed during the year end test:3 marks
- Viva-voce: 2 marks

BOOKS PRESCRIBED

1) *Mathematics Textbook for Class XI, published by NCERT.*
2) *Mathematics Lab Manual class XI, published by NCERT.*

PHYSICS

Max.Marks:100 Time Allowed: 3 hrs

Theory: 70 Marks Practicals: 30 Marks

Unit I: Physical World and Measurement 05 marks

Units and Measurements

Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Significant figures. Dimensions of physical quantities, dimensional analysis and its applications.

Unit II: Kinematics 09 marks

Motion in a Straight Line

Frame of reference, Motion in a straight line, Elementary concepts of differentiation and integration for describing motion, uniform and non-uniform motion, and instantaneous velocity, uniformly accelerated motion, velocity - time and position-time graphs. Relations for uniformly accelerated motion (graphical treatment).

Motion in a Plane

Scalar and vector quantities; position and displacement vectors, general vectors and their notations; equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors, Unit vector; resolution of a vector in a plane, rectangular components, Scalar and Vector product of vectors. Motion in a plane, cases of uniform velocity and uniform acceleration projectile motion, uniform circular motion.

Unit III: Laws of Motion 07 marks

Laws of Motion

Intuitive concept of force, Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion. Law of conservation of linear momentum and its applications. Equilibrium of concurrent forces, Static and kinetic friction, laws of friction, rolling friction, lubrication. Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on a level circular road, vehicle on a banked road).

Unit IV: Work, Energy and Power 06 marks

Work, Energy and Power

Work done by a constant force and a variable force; kinetic energy, work energy

theorem, power. Notion of potential energy, potential energy of a spring, conservative forces: non-conservative forces, motion in a vertical circle; elastic and inelastic collisions in one and two dimensions.

Unit V: Motion of System of Particles and Rigid Body **06 marks**

System of Particles and Rotational Motion

Centre of mass of a two-particle system, momentum conservation and Centre of mass motion. Centre of mass of a rigid body; centre of mass of a uniform rod. Moment of a force, torque, angular momentum, law of conservation of angular momentum and its applications. Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions. Moment of inertia, radius of gyration, values of moments of inertia for simple geometrical objects (no derivation).

Unit VI: Gravitation **06 marks**

Gravitation

Kepler's laws of planetary motion, universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth. Gravitational potential energy and gravitational potential, escape speed, orbital velocity of a satellite.

Unit VII: Properties of Bulk Matter **09 marks**

Mechanical Properties of Solids

Elasticity, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear modulus of rigidity (qualitative idea only), Poisson's ratio; elastic energy.

Mechanical Properties of Fluids

Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes), effect of gravity on fluid pressure. Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, critical velocity, Bernoulli's theorem and its simple applications. Surface energy and surface tension, angle of contact, excess of pressure across a curved surface, application of surface tension ideas to drops, bubbles and capillary rise.

Thermal Properties of Matter

Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; Cp, Cv - calorimetry; change of

state - latent heat capacity. Heat transfer-conduction, convection and radiation, thermal conductivity, qualitative ideas of Blackbody radiation, Wein's displacement Law, Stefan's law.

Unit VIII: Thermodynamics **06 marks**

Thermodynamics

Thermal equilibrium and definition of temperature, zeroth law of thermodynamics, heat, work and internal energy. First law of thermodynamics, Second law of thermodynamics: gaseous state of matter, change of condition of gaseous state -isothermal, adiabatic, reversible, irreversible, and cyclic processes.

Unit IX: Behaviour of Perfect Gases and Kinetic Theory of Gases **06 marks**

Kinetic Theory

Equation of state of a perfect gas, work done in compressing a gas. Kinetic theory of gases - assumptions, concept of pressure, Expression for pressure exerted by a gas. Kinetic interpretation of temperature; rms speed of gas molecules; degrees of freedom, law of equi-partition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path, Avogadro's number.

Unit X: Oscillations and Waves **10 marks**

Oscillations

Periodic motion - time period, frequency, displacement as a function of time, periodic functions and their applications. Simple harmonic motion (S.H.M) and its equations of motion; phase; oscillations of a loaded spring- restoring force and force constant; energy in S.H.M. Kinetic and potential energies; simple pendulum derivation of expression for its time period.

Waves

Wave motion: Transverse and longitudinal waves, speed of travelling wave, displacement relation for a progressive wave, principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics, Beats.

Scheme of Assessment (Theory)

Question paper contains four sections namely

1. **Section –A** contains 10 (Objective Type Question/Multiple Choice Questions) of 1 mark each. 1x10= 10 marks
2. **Section- B** contains 9 Very Short Answer Type Questions of 2 marks each to be answered in20 to 30 words. 2 x 9 = 18 marks
3. **Section – C** contains 9 Short Answer type questions of 3 marks each to be answered in 100 to 150 words. 3 x 9 = 27 marks
4. **Section - D** contains 3 Long Answer type questions of 5 marks each to be answered in 150to 200 words. 5 x 3 = 15 marks

Note: The paper setter shall incorporate Higher Order Thinking Skills (HOTS) questions apart from knowledge, memory and application based questions.

PRACTICALS **Maximum Marks: 30**
Time: 03 Hours **External: 20 Marks/ Internal: 10 Marks**

The record, to be submitted by the students, at the time of their annual examination, has to include:

- Record of at least 8 Experiments [with 4 from each section], to be performed by the students.
- Record of at least 6 Activities [with 3 each from section A and section B], to be performed by the students.
- Report of the project carried out by the students.

SECTION–A
Experiments

1. To measure diameter of a small spherical/cylindrical body and to measure internal diameter and depth of a given beaker/calorimeter using Vernier Callipers and hence find its volume.
2. To measure diameter of a given wire and thickness of a given sheet using screw gauge.
3. To determine volume of an irregular lamina using screw gauge.
4. To determine radius of curvature of a given spherical surface by a spherometer.
5. To determine the mass of two different objects using a beam balance.
6. To find the weight of a given body using parallelogram law of vectors.
7. Using a simple pendulum, plot its L-T2 graph and use it to find the effective length of second's pendulum.
8. To study variation of time period of a simple pendulum of a given length by taking bobs

of same size but different masses and interpret the result.

9. To study the relationship between force of limiting friction and normal reaction and to find the co- efficient of friction between a block and a horizontal surface.

10. To find the downward force, along an inclined plane, acting on a roller due to gravitational pull of the earth and study its relationship with the angle of inclination θ by plotting graph between force and Sin θ.

Activities

1. To make a paper scale of given least count, e.g., 0.2cm, 0.5 cm.
2. To determine mass of a given body using a metre scale by principle of moments.
3. To plot a graph for a given set of data, with proper choice of scales and error bars.
4. To measure the force of limiting friction for rolling of a roller on a horizontal plane.
5. To study the variation in range of a projectile with angle of projection.
6. To study the conservation of energy of a ball rolling down on an inclined plane (using a double inclined plane).
7. To study dissipation of energy of a simple pendulum by plotting a graph between square of amplitude and time.

SECTION–B

Experiments

1. To determine Young's modulus of elasticity of the material of a given wire.
2. To find the force constant of a helical spring by plotting a graph between load and extension.
3. To study the variation in volume with pressure for a sample of air at constant temperature by plotting graphs between P and V, and between P and 1/V.
4. To determine the surface tension of water by capillary rise method.
5. To determine the coefficient of viscosity of a given viscous liquid by measuring terminal velocity of a given spherical body.
6. To study the relationship between the temperature of a hot body and time by plotting a cooling curve.
7. To determine specific heat capacity of a given solid by method of mixtures.
8. To study the relation between frequency and length of a given wire under constant tension using sonometer.
9. To study the relation between the length of a given wire and tension for constant frequency using sonometer.
10. To find the speed of sound in air at room temperature using a resonance tube by two

resonance positions.

Activities

1. To observe change of state and plot a cooling curve for molten wax.
2. To observe and explain the effect of heating on a bi-metallic strip.
3. To note the change in level of liquid in a container on heating and interpret the observations.
4. To study the effect of detergent on surface tension of water by observing capillary rise.
5. To study the factors affecting the rate of loss of heat of a liquid.
6. To study the effect of load on depression of a suitably clamped metre scale loaded at (i) its end (ii) in the middle.
7. To observe the decrease in pressure with increase in velocity of a fluid.

Practical Examination for Visually Impaired Students

General Guidelines

A. The practical examination will be of two-hour duration.
B. A separate list of ten experiments is included here.
C. The written examination in practical for these students will be conducted at the time of practical examination of all other students.
D. The written test will be of 30 minutes duration.
E. The question paper given to the students should be legibly typed. It should contain a total of 15 practical skill based very short answer type questions. A student would be required to answer any 10 questions.
F. A writer may be allowed to such students as per CBSE examination rules.
G. All questions included in the question papers should be related to the listed practicals. Every question should require about two minutes to be answered. These students are also required to maintain a practical file.
H. A student is expected to record at least five of the listed experiments as per the specific instructions for each subject.
I. These practicals should be duly checked and signed by the internal examiner.
J. The format of writing any experiment in the practical file should include aim, apparatus required, simple theory, procedure, related practical skills, precautions etc.
K. Questions may be generated jointly by the external/internal examiners and used for assessment. The viva questions may include questions based on basic theory/principle/concept, apparatus/ materials/chemicals required procedure, precautions, sources of error etc.

L. Items for Identification/Familiarity of the apparatus for assessment in practical's (All experiments)

Spherical ball, Cylindrical objects, vernier callipers, beaker, calorimeter, Screw gauge, wire,

Beam balance, spring balance, weight box, gram and milligram weights, forceps, Parallelogram law of vectors apparatus, pulleys and pans used in the same 'weights' used, Bob and string used in a simple pendulum, meter scale, split cork, suspension arrangement, stop clock/stop watch, Helical spring, suspension arrangement used, weights, arrangement used for measuring extension, Sonometer, Wedges, pan and pulley used in it, 'weights' Tuning Fork, Meter scale, Beam balance, Weight box, gram and milligram weights, forceps, Resonance Tube, Tuning Fork, Meter scale, Flask/Beaker used for adding water.

B. List of Practicals

1. To measure diameter of a small spherical/cylindrical body using vernier callipers.
2. To measure the internal diameter and depth of a given beaker/calorimeter using verniers calipers and hence find its volume.
3. To measure diameter of given wire using screw gauge.
4. To measure thickness of a given sheet using screw gauge.
5. To determine the mass of a given object using a beam balance.
6. To find the weight of given body using the parallelogram law of vectors.
7. Using a simple pendulum plot L-T and L-T^2 graphs. Hence find the effective length of second's pendulum using appropriate length values.
8. To find the force constant of given helical spring by plotting a graph between load and extension.
9. (i) To study the relation between frequency and length of a given wire under constant tension using a sonometer.

   (ii) To study the relation between the length of a given wire and tension, for constant frequency, using a Sonometer.
10. To find the speed of sound in air, at room temperature, using a resonance tube, by observing the two Resonance positions.

Note: The above practical may be carried out in an experiential manner rather than recording observations.

BOOKS PRESCRIBED:

1. Physics Part-I, Textbook for Class XI, Published by NCERT.

2. Physics Part-II, Textbook for Class XI, Published by NCERT.

3. Laboratory Manual of Physics, Class XI Published by NCERT.

CHEMISTRY

Max.Marks:100 Time Allowed: 3hrs
Theory: 70 Marks Practicals: 30 Marks

UNIT-1: SOME BASIC CONCEPTS OF CHEMISTRY 07 Marks

General Introduction: Importance of studying chemistry, Historical approach to particulate nature of matter, Laws of Chemical combination (numerical), Dalton's Atomic Theory, Concept of elements, atoms & molecules. Atomic and molecular masses, Mole concept and molar mass, percentage composition, empirical and molecular formula; chemical reactions, stoichiometry and calculation based on stoichiometry.

Unit-II: STRUCTURE OF ATOM 09 Marks

Discovery of electron, proton and neutron, atomic number, isotopes and isobars. Thompson's model and its limitations, Rutherford's model and its limitations. Bohr's model & its limitations, concept of shells and sub-shells. Dual nature of matter and light, de-Broglie's relationship. Heisenberg's uncertainty principle, concept of orbitals, quantum numbers, shapes of s, p and d- orbitals. Rules for filling electrons in orbitals- Aufbau's principle, Pauli's exclusion principle and Hund's rule. Electronic configuration of atoms, stability of half-filled and completely filled orbitals.

Unit-III: CLASSIFICATION OF ELEMENT AND PERIODICITY IN PROPERTIES 06 Marks

Significance of classification, brief history of the development of periodic table. Modern periodic law and the present form of the periodic table, periodic trends in properties of elements: atomic radii, ionic radii, inert gas radii, ionization enthalpy, electron gain enthalpy, electronegativity, valency.

Unit-IV: CHEMICAL BONDING AND MOLECULAR STRUCTURE 07 Marks

Valence electrons, Ionic bond, covalent bond, bond parameters, Lewis structure, polar character of covalent bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization involving s, p and d-orbitals and shapes of some simple molecules, molecular orbital theory of homonuclear molecules (Qualitative idea only), hydrogen bond.

Unit-V: THERMODYNAMICS 09 Marks

Concepts of system, types of systems, surrounding, work, heat; energy intensive and extensive properties, state functions. First Law of Thermodynamics, internal energy, enthalpy, heat capacity, specific heat, molar heat capacity, measurement of ΔE and ΔH, Hess's law of constant heat summation, enthalpy of bond dissociation, combustion; formation, atomization, sublimation, phase transition ionization and dilution.

Introduction of entropy as a state function, free energy change for spontaneous and non-spontaneous process and equilibrium.

Unit-VI: EQUILIBRIUM 07 Marks

Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium: Le-Chatelier's principle equilibrium-ionization of acids and bases, strong and weak electrolytes, degree of ionization, Concept of pH. Hydrolysis of salts (elementary idea), buffer solutions. Solubility product, common ion effect (with suitable examples).

Unit-VIII: REDOX REACTIONS 04 Marks

Concept of oxidation and reduction, redox reactions, oxidation number, balancing of chemical equations in redox reactions, applications of redox reactions.

Unit-IX: ORGANIC CHEMISTRY-SOME BASIC PRINCIPLES AND TECHNIQUES

11 Marks

General introduction to organic chemistry, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds.

Electronic displacement in a covalent bond: inductive effect, electromeric effect, resonance and hyper-conjugation. Homolytic and heterolytic fission of a covalent bond, free radicals, electrophiles, nucleophiles, carbocations and carbanions. Types of organic reactions.

Unit-X: HYDROCARBONS 10 Marks

Classification of hydrocarbons

Alkanes: Nomenclature, isomerism, conformations (ethane only), physical properties. Chemical reactions including free radical mechanism of halogenation, combustion and Pyrolysis

Alkenes: Nomenclature, structure of double bond (ethene), geometrical isomerism, methods of preparation, physical properties, chemical reactions- addition of hydrogen. halogen, water, hydrogen halides (Markownikov's addition and peroxide effect). ozonolysis, oxidation, mechanism of electrophilic addition.

Alkynes: Nomenclature, structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of hydrogen, halogens, hydrogen halides and water, Aromatic hydrocarbons introduction, IUPAC nomenclature, Benzene resonance, aromaticity, chemical properties, mechanism of electrophilic substitution-nitration, sulphonation, halogenations Friedel Craft's alkylation and acylation, directive influence of functional group in mono substituted benzene.

Scheme of Assessment (Theory)

Question paper contains four sections namely

1. **Section –A** contains 10 (Objective Type Question/Multiple Choice Questions) of 1 mark each. 1x10= 10 marks
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4. **Section - D** contains 3 Long Answer type questions of 5 marks each to be answered in 150to 200 words. 5 x 3 = 15 marks

Note: The paper setter shall incorporate Higher Order Thinking Skills (HOTS) questions apart from knowledge, memory and application based questions.

PRACTICALS **Maximum Marks: 30**
Time: 03 Hours **External: 20 Marks/ Internal: 10 Marks**

1. CONTENT BASED EXPERIMENTS **06 Marks**
A) Organic Preparations:

i) Preparation of acetylene and study of its acidic character.
ii) Preparation of Acetanilide
iii) Preparation of p-Nitro acetanilide

B) Characterization and Purification of Chemical Substance:
i)Determination of melting point of an organic compound (below 100°C)
ii) Determination of boiling point of an organic liquid.
iii) Crystallization involving impure sample of any one of the following: Alum, Copper sulfate, Benzoic acid.

C) Experiments Related to pH Change
Any one of the following experiments:
i) Determination of pH of some solutions obtained from juices and solutions of known and varied concentrations of acids, bases and salts using pH paper/ universal indicator
ii) Comparing the pH of solutions of strong and weak acid of same concentration
iii) Study the pH change in the titration of a strong acid with a strong base using universal indicator
iv) Study of pH change by common-ion effect in case of weak acids and weak bases

D) Chemical Equilibrium:
One of the following experiments
i) Study the shift in equilibrium between ferric ions and thio cyanate ions by increasing/decreasing the concentration of either ion
ii) Study the shift in equilibrium between $[Co(H_2O)_6]$ and Cl^- ions by changing the concentration of either ions.

2. Quantitative Estimation: **08 Marks**
i) Setting of a chemical balance and preparation of a standard solution of oxalic acid
ii) Determination of strength of a given sodium hydroxide solution by titrating it against a standard solution of oxalic acid.
iii) Preparation of standard solution of sodium carbonate.
iv) Determination of strength of given solution of dilute hydrochloric acid by titrating it against a standard solution of sodium carbonate.

3. Qualitative Analysis **08 Marks**
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-},.NO_2^-, NO_3^-, Cl^-, Br^-, PO_4^{3-},$C_2O_4^{2-}$, CH_3COO^-

4. PROJECT **04 Marks**
Scientific investigation involving laboratory testing and collecting information from other sources.

- Study of the methods of purification of water.
- Checking the bacterial contamination in drinking water by testing sulphide ion.
- Testing the hardness, presence of Iron, Fluoride, Chloride, etc., depending upon the regional variation in drinking water and study of causes of presence of these ions above permissible limit (if any).
- Analysis of fruit and vegetable juices for their acidity.
- Preparation of a sample of soap from available oils (Groundnut/Coconut oil).
- Determination of the rate of evaporation of different liquids.
- Study of the effect of acids and bases on the tensile strength of fibers.
- Compare the contents of tannic/ caffeine in various samples of tea and hence their flavor.

5. Class Record and Viva-Voce 04 Marks

Note: Collaboration to seek from nearby Institutions with regard to the performing of practicals/project work.

BOOKS PRESCRIBED:

1. *A textbook of Chemistry for class XI published by NCERT, New Delhi.*

BIOLOGY

Max.Marks:100 Time Allowed: 3 hrs

Theory: 70 Marks Practicals: 30 Marks

SECTION A: BOTANY Marks: 35

Unit-I. Diversity of Life 9 Marks

Biodiversity: Variety of living organisms; Need and History of classification – Artificial, Natural and Phylogenetic classifications. **Biosystematics**: Taxonomy and Systematics; Concept of species and Taxonomical hierarchy; Binomial nomenclature; Herbarium.

Two Kingdom and Five kingdom classifications and their merits and demerits; General characters and classification of Monera, Protista and Fungi; Lichens; Status of Viruses, and Viroids.

Unit -II. Kingdom Plantae 9 Marks

Classification of plants into major groups; General characters of Algae, Bryophyta, Pteridophyta and Gymnosperms and their classes.

Morphology of Flowering plants and their function: Morphology of root, stem and leaf (without their modifications); Morphology of Inflorescence, flower, fruit and seed. Description of family *Solanaceae*.

Unit - III: Plant Anatomy 5 Marks

Tissue systems in plants – Epidermal, ground and vascular tissue systems; Anatomy and functions of dicot and monocot root, stem and leaves.

Unit-IV Plant Physiology 12 Marks

Respiration: Cellular respiration; Glycolysis, Kreb's cycle and Electron transport system (along with ATP energetics); Chemiosmotic hypothesis; Aerobic and Anaerobic respirations; Amphibolic pathways; Respiratory quotient.

Photosynthesis: Historical background; Site of Photosynthesis; Photosynthetic pigments; Mechanism of Photosynthesis – Light dependent phase (Light reaction), Photosystems; Cyclic and non-cyclic photophosphorylations; Light independent (biosynthetic) phase –

Calvin (C_3) cycle and Hatch & Slack (C_4) cycle; Factors affecting photosynthesis; Photorespiration.

Plant Growth and Development: Characteristics of plant growth; phases of growth, growth rate, growth curve; conditions of growth; differentiation, dedifferentiation and redifferentiation.

Sequence of developmental process in a plant cell; Plant growth regulators; Discovery and physiological effects of Auxins, Gibberellins, Cytokinins, Ethylene and Abscissic Acid.

SECTION B: ZOOLOGY Marks: 35

UNIT I: Diversity in Living World 8 Marks

Animal Kingdom; General characters and classification of animals (non-chordates up to phyla level and chordates up to the level of class).

National Parks with special reference to Dachigam, Kishtwar, Salim Ali, Kazinag and Hemis. Concept of Sanctuaries and Biosphere reserves.

Unit - II: Structural Organisation and Animal Biomolecules 7 Marks

Morphology, Anatomy and functions of digestive, circulatory, respiratory, nervous and reproductive systems of Frog.

Basic chemical constituents of living bodies; Bio-molecules: Structure and function of Carbohydrates, proteins, lipids and Nucleic acids; Primary and secondary metabolites.

Enzymes: Types, Properties and functions

Unit-III: Cell Structure and Function 8 Marks

Cell: Brief description of cell; Cell theory; Prokaryotic and Eukaryotic cell, Cell wall, Membrane and Cell organelles (Plastids, Mitochondria, E.R., Golgi, Ribosomes, Lysosomes, Nucleus, Vacuoles, centrioles and Cytoskeleton); Cilia and Flagella; Nuclear organisation.

Cell Division: Cell Cycle, Mitosis and Meiosis.

Unit-V Human Physiology 12 Marks

Breathing and Respiration: Respiratory system in humans; mechanism of breathing and its regulation in humans; respiratory volume; Exchange of gases and their transport; Respiratory disorders.

Body fluids and Circulation: Composition of blood; Blood groups and Rh factor; Lymph; Human Circulatory system; Cardiac cycle and ECG; Double circulation; regulation of cardiac activity; Disorders of circulatory system.

Excretory Products and their Elimination: Modes of excretion; Human excretory system; Urine formation, osmo regulation; regulation of kidney function; Urinary disorders; and artificial kidney.

Locomotion and Movement: Types of movement; Muscle, Contractile proteins and Muscle contraction (Mechanism); Skeletal system and its functions; Joints; Disorders of muscular and skeletal systems.

Neural Control and Coordination: Neuron and nerves; Nervous system in humans; Nerve impulse.

Chemical Coordination and Integration: Human endocrine system; Hormones of Heart, Kidney and G.I. Tract; Mechanism of hormone action (elementary idea); Hormonal disorders.

*(**Note**: diseases of human physiology systems to be taught in brief)*

Scheme of Assessment (Theory)

BOTANY

Question paper contains four sections namely

1. **Section –A** contains 5 (Objective Type Question/Multiple Choice Questions) of 1 mark each. 1x 5= 5 marks
2. **Section- B** contains 5 Very Short Answer Type Questions of 2 marks each to be answered in20 to 30 words. 2 x 5 = 10 marks
3. **Section – C** contains 5 Short Answer type questions of 3 marks each to be answered in 100 to 150 words. 3 x 5 = 15 marks
4. **Section - D** contains 1 Long Answer type question of 5 marks each to be answered in 150to 200 words. 5 x 1 = 5 marks

Note: The paper setter shall incorporate Higher Order Thinking Skills (HOTS) questions apart from knowledge, memory and application based questions.

ZOOLOGY

Question paper contains four sections namely

1. **Section –A** contains 5 (Objective Type Question/Multiple Choice Questions) of 1 mark each. 1x 5= 5 marks
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4. **Section - D** contains 1 Long Answer type question of 5 marks each to be answered in 150to 200 words. 5 x 1 = 5 marks

Note: The paper setter shall incorporate Higher Order Thinking Skills (HOTS) questions apart from knowledge, memory and application based questions.

PRACTICALS **Maximum Marks: 30**
Time: 03 Hours **External: 20 Marks/ Internal: 10 Marks**

SECTION A: BOTANY

Max. Marks: 15

A. Observation/ Spotting

1. Study of different parts of a Compound Microscope.
2. Study of Specimens and identification with reasons – Bacteria, Algae (*Spirogyra*), Fungi (*Rhizopus*, Mushroom & Yeast); Lichens; Bryophytes (*Marchantia* & *Funaria*); Pteridophyta (*Dryopteris*); Gymnosperms (*Pinus* – male & female cones); Angiosperms (one monocot & one dicot plant).
3. Study of T.S. of dicot and Monocot Root, Stem and Leaf from permanent slides.
4. Study of Leaf (arrangement, shape & venation) and Leaf types (simple & compound).
5. Study and identification of types of infloresences (Cymose & Racemose).

B. List of Experiments:

1. Description of locally available flowers from the families Solanaceae and Liliaceae.
2. Study of Osmosis by Potato Osmoscope (Osmometer).
3. Study of plasmolysis in epidermal peels (e.g. Onion/Rhoeo/lily leaves).
4. Study of imbibition in seeds/raisins.
5. Study of distribution of stomata on the upper and lower surfaces of leaves.
6. Separation of plant pigments through paper chromatography.
7. Study of the rate of respiration in germinating seeds.

C. Project work

1. Collection and preservation of plant specimens for Herbarium.
2. Biodiversity trip: Visit to a botanical garden/flora rich area and preparation of report.

3. Observations on the experimental set up on Phototropism, Apical bud removal, Anaerobic respiration and Suction due to transpiration.

SECTION – B: ZOOLOGY

Max. Marks: 15

A. Observation/ Spotting

1. Study and handling of Compound Microscope.
2. Study of specimens/ Virtual specimens/ Models and identification with reasons – *Amoeba*, *Paramecium*, Hydra, Liver fluke, *Ascaris*, Leech, Earthworm, Honey bee, Snail, Starfish, Shark, *Labeo*, Frog, Lizard, Pigeon and Rabbit.
3. Study of Animal cell and its organelles with the help of Slides/ Charts.
4. Study of Mitosis and Meiosis from prepared slides.
5. Study of organ systems of Frog with the help of Charts/ Models/Virtual Dissection.
6. Study of Human skeleton and different types of joints (virtual images/models only).

B. Experiments

1. To Test for presence of urea in urine.
2. To test the presence of carbohydrates and protein (albumin) in Urine sample.
3. Preparation and study of human blood smear.
4. To test the presence of sugar in urine/blood sample.

C. Project work:

4. Biodiversity trip: Visit to a zoological garden/ National Park and preparation of report.
5. Study of cyclosis in Paramecium.

BOOK PRESCRIBED:

1. *A textbook of Biology for class XI published by NCERT, New Delhi.*

BUSINESS STUDIES

Maximum marks:100 Theory: 80 Marks

Time: 3 hrs Project Work: 20 Marks

Part A: Foundations of Business

Unit I: Nature and Purpose of Business 08 Marks

- Concept and characteristics of business.
- Business, profession and employment– distinctive features.
- Objectives of business–economic and social, role of profit in business.
- Classification of business activities: Industry and Commerce.
- Industry–types: primary, secondary, tertiary.
- Commerce: Trade and Auxiliaries.
- Business risks–nature and causes.

Unit II: Forms of Business Organisation 08 Marks

- Sole Proprietor ship; Joint Hindu Family Business–meaning, features, merits and limitations.
- Partnership– meaning, types, registration, merits, limitations, types of partners.
- Cooperative Societies –types, merits and limitations.
- Company: Private Ltd., Public Ltd–merits, limitations.
- Choice of form of business organisations.
- Starting a business – Basic factors.

Unit III: Private, Public and Global Enterprises 07 Marks

- Private Sector and Public Sector.
- Forms of Organising public sector enterprises:
- Departmental Undertaking
- Statutory Corporation
- Government Company
- Changing role of public sector.
- Global Enterprises (Multinational Companies): meaning and features.

Unit IV: Business Services 07 Marks

- Nature and types of Business services—Banking, Insurance, Transportation, Warehousing, Communication.

- Banking—types of Banks, Functions of Commercial banks, E-banking.
- Insurance: principles, types: life, fire and marine.
- Communication and Transportation.

Unit V: Emerging Modes of Business **05 Marks**

- E-Business — Meaning, scope and benefits, Resources required for successful e-business implementation, On-line transactions, payment mechanism, security and safety of business transactions.

Unit VI: Social Responsibility of Business and Business Ethics **05 Marks**

- Concept of social responsibility.
- Case for social responsibility;
- Responsibility towards different interest groups: owners, investors, employees, consumers, government, community and public in general;
- Business and environmental protection;
- Business ethics: concept and elements.

Part B: Corporate Oganisation, Finance and Trade

Unit VII: Formation of a Company **07 Marks**

Stages in the formation of a company:

- Promotion,
- Incorporation,
- Capital Subscription, and
- Commencement of business.

Unit VIII: Sources of Business Finance **10 Marks**

- Nature and significance of business finance.
- Classification of Sources – Period, Ownership basis.
- Methods of raising Finance:
  - –Equity and Preference shares
  - –Debentures and Bonds
  - –Retained profits
  - –Public deposits
  - –Loan from Commercial Banks
  - –Loan from Financial Institution
  - –Trade Credit

Unit IX: Small Business **06 Marks**

- Concept of small business, types;
- Role of small business in rural India;
- Problems of small business in India.

- Government Assistance and Special Schemes for Industries in rural, back ward and hilly areas.

Unit X: Internal Trade **12 Marks**

- Meaning and types of internal trade: wholesale and retail;
- Services of a wholesaler and a retailer.
- Types of Retail Trade:
  - Itinerant retailers and fixed shops.
  - Departmental store, super market, malls, chain store, mail order business, consumer's cooperative store
  - Automatic Vending Machine
- Role of Chambers of Commerce and Industry in promotion of internal trade.

Unit XI: International Business **05 Marks**

- Nature and Importance of International Business;
- Contract manufacturing; licensing; franchising; Joint ventures and Setting up Wholly Owned Subsidies;
- Export-Import procedures and Documentation;
- International Trade Institutions and Agreement: WTO, UNCTAD, World Bank/IMF.

Scheme of Assessment (Theory)

Question paper contains five sections namely

1. **Section –A** contains 8 (Objective Type Question/Multiple Choice Questions) of 1 mark each. 1x 8 = 8 marks
2. **Section- B** contains 4 Short Answer Type Questions of 3 marks each to be answered in20 to 30 words. 3 x 4 = 12 marks
3. **Section – C** contains 5 Short Answer type questions of 4 marks each to be answered in 100 to 150 words. 4 x 5 = 20 marks
4. **Section - D** contains 4 Long Answer type questions of 6 marks each to be answered in 150 to 200 words. 6 x 4 = 24 marks
5. **Section – E** contains 2 Long Answer type questions of 8 marks each to be answered in 150 to 200 words. 8 x 2 = 16 marks

   Note: The paper setter shall incorporate Higher Order Thinking Skills (HOTS) questions apart from knowledge, memory and application based questions.

PROJECT WORK IN BUSINESS STUDIES

Introduction

The course in Business Studies is introduced at Senior School level to provide students with a sound understanding of the principles and practices bearing in business (trade and industry) as well as their relationship with the society. Business is a dynamicprocess that brings together technology, natural resources and human initiative in a constantly changing global environment. With the purpose to help them understand the framework within which a business operates, and its interaction with the social, economic, technological and legal environment, the CBSE has introduced Project Work in the Business Studies Syllabus for Classes XI. The projects have beendesigned to allow students to appreciate that business is an integral component of society and help them develop an understanding of the social and ethical issues concerning them.

The project work also aims to empower the teacher to relate all the concepts with what is happening around the world and the student's surroundings, making them appear more clear and contextual. This will enable the student to enjoy studies and use his free time effectively in observing what's happening around.

By means of Project Work the students are exposed to life beyond textbooks giving themopportunities to refer materials, gather information, analyze it further to obtain relevant information and decide what matter to keep.

Objectives

After doing the Project Work in Business Studies, the students will be able to do the following:

- develop a practical approach by using modern technologies in the field of business and management;
- get an opportunity for exposure to the operational environment in the field of business management and related services;
- inculcate important skills of team work, problem solving, time management, information collection, processing, analysing and synthesizing relevant information to derive meaningful conclusions
- get involved in the process of research work; demonstrate his or her capabilities while working independently and
- Make studies an enjoyable experience to cherish.

GUIDELINES FOR TEACHERS

This section provides some basic guidelines for the teachers to launch the projects in Business Studies. It is very necessary to interact, support, guide, facilitate and encourage students while assigning projects to them.

The teachers must ensure that the project work assigned to the students whether individually or in group are discussed at different stages right from assignment to drafts review and finalization. Students should be facilitated in terms of providing relevant materials or suggesting websites, or obtaining required permissions from business houses, malls etc. for their project. The periods assigned to the Project Work should be suitably spaced throughout the academic session. The teachers MUST ensure that the

students actually go through the rigors and enjoy the process of doing the project rather than depending on any readymade material available commercially.

The following steps might be followed:

1. Students must take any one topic during the academic session of Class XI.
2. The project may be done in a group or individually.
3. The topic should be assigned after discussion with the students in the class and should then be discussed at every stage of submission of the draft/final project work.
4. The teacher should play the role of a facilitator and should closely supervise the process of project completion.
5. The teachers must ensure that the student's self-esteem should go up, and he /she should be able to enjoy this process.
6. The project work for each term should culminate in the form of Power Point Presentation/Exhibition/ Skit before the entire class. This will help in developing ICT and communication skills among them.

The teacher should help students to identify any one project from the giventopics.

I. Project One: Field Visit

The objective of introducing this project among the students is to give a firsthand experience to them regarding the different types of business units operating in their surroundings, to observe their features and activities and relate them to the theoretical knowledge given in their text books. The students should select a place of field visit fromthe following: – (Add more as per local area availability.)

1. Visit to a Handicraft unit.
2. Visit to an Industry.
3. Visit to a Whole sale market (vegetables, fruits, flowers, grains, garments, etc.)
4. Visit to a Departmental store.
5. Visit to a Mall.

The following points should be kept in mind while preparing this visit.

1. Select a suitable day free from rush/crowd with lean business hours.
2. The teacher must visit the place first and check out on logistics. It's better to seekpermission from the concerned business- in-charge.
3. Visit to be discussed with the students in advance. They should be encouragedto prepare a worksheet containing points of observation and reporting.
4. Students may carry their cameras (at their own risk) with prior permission forcollecting evidence of their observations.

1. Visit to a Handicraft Unit

The purpose of visiting a Handicraft unit is to understand nature and scope of its business, stake holders involved and other aspects as outlined below

The raw material and the processes used in the business: People /parties/firms

fromwhich they obtain their raw material.

a) The raw material and the processes used in the business: People /parties/firms fromwhich they obtain their raw material.
b) The market, the buyers, the middlemen, and the areas covered.
c) The countries towhich exports are made.
d) Mode of payment to workers, suppliers etc.
e) Working conditions.
f) Modernization of the process over a period of time.
g) Facilities, security and training for the staff and workers.
h) Subsidies available/ availed.
i) Any other aspect that the teachers deem fit.

2. Visit to an Industry.

The students are required to observe the following:

a) Nature of the business organisation.
b) Determinants for location of business unit.
c) Form of business enterprise: Sole Proprietorship, Partnership, Undivided Hindu Family, Joint Stock Company (a Multinational Company).
d) Different stages of production/process
e) Auxiliaries involved in the process.
f) Workers employed method of wage payment, training programmes and Facilities available.
g) Social responsibilities discharged towards workers, investors, society, Environment and government.
h) Levels of management.
i) Code of conduct for employers and employees.
j) Capital structure employed- borrowed v/s owned.
k) Quality control, recycling of defective goods.
l) Subsidies available/availed.
m) Safety Measures employed.
n) Working conditions for labour in observation of Labour Laws.
o) Storage of raw material and finished goods.
p) Transport management for employees, raw material and finished goods.
q) Functioning of various departments and coordination among them (Production,Human Resource, Finance and Marketing)
r) Waste Management.
s) Any other observation.

3. Visit to a whole sale market: vegetables/ fruits/ flowers/ grains/ garments etc.

The students are required to observe the following:

a) Sources of merchandise.
b) Local market practices.
c) Any linked-up businesses like transporters, packagers, money lenders, agents, etc.
d) Nature of the goods dealt in.
e) Types of buyers and sellers.
f) Mode of the goods dispersed, minimum quantity sold, types of packaging employed.
g) Factors determining the price fluctuations.

h) Seasonal factors (if any) affecting the business.
i) Weekly/ monthly non-working days.
j) Strikes, if any- causes thereof.
k) Mode of payments.
l) Wastage and disposal of dead stock.
m) Nature of price fluctuations, reason thereof.
n) Warehousing facilities available/availed.
o) Any other aspect.

4. Visit to a Departmental store

The students are required to observe the following:
a) Different departments and their lay out.
b) Nature of products offered for sale.
c) Display of fresh arrivals.
d) Promotional campaigns.
e) Spaces and advertisements.
f) Assistance by Sales Personnel.
g) Billing counter at store – Cash, Credit Card/ Debit Card, swipe facility. Added attractions and facilities at the counter.
h) Additional facilities offered to customers
i) Any other relevant aspect.

5. Visit to a Mall.

The students are required to observe the following:

a) Number of floors, shops occupied and unoccupied.
b) Nature of shops, their ownership status
c) Nature of goods dealt in: local brands, international brands,
d) Service business shops- Spas, gym, saloons etc.
e) Rented spaces, owned spaces,
f) Different types of promotional schemes.
g) Most visited shops.
h) Special attractions of the Mall- Food court, Gaming zone or Cinema etc.
i) Innovative facilities.
j) Parking facilities. Teachers may add more to the list.

II. Project Two: Case Study on a Product

a) Take a product having seasonal growth and regular demand with which studentscan relate. For example,
   - Apples from Himachal Pradesh, Kashmir.
   - Oranges from Nagpur,
   - Mangoes from Maharashtra/U.P./Bihar/Andhra Pradesh etc.
   - Strawberries from Panchgani,
   - Aloe vera from Rajasthan,
   - Walnuts/almonds from Kashmir,
   - Jackfruit from South,
   - Guavas from Allahabad,
   - Pineapples from North East India,
   - Tea from Assam,

- Orchids from Sikkim and Meghalaya,
- Pottery of Manipur,
- Fishes from coastal areas.

Students may develop a Case Study on the following lines:

(i) Research for change in price of the product. For example, apples in HimachalPradesh during plucking and non-plucking season.
(ii) Effect on prices in the absence of effective transport system.
(iii) Effect on prices in the absence of suitable warehouse facilities.
(iv) Duties performed by the warehouses.
(v) Demand and supply situation of the product during harvesting season, prices near the place of origin and away.

Students may be motivated to find out the importance of producing and selling these products and their processed items along with the roles of Transport, Warehousing, Advertising, Banking, Insurance, Packaging, Wholesale selling, Retailing, Co-operative farming, Co-operative marketing etc.

The teacher may develop the points for other projects on similar lines for students to work on.

The teacher may assign this project as 'group' project and may give different products todifferent groups. It could conclude in the form of an exhibition.

III. Project Three: Aids to Trade

Taking any one AID TO TRADE, for example Insurance and gathering information onfollowing aspects

1. History of Insurance Lloyd's contribution.
2. Development of regulatory Mechanism.
3. Insurance Companies in India
4. Principles of Insurance.
5. Types of Insurance. Importance of insurance to the businessmen.
6. Benefits of crop, orchards, animal and poultry insurance to the farmers.
7. Terminologies used (premium, face value, market value, maturity value, surrenderValue) and their meanings.
8. Anecdotes and interesting cases of insurance. Reference of films depicting peoplecommitting fraudulent acts with insurance companies.
7. Careers in Insurance.

Teachers to develop such aspects for other aids to trade.

IV. Project Four: Import /Export Procedure
Any one from the following

1. Import /Export procedure

The students should identify a product of their city/country which is imported /exported. They are required to find the details of the actual import/export procedure. They may take help from the Chambers of Commerce, Banker, existing Importers/Exporters, etc.
They should find details of the procedure and link it with their Text knowledge.

The specimens of documents collected should be pasted in the Project file with brief description of each. They may also visit railway godowns/dockyards/ transport agencies and may collect pictures of the same.

Presentation and submission of project report.

At the end of the stipulated term, each student will prepare and submit his/her project-report.

1. The total project will be in a file format, consisting of the recordings of the value ofshares and the graphs.
2. The project will be handwritten.
3. The project will be presented in a neat folder.
4. The project report will be developed in the following sequence-
   - Cover page should project the title, student information, school and year.
   - List of contents.
   - Acknowledgements and preface (acknowledging the institution, the news-papers read, T.V. channels viewed, places visited and persons who have helped).
   - Introduction.
   - Topic with suitable heading.
   - Planning and activities done during the project, if any.
   - Observations and findings while conducting the project.
   - Newspaper clippings to reflect the changes of share prices.
   - Conclusions (summarized suggestions or findings, future scope of study).
   - Appendix (if needed).
   - Teachers report.
   - Teachers will initial preface page.
   - At the completion of the evaluation of the project, it will be punched in the centre so that the report cannot be reused but is available for reference only.
   - The projects will be returned after evaluation. The school may keep the bestprojects.

V. Project Five: A visit to any State Emporium (other than your school state).

The purpose of this project is that it leads to -

- Development of deeper understanding of the diversity of products in the states like Assam, Tripura, Nagaland, Mizoram, Manipur, Meghalaya, Sikkim, Arunachal Pradesh,

Jammu and Kashmir, Kerala, Chhattisgarh, Telangana, Andhra Pradesh and other statesof the country.

- Sensitization and orientation of students about other states, their trade, business and commerce,
- Understanding the cultural and socio-economic aspects of the state by the students,
- Developing the understanding of role of folk art, artisanship and craftsmanship of thestate in its growth and economic development
- Understanding the role of gifts of nature and natural produce in the development oftrade, business and commerce.
- Understanding the role of vocational skills and abilities on the livelihood of artisans/craftsman.
- Understanding of entrepreneurial skills and abilities of the artisans/craftsman.
- Understanding of the unemployment problem of the state and role of art and craft ofthe state in generating employment opportunities.
- Value aspect –
- Sense of gratitude - by appreciating the contributions made by others in the betterment of our lives.
- Appreciating the dignity of work.
- Sensitivity towards social, cultural, ethnical and religious differences Benefits of socialharmony and peace.
- Understanding and appreciating the unity in diversity in India.
- Appreciating differences in race, skin colour, languages, religion, habits, festivals, clothing coexistence.

Presentation and Submission of Project Report

At the end of the stipulated term, each student will prepare and submit his/her projectreport.

Following essentials are required to be fulfilled for its preparation and submission.

1. Nature of the business organisation (emporium)
2. Determinants for location of the concerned emporium
3. Is the space rented or owned
4. Nature of the goods dealt in
5. Sources of merchandise of the emporium
6. Role of co-operative societies in the manufacturing and/or marketing of the merchandise
7. Role of gifts of nature or natural produce in the development of goods/merchandise
8. Types of buyers and sellers
9. Modes of goods dispersed, minimum quantity sold and type of carrying bag orpackage used for delivery of the products sold
10. Factors determining the pricing at the emporium.
11. Comparison between the prices of goods available at the emporium with the pricesin the open market. Also highlight probable causes of variations if any.

12. Kind of raw material available naturally, used in making the products.
13. The technique used in making the products i.e., handmade or machine made.
14. Has the child labour been used in making the products sold at the emporium.
15. Are the products eco-friendly, in terms of manufacturing, disposal and packing.
16. Seasonal factors if any affecting the business of the emporium.
17. Weekly/ Monthly non-working days.
18. Mode of billing and payments - Cash, Credit Card/ Debit Card, Swipe facility.
19. Does the emporium sell its merchandise in installment / deferred payment basis.
20. Do they provide home delivery and after sales services.
21. Different types of promotional campaigns / schemes.
22. Assistance by Sales Personnel.
23. Export orientation of this emporium and procedure used.
24. Policies related to damaged/ returned goods.
25. Any government facility available to the emporium.
26. Warehousing facilities available / availed.
27. Impact of tourism on the business of emporium.
28. Additional facility offered to customers.
29. Any Corporate Social Responsibility (CSR) assumed by the emporium.
30. Contribution made by the emporium to its locality.

ASSESSMENT

The marks will be allocated on the following heads.

1	Initiative, cooperativeness and participation	2 Mark
2	Creativity in presentation	2 Mark
3	Content, observation and research work	4 Marks
4	Analysis of situations	4 Marks
5	Viva	8 Marks
	Total	**20 Marks**

BOOKS PRESCRIBED

1. *Business Studies Text Book for Class 11th, Published by NCERT.*
2. *Business Studies Text Book for Class 11th, Published by JKBOSE.*

ACCOUNTANCY

Maximum marks: 100 **Theory: 80 Marks**

Time: 3 hrs **Project Work: 20 Marks**

Financial Accounting –I

Unit-I: Introduction to Accounting **06 Marks**

(i) Book keeping Meaning, Accounting meaning, objectives. Difference between Book-keeping and Accounting, Accounting as source of information, internal and external users of Accounting information and their needs.

(ii) Qualitative characteristics of Accounting information-reliability, relevance, Understandability and comparability.

(III) Basic accounting terms: business transaction, account, capital, drawings, Liability (Non- Current and current); Asset (Non- current; tangible, intangible assets, current assets), receipts (capital and revenue), expenditure (capital, revenue and deferred), expense, income, profits, gains and losses, purchases, sales, stock, trade receivables (debtors and bills receivable), trade payable (creditors and bills payable), goods, cost, vouchers, Discount - trade and cash, bad debts, Vouchers (cash and non-cash), source documents. Invoices, cash memo, pay in slip, cheque.

Unit 2: Theory Base of Accounting **06 Marks**

(i) Accounting Principles-concept

(ii) Accounting principles: Accounting Entity, Money measurement, Going Concern, Accounting Period, Costs Concept, Dual Aspect, Revenue Recognition (Realisation), Matching concept, Accrual, Full Disclosure, and Consistency. Conservatism, Materiality.

(iii) Bases of Accounting-Cash Basis, Accrual Basis

Unit 3: Recording of Business Transactions **26 Marks**

i. Accounting Equation Approach-Meaning and Analysis of transactions using Accounting Equation.

ii. Rules of Debit and Credit-traditional and modern approach.

iii. Recording of Transactions: Books of original entry-Journal, Special Purpose Books: Cash Book:
Simple Cash Book, Cash Book with Discount Column, Cash Book with Bank and Discount Columns, Petty Cash Book. Other books: purchases book, sales book, purchases returns book, sales returns book and journal proper.

iv. Ledger-meaning, utility, format; posting from Journal and Subsidiary books; Balancing of
Accounts.

V. Bank reconciliation statement- calculating bank balance at accounting date: need and preparation.

Unit 4: Trial Balance and Rectification of Errors **06 Marks**

i. Trial balance: Meaning, objectives and preparation, (Scope: Trial Balance with balance method).

ii. Error: Types of Errors: Errors of omission, commission, principles and compensating errors affecting Trial Balance; errors not affecting Trial Balance.

iii. Detection and Rectification of Errors (One Sided and Two Sided); use of Suspense Account.

Unit 5: Depreciation, Provisions and Reserves **10 Marks**

i. Depreciation: Meaning and need for charging depreciation, factors affecting depreciation, methods of depreciation-Straight Line method, Written Down

Value method (excluding change in method), Method of recording depreciation-charging to asset account, creating provision for depreciation/accumulated depreciation account; Treatment of disposal of asset.

ii. Provisions and Reserves: meaning, Importance, difference between Provisions and Reserves, types of Reserves: Revenue Reserve, Capital Reserve, General Reserve, Specific Reserve and secret Reserves.

Financial Accounting-II

Unit 6: Financial Statements of Sole Proprietorship from Complete and Incomplete Records **26 Marks**

(i) Financial Statements: Meaning and uses

(ii) Capital expenditure and deferred revenue expenditure, Trading and Profit and loss account-Gross Profit, operating profit and net profit, Balance Sheet: need, grouping, marshalling of assets and Liabilities. Preparation of Trading and Profit and Loss Account and Balance Sheet of sole proprietorship.

(iii) Adjustments of preparation of financial statements: with respect to closing stock, outstanding Expenses, prepaid expenses, accrued income; income received in advance, depreciation, bad debts, Provision for doubtful debts, provision for discount on debtors, manager's commission, abnormal Loss, goods taken for personal use and goods distributed as free samples.

Scheme of Assessment (Theory)

Question paper contains five sections namely

1. **Section –A** contains 8 (Objective Type Question/Multiple Choice Questions) of 1 mark each. 1x 8 = 8 marks
2. **Section- B** contains 4 Short Answer Type Questions of 3 marks each to be answered in20 to 30 words. 3 x 4 = 12 marks
3. **Section – C** contains 5 Short Answer type questions of 4 marks each to be answered in 100 to 150 words. 4 x 5 = 20 marks
4. **Section - D** contains 4 Long Answer type questions of 6 marks each to be answered in 150to 200 words. 6 x 4 = 24 marks
5. **Section – E** contains 2 Long Answer type questions of 8 marks each to be answered in 150to 200 words. 8 x 2 = 16 marks

Note: The paper setter shall incorporate Higher Order Thinking Skills (HOTS) questions apart from knowledge, memory and application based questions.

Project Work: - 20 Marks

Any one

1. Collection of source documents, preparation of vouchers and presentation of source documents of trading and banking concerns.
2. Preparation of bank reconciliation statements with the given cash book and pass book with 20-25 transactions.
3. Comprehensive project starting with journal entries regarding any sole proprietorship business, posting them to the ledger and preparation of Trial balance. The students

will then prepare Trading and profit and Loss. Account on the basis of the prepared trail balance. Expenses, incomes and profit (loss) are to be depicted using pie chart/bar diagram.

The above-mentioned projects should be presented in a project file which should be made available for evaluation.

- Internal Assessment: - 05 Marks
- External Assessment: - 15 Marks

Project File	03 Marks
Written Test	09 Marks
Viva-Voce	03 Marks

BOOKS PRESCRIBED

1. *Accountancy Financial Accounting Part-I, Textbook for Class 11th, Published by NCERT.*
2. *Accountancy Financial Accounting Part-II, Textbook for Class 11th, Published by NCERT*

COMPUTER SCIENCE

Maximum Marks=100 Time: 3 Hrs

Theory =70 Marks Practical =30 Marks

1. Computer Fundamentals 10 marks
2. Software Concepts 10 marks
3. Number System 10 marks
4. Programming methodology 10 marks
5. Introduction to Python 10 marks
6. Data types and operators 10 marks
7. Strings in Python 10 marks

UNIT 1: COMPUTER FUNDAMENTALS

- History of Computers
- Generations of Computers
- Functions of a Computer
- Block diagram of a Computer system
- Brief description of following functional components of a Computer system:

- Input devices: Keyboard, Mouse, Scanner, barcode reader
- Output devices: Monitor, Printer
- CPU: ALU and CU
- Memory unit
- Primary memory: Cache memory, RAM, ROM
- Secondary memory: Hard disk drive, CD, DVD, Pen drive
- Units of Memory: Byte, Kilo Byte, Mega Byte, Giga Byte, Tera Byte Peta Byte
- Concept of PROM, EPROM, EEPROM

UNIT 2: SOFTWARE CONCEPTS

- Definition of Software
- Types of software (System Software, Application Software, Utility Software)
- Need for Operating System
- Functions of Operating System (Processor management, Memory management, File management, Device management)
- Concept of computer languages: Machine language, Assembly language, High level language.
- Language Processors: Assembler, Compiler and Interpreter

UNIT 3: NUMBER SYSTEM

- Number Systems: Decimal, Binary, Octal, Hexadecimal
- Conversion from Decimal number system to Binary, Octal and Hexadecimal number system (Whole numbers only)
- Conversion from Binary, Octal and Hexadecimal number system to Decimal number system (Whole numbers only)
- Conversion from Binary number system to Octal, Hexadecimal number system using shortcut method (whole numbers only)
- Conversion from Octal, Hexadecimal number system to Binary number system using shortcut method (whole numbers only)

UNIT 4: PROGRAMMING METHODOLOGY

- Concept of a Program
- Characteristics of a good program
- Concept of Modular approach
- Program Documentation (Internal & External documentation)
- Program Maintenance
- Debugging a program
- Error and types of errors (Syntax error, Logical error, Runtime error)

UNIT 5: Introduction to Python

- Origin of python
- Unique Features of python
- Python character set
- Tokens (Keywords, Identifiers, Litrals, Operators, Punctuators)
- The print and input statement
- comments in python
- Concept of variables
- Rules for naming a variable

UNIT 6: Data Types and operators

- Built-in data types in Python
  - Text type: str
  - Numeric type: int, float
  - Sequence type: list
  - Boolean Type: bool
- Displaying the data type (use of type)
- Type Conversion (from int to float and float to int)
- Operators
  - Arithmetic operators (+, -, *, /, %, **)
  - Comparison operators (==,!= ,>,>=,<,<=)
  - Logical operators (and, or, not)
  - Assignment operators (=,+=,-=,*=,/=,%=,**=)
  - Identity operator (is, is not)
  - Membership operator (in, not in)

UNIT 7: Strings in Python

- Defining String
- Assigning string to a variable
- Multiline strings
- Use of len (), upper(), lower(),replace(),in, not in
- Slicing

- Slice from the start
- Slice to the end

➢ Use of escape characters in the string (\", \',\n,\t)

Scheme of Assessment (Theory)

The Question paper shall contain - Four sections A, B, C and D. Each section is compulsory.

1. Section A-Question 1 to 10 comprises of 10 questions of 1 mark each (MCQ's, Fill in the blanks, True/False, Assertion-Reason etc.)
2. Section B-Question 1 to 19 comprises of 9 Very Short Answer (VSA)-type questions of 2 marks each.
3 Section C-Question 20 to 28 comprises of 9 Short Answer (SA)-type questions of 4 marks each.
4. Section D-Question 29 to 31 comprises of 3 Long Answer (LSA)-type questions of 6 marks each with internal choice

PATTERN	MARKS	QUESTIONS	TOTAL
Very Short Questions	01	10	10 Marks
Short Type-I Questions	02	9	18 Marks
Short Type-II Questions	03	9	27 Marks
Long Type Questions	05	3	15 Marks
TOTAL		**31**	**70 Marks**

PRACTICALS: 30 Marks (Internal=10: and External=20)

➢ **Programming in Python**

1. WAP to display "hello world".
2. . WAP to add two numbers.
3. WAP to find the length of the string.
4. WAP to convert uppercase string into lowercase and vice-versa.
5. WAP to convert temperature from Celsius to Fahrenheit
6. WAP for displaying multiline strings.
7. WAP to concatenate two strings.
8. WAP to slice a string from start to a particular position in the string.
9. WAP to replace some characters of the string with new characters.
10. WAP to find the area of a square.

➢ Practical file

Practical file must contain the entire mentioned practical.

➢ Viva voce

Viva will be asked from syllabus covered in class XI.

Distribution of 20 marks for External practical

- Programming (Logic, Syntax, documentation/ Indentation, output) (10 marks)
- Practical file (05 marks)
- Viva (05 marks)

INFORMATION PRACTICES (IP)

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

TOPIC	Marks	Theory Lectures	Practical
Basics of Information Technology	20	40	
Operating System Concepts	10	30	-
Programming Concepts	10	20	
Python Programming	20	35	30
Introduction to Emerging Technologies	10	25	

UNIT –I Basics of Information Technology

Introduction to Information Technology, Data, Information, Importance of Information Technology, Components of Information Technology.
Introduction to Computer: Basic components of a Computer System (CPU, ALU, CU, Memory) and their interconnection, Illustration with Block Diagram, Basic Input and Output devices, Computer Memory and Types of Memory, Computer Storage and Types of Computer Storage, Units of Memory.
Concept of Software, Categories of Software (Open and Closed Source Software), Types of Software (Application and System Software)
Number Systems and Logical Gates: Binary, Octal, Decimal, Hexadecimal and conversions, Basic Logical Gates (AND, OR, NOT) with Truth Tables.

UNIT –II Operating System Concepts

Operating System, Types of Operating System: Batch Operating System Multitasking/Time Sharing Operating System, Multiprocessing Operating System, Real Time Operating System, Distributed Operating System, Network Operating System, Mobile Operating System.
Functions of Operating System: Processor Management, Memory Management, File Management, Device Management. 32-Bit and 64-Bit Operating System. Introduction to Firmware.
Introduction to Microsoft Windows Operating System, Features of Windows Operating System, Versions of Windows Operating System, File structure of Windows Operating System.

UNIT –III Programming Concepts

Introduction to Programming Languages, Categories of Computer Languages: Low Level Language, High Level Languages, Assembly Language, Language Translators: Compiler, Interpreter and Assembler, History of Programming Languages.
Basic Element of Programming Language, Syntax and Semantics of a Programming Language, Introduction to Algorithms, Pseudo code and Flowcharts.

UNIT –IV Python Programming

Basics of Python Programming: Installation and Setup of Python and IDE, Identifiers, Keywords, Constants, Variables, Naming rules of variables, Operators (Arithmetic, Assignment, Comparison, Logical, Identity, Membership and Bitwise), Data Types, Indentation, Statements, Expressions, Input and Output Statements, Control Statement (conditional/selection statements) IF, IF-ELSE, IF-ELIF-ELSE, Looping Structure while Loop and For Loop

UNIT –V Introduction to Emerging Technologies

Big Data, Artificial Intelligence, Machine Learning, Natural Language Processing, Immersive Technologies (Augmented Reality, Virtual Reality), Robotics, Internet of Things (IoT), Cloud Computing and Types of Cloud Services.

Scheme of Assessment (Theory)

The Question paper shall contain - Four sections A, B, C and D. Each section is compulsory.

1. Section A-Question 1 to 10 comprises of 10 questions of 1 mark each (MCQ's, Fill in the blanks, True/False, Assertion-Reason etc.)
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Long Type Questions	05	3	15 Marks
TOTAL		31	70 Marks

PRACTICALS

List of Suggested Practical (Programming in Python)

1. To do basic arithmetic operations.
2. To calculate Simple and Compound Interest.
3. To calculate perimeter/circumference and area of shapes such as triangle, rectangle, square and circle.
4. To find if a number is Even or Odd
5. To find if a number is Prime or Not.
6. To find Total Marks, Percentage and Grade for a given student.
7. To Swap the Two Numbers.
8. To print the multiplication table of a given number.
9. To find the sum of 'n' natural numbers.
10. To find the factorial of a natural number.

ELECTRONICS

Time: 3 hours | Maximum Marks: 100
Theory: 70 marks | Practical: 30 marks.
(Internal: 10 marks, External: 20 marks)

Unit-I

Number Systems: (Marks = 10)

Number systems, Binary, Octal, Hexadecimal Number Systems and their inter conversion. Binary addition, Subtraction and multiplication, I's compliment and 2's compliment of a number. Binary Coded Decimal (BCD), Grey Code, Excess 3 code and logic operations.

Unit -II

Boolean algebra and Logic Gates: (Marks =15)

Logic Gates (OR, AND, NOT, NAND, NOR, Ex-OR and Ex-NOR and their truth tables). Construction of primary Logic gates using Universal gates. Postulates of Boolean algebra. De-Morgan theorems. Minimization of Boolean functions. Implementation of Boolean expressions using Logic circuits.

Unit-III

Passive components: (Marks = 15)

Resistors: linear and non-linear, colour coding of carbon Resistors. Brief description of Inductor and Capacitor. Series and Parallel Connections Equivalent value of Resistors, capacitors and inductors in series and parallel combinations. (with numericals), (Derivation only for resistances).

Unit-IV

AC signals and Circuits: (Marks = 15)

Types of alternating waveforms, definition of amplitude, frequency, time period, Instantaneous value, peak value, rms value, average value and form factor of sinusoidal current and voltage, Relation between f and T, Phase difference, AC through: pure resistance, pure inductance and pure capacitance. Applications of cathode ray oscilloscope (CRO).

Unit-V

Kirchhoff's laws: (Marks = 15)

Kirchhoff's Current Law (KCL) and Kirchhoff's Voltage Law (KVL) (with numerical), Current Divider Rule (CDR), Voltage Divider Rule (VDR) (with numerical). Analysing Series-Parallel circuits.

Scheme of Assessment (Theory)

The Question paper shall contain - Four sections A, B, C and D. Each section is compulsory.

1. Section A-Question 1 to 10 comprises of 10 questions of 1 mark each (MCQ's, Fill in the blanks, True/False, Assertion-Reason etc.)
2. Section B-Question 1 to 19 comprises of 9 Very Short Answer (VSA)-type questions of 2 marks each.
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PATTERN	MARKS	QUESTIONS	TOTAL
Very Short Questions	01	10	10 Marks
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Short Type-II Questions	03	9	27 Marks
Long Type Questions	05	3	15 Marks
TOTAL		31	70 Marks

PRACTICALS

1. To study OR-Gate using IC-7432, AND-Gate using IC-7408, NOT-Gate using IC-7404. Verification of the truth table of basic logic gates (AND, OR, NOT).
2. Implementation of basic gates using discrete components.
3. Implement the universal gates (NAND and NOR) using the basic logic gates (IC's) and Verification of the Truth Table of NAND and NOR gates
4. TO study the De-Morgan's laws using Logic gates.
5. To study the realization of Logic gates using Universal gates.
6. To implement a simple Boolean expression using Logic gates.
7. Identification of Various electronics components from mixed collection of items.
8. To study and understand the various controls of a Digital Multimeter.
9. To find the value of Carbon resistors using color coding and verify with the digital multimeter.
10. To study the use of digital multimeter for
    a) measuring resistance and check continuity of a given circuit.
    b) measuring voltage (ac/ dc)
    c) measuring current (ac/ dc)
11. To find the value of capacitor with the help of a digital multimeter.
12. To verify the laws of combination of resistance (Series and Parallel) using digital multimeter.

13. Verify Voltage Division Rule by digital Multimeter.
14. Verify Current Division Rule by digital Multimeter.
15. To study front panel controls of CRO.
16. To generate various waveforms using a waveform generator and study their characteristics with the help of a CRO.
17. To study how Amplitude, frequency, time period, measurements are done using a CRO
18. Design and implement simple electronic circuits.

STATISTICS

Maximum Marks: 100 (Theory: 70: Practical: 30)

Unit I: Introduction to Statistics (06 marks)

Historical overview of Statistics, Definition and Meaning of Statistics, Importance and Scope of Statistics, Statistics Then and Now, New Career options in Statistics, Role of Statistics in Integrated research. Limitations of Statistics.

Unit II: Statistical Data Collection (06 marks)

Data and its type (Primary, Secondary, Qualitative and Quantitative data), Sources of Secondary data. Method of data collection (Questionnaire and Interview Method). Merits and demerits of these Methods. Presentation of data, Classification and tabulation of data. Discrete and continuous data. Frequency and frequency distribution. Concept of Population and Sample.

Unit III: Graphical Representation of Data (07 marks)

Representation of data by Graph/diagram, advantages of graphical representation of data, Construction of diagrams/ Charts (Bar chart, Multiple Bar diagram, Sub-divided bar chart, Pie chart), Frequency graphs (Histogram, Frequency Polygon), Cumulative frequency curves (Ogive/ Ojive).

Unit IV: Measures of Location (08 marks)

Central Tendency meaning, Different Measures of Central Tendency (Mean, Median, Mode, Geometric Mean and Harmonic Mean), Computation of Measures of Central Tendency from Discrete and Continuous data, Essentials of good average. Merits and Demerits of Measures of Central Tendency. Combined Mean and Weighted Mean.

Unit V: Partition Values. (08 marks)

Concept of Partition values, Distinguish Measure of central tendency and Measures of location, Uses of Partition values, Graphical representation of Median, Concept of Quartiles, Deciles and Percentiles. Percentile Rank, Empirical relation between Mean, Median and Mode, Symmetrical and Asymmetrical data.

Unit VI: Dispersion (09 marks)

Dispersion and its absolute measures (Rang, Quartile Deviation, Mean Deviation and Standard Deviation). Merits and Demerits of these measures. Relative measures of Dispersion (Co-efficient of Range, Co-efficient of Quartile deviation, Co-efficient of Standard deviation). Co-efficient of variation (C.V).

Unit VII: Moments, Skewness and Kurtosis (10 marks)

Define Moments Types of Moments (Raw Moments and Centre Moments for discrete and Continuous data) Relationship between Raw and Central Moments

Define Skewness and its types, Measures of Skewness (Karl Pearson, Bowleys and Moment based measure). Kurtosis and its types. Measures of Kurtosis.

Unit VIII: Correlation **(08 marks)**

Concept of Bi-Variate data, Scattered diagram, Concept of Correlation and its types. Methods of Measuring Correlation coefficients (Product moment method, Graphical method). Properties of Correlation coefficient. Rank correlation for simple and repeated Ranks.

Unit IX: Linear Programming and Computer Applications **(08 marks)**

Basic concept of inequalities, Solution of one variable inequalities, Graphical representation of inequalities, Basic concept of Linear programming.

Introduction to Computers, uses of computers in Education, Various components /Units of Computer (Input /Output), Hardware and Software, Concept of flow charts.

Scheme of Assessment (Theory)

The Question paper shall contain - Four sections A, B, C and D. Each section is compulsory.

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Short Type-II Questions	03	9	27 Marks
Long Type Questions	05	3	15 Marks
TOTAL		**31**	**70 Marks**

Practical/Project work **(30 marks)**

1. Collection of different categories of data from Schools/Societies/Surrounding area of Institution.
2. Construct different statistical tables from real life data (Frequency table, cumulative frequency table, Exclusive and inclusive tables)
3. Construct diagrams/charts (Bar Charts, Multiple Bar diagram, Pie Chart) from the given data.
4. Construct frequency and cumulative frequency curves to the given data.
5. Evaluate different measures of central tendency from the real-life data.
6. Evaluate different measures of location from given data.

7. Evaluate different measures of dispersion and relative measures of dispersion.
8. Compute raw and central moments from collected data.
9. Estimate Skewness and Kurtosis from given data or Moments.
10. Estimate correlation coefficient from the Discrete and continuous data.
11. Estimate Rank correlation coefficient from ranked and unranked data.
12. Construct a Linear Programming problem from any industrial or social data.

NOTE:

1. The syllabus and marks distribution is strictly in accordance with the rationalized syllabus provided by the NCERT.
2. The internal assessment/ internal Project Work will be evaluated by the concerned subject teacher.
3. All the stakeholders can give their valuable feedback and suggestions regarding the notified rationalized syllabi to CDR Wing, JKBOSE.