

**BIOLOGY (Code No. 044)**  
**Classes XI & XII (2022-23)**

The present curriculum provides the students with updated concepts along with an extended exposure to contemporary areas of the subject. The curriculum also aims at emphasizing the underlying principles that are common to animals, plants and microorganisms as well as highlighting the relationship of Biology with other areas of knowledge. The format allows a simple, clear, sequential flow of concepts. It relates the study of biology to real life through the developments in use of technology. It links the discoveries and innovations in biology to everyday life such as environment, industry, health and agriculture. The updated curriculum also focuses on understanding and application of scientific principles, while ensuring that ample opportunities and scope for learning and appreciating basic concepts continue to be available within its framework. The prescribed syllabus is expected to:

- promote understanding of basic principles of Biology
- encourage learning of emerging knowledge and its relevance to individual and society
- promote rational/scientific attitude towards issues related to population, environment and development
- enhance awareness about environmental issues, problems and their appropriate solutions
- create awareness amongst the learners about diversity in the living organisms and developing respect for other living beings
- appreciate that the most complex biological phenomena are built on essentially simple processes

It is expected that the students would get an exposure to various branches of Biology in the curriculum in a more contextual and systematic manner as they study its various units.

**BIOLOGY (Code No. 044)**  
**COURSE STRUCTURE**  
**CLASS XI (2022 -23) (THEORY)**

**Time: 03 Hours**

**Max. Marks: 70**

<b>Unit</b>	<b>Title</b>	<b>Marks</b>
<b>I</b>	Diversity of Living Organisms	15
<b>II</b>	Structural Organization in Plants and Animals	10
<b>III</b>	Cell: Structure and Function	15
<b>IV</b>	Plant Physiology	12
<b>V</b>	Human Physiology	18
	<b>Total</b>	<b>70</b>

## **Unit-I Diversity of Living Organisms**

### **Chapter-1: The Living World**

Biodiversity; Need for classification; three domains of life; taxonomy and systematics; concept of species and taxonomical hierarchy; binomial nomenclature

### **Chapter-2: Biological Classification**

Five kingdom classification; Salient features and classification of Monera, Protista and Fungi into major groups; Lichens, Viruses and Viroids.

### **Chapter-3: Plant Kingdom**

Classification of plants into major groups; Salient and distinguishing features and a few examples of Algae, Bryophyta, Pteridophyta, Gymnospermae (Topics excluded – Angiosperms, Plant Life Cycle and Alternation of Generations)

### **Chapter-4: Animal Kingdom**

Salient features and classification of animals, non-chordates up to phyla level and chordates up to class level (salient features and at a few examples of each category).  
(No live animals or specimen should be displayed.)

## **Unit-II Structural Organization in Animals and Plant**

### **Chapter-5: Morphology of Flowering Plants**

Morphology of different parts of flowering plants: root, stem, leaf, inflorescence, flower, fruit and seed. Description of family Solanaceae

### **Chapter-6: Anatomy of Flowering Plants**

Anatomy and functions of tissue systems in dicots and monocots.

### **Chapter-7: Structural Organisation in Animals**

Morphology, Anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of frog.

## **Unit-III Cell: Structure and Function**

### **Chapter-8: Cell-The Unit of Life**

Cell theory and cell as the basic unit of life, structure of prokaryotic and eukaryotic cells; Plant cell and animal cell; cell envelope; cell membrane, cell wall; cell organelles - structure and function; endomembrane system, endoplasmic reticulum, golgi bodies, lysosomes, vacuoles, mitochondria, ribosomes, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles (ultrastructure and function); nucleus.

### **Chapter-9: Biomolecules**

Chemical constituents of living cells: biomolecules, structure and function of proteins, carbohydrates, lipids, nucleic acids; Enzyme - types, properties, enzyme action. (Topics excluded: Nature of Bond Linking Monomers in a Polymer, Dynamic State of Body Constituents – Concept of Metabolism, Metabolic Basis of Living, The Living State)

### **Chapter-10: Cell Cycle and Cell Division**

Cell cycle, mitosis, meiosis and their significance

## **Unit-IV Plant Physiology**

### **Chapter-13: Photosynthesis in Higher Plants**

Photosynthesis as a means of autotrophic nutrition; site of photosynthesis, pigments involved in photosynthesis (elementary idea); photochemical and biosynthetic phases of photosynthesis; cyclic and non-cyclic photophosphorylation; chemiosmotic hypothesis; photorespiration; C<sub>3</sub> and C<sub>4</sub> pathways; factors affecting photosynthesis.

### **Chapter-14: Respiration in Plants**

Exchange of gases; cellular respiration - glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); energy relations - number of ATP molecules generated; amphibolic pathways; respiratory quotient.

### **Chapter-15: Plant - Growth and Development**

Seed germination; phases of plant growth and plant growth rate; conditions of growth; differentiation, dedifferentiation and redifferentiation; sequence of developmental processes in a plant cell; growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA;

## **Unit-V Human Physiology**

### **Chapter-17: Breathing and Exchange of Gases**

Respiratory organs in animals (recall only); Respiratory system in humans; mechanism of breathing and its regulation in humans - exchange of gases, transport of gases and regulation of respiration, respiratory volume; disorders related to respiration - asthma, emphysema, occupational respiratory disorders.

### **Chapter-18: Body Fluids and Circulation**

Composition of blood, blood groups, coagulation of blood; composition of lymph and its function; human circulatory system - Structure of human heart and blood vessels; cardiac cycle, cardiac output, ECG; double circulation; regulation of cardiac activity; disorders of circulatory system - hypertension, coronary artery disease, angina pectoris, heart failure.

### Chapter-19: Excretory Products and their Elimination

Modes of excretion - ammonotelism, ureotelism, uricotelism; human excretory system – structure and function; urine formation, osmoregulation; regulation of kidney function - renin - angiotensin, atrial natriuretic factor, ADH and diabetes insipidus; role of other organs in excretion; disorders - uremia, renal failure, renal calculi, nephritis; dialysis and artificial kidney, kidney transplant.

### Chapter-20: Locomotion and Movement

Types of movement - ciliary, flagellar, muscular; skeletal muscle, contractile proteins and muscle contraction; skeletal system and its functions; joints; disorders of muscular and skeletal systems - myasthenia gravis, tetany, muscular dystrophy, arthritis, osteoporosis, gout.

### Chapter-21: Neural Control and Coordination

Neuron and nerves; Nervous system in humans - central nervous system; peripheral nervous system and visceral nervous system; generation and conduction of nerve impulse

### Chapter-22: Chemical Coordination and Integration

Endocrine glands and hormones; human endocrine system - hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, gonads; mechanism of hormone action (elementary idea); role of hormones as messengers and regulators, hypo - and hyperactivity and related disorders; dwarfism, acromegaly, cretinism, goiter, exophthalmic goitre, diabetes, Addison's disease.

**Note:** Diseases related to all the human physiological systems to be taught in brief.

## PRACTICALS

**Time: 03 Hours**

**Max. Marks: 30**

Evaluation Scheme	Marks	
One Major Experiment Part A (Experiment No- 1,3,7,8)	5 Marks	
One Minor Experiment Part A (Experiment No- 6,9,10,11,12,13)	4 Marks	
Slide Preparation Part A (Experiment No- 2,4,5)	5 Marks	
Spotting Part B	7 Marks	
Practical Record + Viva Voce	(Credit to the students' work over the academic session may be given)	4 Marks
Project Record + Viva Voce		5 Marks
<b>Total</b>	<b>30Marks</b>	

### A: List of Experiments

1. Study and describe locally available common flowering plants, from family Solanaceae (Poaceae, Asteraceae or Brassicaceae can be substituted in case of particular geographical location) including dissection and display of floral whorls, anther and ovary to show number of chambers (floral formulae and floral diagrams), type of root (tap and adventitious); type of stem (herbaceous and woody); leaf (arrangement, shape, venation, simple and compound).

2. Preparation and study of T.S. of dicot and monocot roots and stems (primary).
3. Study of osmosis by potato osmometer.
4. Study of plasmolysis in epidermal peels (e.g. Rhoeo/lily leaves or flashy scale leaves of onion bulb).
5. Study of distribution of stomata on the upper and lower surfaces of leaves.
6. Comparative study of the rates of transpiration in the upper and lower surfaces of leaves.
7. Test for the presence of sugar, starch, proteins and fats in suitable plant and animal materials.
8. Separation of plant pigments through paper chromatography.
9. Study of the rate of respiration in flower buds/leaf tissue and germinating seeds.
10. Test for presence of urea in urine.
11. Test for presence of sugar in urine.
12. Test for presence of albumin in urine.
13. Test for presence of bile salts in urine.

**B. Study and Observe the following (spotting):**

1. Parts of a compound microscope.
2. Specimens/slides/models and identification with reasons - Bacteria, *Oscillatoria*, *Spirogyra*, *Rhizopus*, mushroom, yeast, liverwort, moss, fern, pine, one monocotyledonous plant, one dicotyledonous plant and one lichen.
3. Virtual specimens/slides/models and identifying features of - *Amoeba*, *Hydra*, liverfluke, *Ascaris*, leech, earthworm, prawn, silkworm, honey bee, snail, starfish, shark, rohu, frog, lizard, pigeon and rabbit.
4. Mitosis in onion root tip cells and animals cells (grasshopper) from permanent slides.
5. Different types of inflorescence (cymose and racemose).
6. Human skeleton and different types of joints with the help of virtual images/models only.

**Practical Examination for Visually Impaired Students Class XI**

**Note:** The 'Evaluation schemes' and 'General Guidelines' for visually impaired students as given for Class XII may be followed.

**A. Items for Identification/Familiarity with the apparatus /equipments/animal and plant material / chemicals. for assessment in practicals (All experiments)**

**B. Equipments** - compound microscope, test tube, petridish, chromatography paper, chromatography chamber, beaker, scalpel

**Chemical** – alcohol

**Models** – Model of Human skeleton to show – Ball and socket joints of girdles and limbs, Rib cage, Honey comb, Mollusc shell, Pigeon and Star fish, cockroach

**Specimen/Fresh Material** – mushroom, succulents such as *Aloe vera*/kalenchoe, raisins, potatoes, seeds of monocot and dicot- maize and gram or any other plant, plants of Solanaceae - Brinjal, Petunia, any other

**C. List of Practicals**

1. Study locally available common flowering plants of the family – Solanaceae and

- identify type of stem (Herbaceous or Woody), type of leaves (Compound or Simple).
2. Study the parts of a compound microscope- eye piece and objective lens, mirror, stage, coarse and fine adjustment knobs.
  3. Differentiate between monocot and dicot plants on the basis of venation patterns.
  4. Study the following parts of human skeleton (Model): Ball and socket joints of thigh and shoulder
  5. Rib cage
  6. Study honeybee/butterfly, snail/sheik snail through shell, Starfish, Pigeon (through models).
  7. Identify the given specimen of a fungus – mushroom, gymnosperm-pine cone
  8. Identify and relate the experimental set up with the aim of experiment:  
For Potato Osmometer/endosmosis in raisins.

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

**Prescribed Books:**

1. Biology Class-XI, Published by NCERT
2. Other related books and manuals brought out by NCERT (consider multimedia also)

## CLASS XII (2022-23) (THEORY)

Time: 03 Hours

Max. Marks: 70

Unit	Title	Marks
VI	Reproduction	16
VII	Genetics and Evolution	20
VIII	Biology and Human Welfare	12
IX	Biotechnology and its Applications	12
X	Ecology and Environment	10
	<b>Total</b>	<b>70</b>

### Unit-VI Reproduction

#### Chapter-2: Sexual Reproduction in Flowering Plants

Flower structure; development of male and female gametophytes; pollination - types, agencies and examples; out breeding devices; pollen-pistil interaction; double fertilization; post fertilization events - development of endosperm and embryo, development of seed and formation of fruit; special modes- apomixis, parthenocarpy, polyembryony; Significance of seed dispersal and fruit formation.

#### Chapter-3: Human Reproduction

Male and female reproductive systems; microscopic anatomy of testis and ovary; gametogenesis -spermatogenesis and oogenesis; menstrual cycle; fertilisation, embryo development upto blastocyst formation, implantation; pregnancy and placenta formation (elementary idea); parturition (elementary idea); lactation (elementary idea).

#### Chapter-4: Reproductive Health

Need for reproductive health and prevention of Sexually Transmitted Diseases (STDs); birth control - need and methods, contraception and medical termination of pregnancy (MTP); amniocentesis; infertility and assisted reproductive technologies - IVF, ZIFT, GIFT (elementary idea for general awareness).

### Unit-VII Genetics and Evolution

#### Chapter-5: Principles of Inheritance and Variation

**Heredity and variation:** Mendelian inheritance; deviations from Mendelism – incomplete dominance, co-dominance, multiple alleles and inheritance of blood groups, pleiotropy; elementary idea of polygenic inheritance; chromosome theory of inheritance; chromosomes and genes; Sex determination - in humans, birds and honey bee; linkage and crossing over; sex linked inheritance - haemophilia, colour blindness; Mendelian disorders in humans - thalassemia; chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes.

#### Chapter-6: Molecular Basis of Inheritance

Search for genetic material and DNA as genetic material; Structure of DNA and RNA; DNA packaging; DNA replication; Central Dogma; transcription, genetic code, translation; gene

expression and regulation - lac operon; Genome, Human and rice genome projects; DNA fingerprinting.

### **Chapter-7: Evolution**

Origin of life; biological evolution and evidences for biological evolution (paleontology, comparative anatomy, embryology and molecular evidences); Darwin's contribution, modern synthetic theory of evolution; mechanism of evolution - variation (mutation and recombination) and natural selection with examples, types of natural selection; Gene flow and genetic drift; Hardy - Weinberg's principle; adaptive radiation; human evolution.

## **Unit-VIII Biology and Human Welfare**

### **Chapter-8: Human Health and Diseases**

Pathogens; parasites causing human diseases (malaria, dengue, chikungunya, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiasis, ring worm) and their control; Basic concepts of immunology - vaccines; cancer, HIV and AIDS; Adolescence - drug and alcohol abuse.

### **Chapter-10: Microbes in Human Welfare**

Microbes in food processing, industrial production, sewage treatment, energy generation and microbes as bio-control agents and bio-fertilizers. Antibiotics; production and judicious use.

## **Unit-IX Biotechnology and its Applications**

### **Chapter-11: Biotechnology - Principles and Processes**

Genetic Engineering (Recombinant DNA Technology).

### **Chapter-12: Biotechnology and its Applications**

Application of biotechnology in health and agriculture: Human insulin and vaccine production, stem cell technology, gene therapy; genetically modified organisms - Bt crops; transgenic animals; biosafety issues, biopiracy and patents.

## **Unit-X Ecology and Environment**

### **Chapter-13: Organisms and Populations**

Population interactions - mutualism, competition, predation, parasitism; population attributes - growth, birth rate and death rate, age distribution. (Topics excluded: Organism and its Environment, Major Abiotic Factors, Responses to Abiotic Factors, Adaptations)



### Chapter-14: Ecosystem

Ecosystems: Patterns, components; productivity and decomposition; energy flow; pyramids of number, biomass, energy (Topics excluded: Ecological Succession and Nutrient Cycles)

### Chapter-15: Biodiversity and its Conservation

Biodiversity-Concept, patterns, importance; loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red Data Book, Sacred Groves, biosphere reserves, national parks, wildlife, sanctuaries and Ramsar sites.

## PRACTICALS

Time allowed: 3 Hours

Max. Marks: 30

Evaluation Scheme	Marks
One Major Experiment 5	5
One Minor Experiment 2 & 3	4
Slide Preparation 1 & 4	5
Spotting	7
Practical Record + Viva Voce	4
Investigatory Project and its Project Record + Viva Voce (Credit to the students' work over the academic session may be given)	5
<b>Total</b>	<b>30</b>

### A. List of Experiments

1. Prepare a temporary mount to observe pollen germination.
2. Study the plant population density by quadrat method.
3. Study the plant population frequency by quadrat method.
4. Prepare a temporary mount of onion root tip to study mitosis.
5. Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc.

### B. Study and observe the following (Spotting):

1. Flowers adapted to pollination by different agencies (wind, insects, birds).
2. Pollen germination on stigma through a permanent slide or scanning electron micrograph.
3. Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice).
4. Meiosis in onion bud cell or grasshopper testis through permanent slides.
5. T.S. of blastula through permanent slides (Mammalian).
6. Mendelian inheritance using seeds of different colour/sizes of any plant.
7. Prepared pedigree charts of any one of the genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colour blindness.
8. Controlled pollination - emasculation, tagging and bagging.
9. Common disease causing organisms like *Ascaris*, *Entamoeba*, *Plasmodium*, any fungus causing ringworm through permanent slides, models or virtual images or specimens. Comment on symptoms of diseases that they cause.

10. Models specimen showing symbolic association in root modules of leguminous plants, Cuscuta on host, lichens.
11. Flash cards models showing examples of homologous and analogous organs.

**Practical Examination for Visually Impaired Students of Classes XI and XII  
Evaluation Scheme**

**Time: 02 Hours**

**Max. Marks: 30**

Topic	Marks
Identification/Familiarity with the apparatus	5
Written test (Based on given / prescribed practicals)	10
Practical Records	5
Viva	10
<b>Total</b>	<b>30</b>

**General Guidelines**

- The practical examination will be of two hour duration. A separate list of ten experiments is included here.
- The written examination in practicals for these students will be conducted at the time of practical examination of all other students.
- The written test will be of 30 minutes duration.
- 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.
- A writer may be allowed to such students as per CBSE examination rules.
- All questions included in the question paper 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. A student is expected to record at least five of the listed experiments as per the specific instructions for each subject. These practicals should be duly checked and signed by the internal examiner.
- The format of writing any experiment in the practical file should include aim, apparatus required, simple theory, procedure, related practical skills, precautions etc.
- 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.

**Class XII**

- A. Items for Identification/ familiarity with the apparatus for assessment in practicals (All experiments)** Beaker, flask, petriplates, soil from different sites - sandy, clayey, loamy, small potted plants, aluminium foil, paint brush, test tubes, starch solution, iodine, ice cubes, Bunsen burner/spirit lamp/water bath, large flowers, Maize inflorescence, model of developmental stages highlighting morula and blastula of frog, beads/seeds of different shapes/size/texture *Ascaris*, Cactus/*Opuntia*(model).

**B. List of Practicals**

1. Study of flowers adapted to pollination by different agencies (wind, insects).
2. Identification of T.S of morula or blastula of frog (Model).
3. Study of Mendelian inheritance pattern using beads/seeds of different sizes/texture.
4. Preparation of pedigree charts of genetic traits such as rolling of tongue, colour blindness.
5. Study of emasculation, tagging and bagging by trying out an exercise on controlled pollination.
6. Identify common disease causing organisms like *Ascaris* (model) and learn some common symptoms of the disease that they cause.
7. Comment upon the morphological adaptations of plants found in xerophytic conditions.

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

**Prescribed Books:**

1. Biology, Class-XII, Published by NCERT
2. Other related books and manuals brought out by NCERT (consider multimedia also)
3. Biology Supplementary Material (Revised). Available on CBSE website.

**Question Paper Design (Theory) 2022-23**

**Class XII**

**Biology (044)**

<b>Competencies</b>	
<b>Demonstrate Knowledge and Understanding</b>	50%
<b>Application of Knowledge / Concepts</b>	30%
<b>Analyze, Evaluate and Create</b>	20%

**Note:**

- Typology of questions: VSA including MCQs, Assertion – Reasoning type questions; SA; LA-I; LA-II; Source-based/ Case-based/ Passage-based/ Integrated assessment questions.
- An internal choice of approximately 33% would be provided.

**Suggestive verbs for various competencies**

- **Demonstrate, Knowledge and Understanding**  
State, name, list, identify, define, suggest, describe, outline, summarize, etc.
- **Application of Knowledge/Concepts**  
Calculate, illustrate, show, adapt, explain, distinguish, etc.
- **Analyze, Evaluate and Create**  
Interpret, analyse, compare, contrast, examine, evaluate, discuss, construct, etc.

## **CHEMISTRY (Code No. 043) (2022-2023)**

Higher Secondary is the most crucial stage of school education because specialized discipline-based, content-oriented courses are introduced at this juncture. Students reach this stage after 10 years of general education and opt for Chemistry to pursue their career in basic sciences or professional courses like medicine, engineering, technology and study courses in applied areas of science and technology at the tertiary level. Therefore, there is a need to provide learners with sufficient conceptual background in Chemistry, which will make them competent to meet the challenges of academic and professional courses after the senior secondary stage.

The new and updated curriculum is based on a disciplinary approach with rigour and depth taking care that the syllabus is not heavy and at the same time it is comparable to the international level. The knowledge related to the subject of Chemistry has undergone tremendous changes during the past decade. Many new areas like synthetic materials, biomolecules, natural resources, and industrial chemistry are coming in a big way and deserve to be an integral part of the chemistry syllabus at the senior secondary stage. At the international level, new formulations and nomenclature of elements and compounds, symbols and units of physical quantities floated by scientific bodies like IUPAC and CGPM are of immense importance and need to be incorporated into the updated syllabus. The revised syllabus takes care of all these aspects. Greater emphasis has been laid on the use of new nomenclature, symbols and formulations, the teaching of fundamental concepts, application of concepts in chemistry to industry/ technology, logical sequencing of units, removal of obsolete content and repetition, etc.

### **OBJECTIVES**

The curriculum of Chemistry at Senior Secondary Stage aims to:

- promote understanding of basic facts and concepts in chemistry while retaining the excitement of chemistry.
- make students capable of studying chemistry in academic and professional courses (such as medicine, engineering, technology) at tertiary level.
- expose the students to various emerging new areas of chemistry and apprise them with their relevance in future studies and their application in various spheres of chemical sciences and technology.
- equip students to face various challenges related to health, nutrition, environment, population, weather, industries and agriculture.
- develop problem solving skills in students.
- expose the students to different processes used in industries and their technological applications.
- apprise students with interface of chemistry with other disciplines of science such as physics, biology, geology, engineering etc.
- acquaint students with different aspects of chemistry used in daily life.
- develop an interest in students to study chemistry as a discipline.
- integrate life skills and values in the context of chemistry.

### **COURSE STRUCTURE**

## CLASS–XI (THEORY) (2022-23)

Time:3Hours

Total Marks70

S.NO	UNIT	PERIODS	MARKS
1	Some Basic Concepts of Chemistry	18	7
2	Structure of Atom	20	9
3	Classification of Elements and Periodicity in Properties	12	6
4	Chemical Bonding and Molecular Structure	20	7
5	Chemical Thermodynamics	23	9
6	Equilibrium	20	7
7	Redox Reactions	9	4
8	Organic Chemistry: Some basic Principles and Techniques	20	11
9	Hydrocarbons	18	10
	<b>TOTAL</b>	<b>160</b>	<b>70</b>

### Unit I: Some Basic Concepts of Chemistry

18 Periods

General Introduction: Importance and scope of Chemistry. Nature of matter, laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules. Atomic and molecular masses, mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry.

### Unit II: Structure of Atom

20 Periods

Discovery of Electron, Proton and Neutron, atomic number, isotopes and isobars. Thomson's model and its limitations. Rutherford's model and its limitations, Bohr's model and its limitations, concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbitals, quantum numbers, shapes of s, p and d orbitals, rules for filling electrons in orbitals - Aufbau 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 Elements and Periodicity in Properties

12 Periods

Significance of classification, brief history of the development of periodic table, modern periodic law and the present form of periodic table, periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valency. Nomenclature of elements with atomic number greater than 100.

### Unit IV: Chemical Bonding and Molecular Structure

20 Periods

Valence electrons, ionic bond, covalent bond, bond parameters, Lewis's structure, polar character of covalent bond, covalent character of ionic 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 diatomic molecules (qualitative idea only), Hydrogen bond.

#### **Unit VI: Chemical Thermodynamics**

**23 Periods**

Concepts of System and types of systems, surroundings, work, heat, energy, extensive and intensive properties, state functions. First law of thermodynamics - internal energy and enthalpy, heat capacity and specific heat, measurement of  $\Delta U$  and  $\Delta H$ , Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. Second law of Thermodynamics (brief introduction) Introduction of entropy as a state function, Gibb's energy change for spontaneous and non-spontaneous processes, criteria for equilibrium. Third law of thermodynamics (brief introduction).

#### **Unit VII: Equilibrium**

**20 Periods**

Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium - Le Chatelier's principle, ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of poly basic acids, acid strength, concept of pH, hydrolysis of salts (elementary idea), buffer solution, Henderson Equation, solubility product, common ion effect (with illustrative examples).

#### **Unit VIII: Redox Reactions**

**09 Periods**

Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, in terms of loss and gain of electrons and change in oxidation number, applications of redox reactions.

#### **Unit XII: Organic Chemistry -Some Basic Principles and Techniques**

**20 Periods**

General introduction, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds. Electronic displacements in a covalent bond: inductive effect, electromeric effect, resonance and hyper conjugation. Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions, electrophiles and nucleophiles, types of organic reactions.

#### **Unit XIII: Hydrocarbons**

**18 Periods**

##### **Classification of Hydrocarbons**

##### **Aliphatic Hydrocarbons:**

Alkanes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis.

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

Alkynes - Nomenclature, the 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, halogenation, Friedel Craft's alkylation and acylation, directive influence of the functional group in monosubstituted benzene. Carcinogenicity and toxicity.

**PRACTICALS****3 HOURS/ 30 Marks**

<b>Evaluation Scheme for Examination</b>	<b>Marks</b>
Volumetric Analysis	08
Salt Analysis	08
Content Based Experiment	06
Project Work	04
Class record and viva	04
<b>Total</b>	<b>30</b>

**PRACTICAL SYLLABUS****Total Periods: 60**

**Micro-chemical methods are available for several of the practical experiments, wherever possible such techniques should be used.**

**A. Basic Laboratory Techniques**

1. Cutting glass tube and glass rod
2. Bending a glass tube
3. Drawing out a glass jet
4. Boring a cork

**B. Characterization and Purification of Chemical Substances**

1. Determination of melting point of an organic compound.
2. Determination of boiling point of an organic compound.
3. Crystallization of impure sample of any one of the following: Alum, Copper Sulphate, Benzoic Acid.

**C. Experiments based on pH**

1. Any one of the following experiments:
  - Determination of pH of some solutions obtained from fruit juices, solution of known and varied concentrations of acids, bases and salts using pH paper or universal indicator.



- Comparing the pH of solutions of strong and weak acids of same concentration. □ Study the pH change in the titration of a strong base using universal indicator.
2. Study the pH change by common-ion in case of weak acids and weak bases.

#### D. Chemical Equilibrium

##### One of the following experiments:

1. Study the shift in equilibrium between ferric ions and thiocyanate ions by increasing/decreasing the concentration of either of the ions.
2. Study the shift in equilibrium between  $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$  and chloride ions by changing the concentration of either of the ions.

#### E. Quantitative Estimation

1. Using a mechanical balance/electronic balance.
2. Preparation of standard solution of Oxalic acid.
3. Determination of strength of a given solution of Sodium hydroxide by titrating it against standard solution of Oxalic acid.
4. Preparation of standard solution of Sodium carbonate.
5. Determination of strength of a given solution of hydrochloric acid by titrating it against standard Sodium Carbonate solution.

#### F. Qualitative Analysis

1. Determination of one anion and one cation in a given salt

##### Cation:

$\text{Pb}^{2+}$ ,  $\text{Cu}^{2+}$ ,  $\text{As}^{3+}$ ,  $\text{Al}^{3+}$ ,  $\text{Fe}^{3+}$ ,  $\text{Mn}^{2+}$ ,  $\text{Zn}^{2+}$ ,  $\text{Ni}^{2+}$ ,  $\text{Ca}^{2+}$ ,  $\text{Sr}^{2+}$ ,  $\text{Ba}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{NH}_4^+$

##### Anions:

$(\text{CO}_3)^{2-}$ ,  $\text{S}^{2-}$ ,  $(\text{SO}_3)^{2-}$ ,  $(\text{NO}_2)^-$ ,  $(\text{SO}_4)^{2-}$ ,  $\text{Cl}^-$ ,  $\text{Br}^-$ ,  $\text{I}^-$ ,  $(\text{PO}_4)^{3-}$ ,  $(\text{C}_2\text{O}_4)^{2-}$ ,  $\text{CH}_3\text{COO}^-$ ,  $\text{NO}_3^-$

**(Note: Insoluble salts excluded)**

2. Detection of -Nitrogen, Sulphur, Chlorine in organic compounds.

#### G. PROJECTS

Scientific investigations involving laboratory testing and collecting information from other sources.

A few suggested Projects

- Checking the bacterial contamination in drinking water by testing sulphide ion
- Study of the methods of purification of water
- 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).
- Investigation of the foaming capacity of different washing soaps and the effect of addition of Sodium carbonate on it
- Study the acidity of different samples of tea leaves.
- Determination of the rate of evaporation of different liquids.
- Study the effect of acids and bases on the tensile strength of fibers.

- Study of acidity of fruit and vegetable juices.

Note: Any other investigatory project, which involves about 10 periods of work, can be chosen with the approval of the teacher.

### **PRACTICAL EXAMINATION FOR VISUALLY IMPAIRED STUDENTS**

**Note:** Same Evaluation scheme and general guidelines for visually impaired students as given for Class XII may be followed.

#### **A. List of apparatus for identification for assessment in practical (All experiments)**

Beaker, tripod stand, wire gauze, glass rod, funnel, filter paper, Bunsen burner, test-tube, test-tube stand, dropper, test tube holder, ignition tube, china dish, tongs, standard flask, pipette, burette, conical flask, clamp stand, dropper, wash bottle

- Odour detection in qualitative analysis
- Procedure/Setup of the apparatus

#### **B. List of Experiments A. Characterization and Purification of Chemical Substances**

1. Crystallization of an impure sample of any one of the following: copper sulphate, benzoic acid

#### **C. Experiments based on pH**

1. Determination of pH of some solutions obtained from fruit juices, solutions of known and varied concentrations of acids, bases and salts using pH paper
2. Comparing the pH of solutions of strong and weak acids of same concentration.

#### **D. Chemical Equilibrium**

1. Study the shift in equilibrium between ferric ions and thiocyanate ions by increasing/decreasing the concentration of either ions.
2. Study the shift in equilibrium between  $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$  and chloride ions by changing the concentration of either of the ions.

#### **E. Quantitative estimation**

1. Preparation of standard solution of oxalic acid.
2. Determination of molarity of a given solution of sodium hydroxide by titrating it against standard solution of oxalic acid.

#### **F. Qualitative Analysis**

1. Determination of one anion and one cation in a given salt
2. Cations -  $\text{NH}_4^+$

Anions –  $(\text{CO}_3)^{2-}$ ,  $\text{S}^{2-}$ ,  $(\text{SO}_3)^{2-}$ ,  $\text{Cl}^-$ ,  $\text{CH}_3\text{COO}^-$   
(Note: insoluble salts excluded)

3. Detection of Nitrogen in the given organic compound.
4. Detection of Halogen in the given organic compound.

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

**PRESCRIBED BOOKS:**

1. Chemistry Part – I, Class-XI, Published by NCERT.
2. Chemistry Part – II, Class-XI, Published by NCERT.
3. Laboratory Manual of Chemistry, Class XI Published by NCERT
4. Other related books and manuals of NCERT including multimedia and online sources

**Note:**

**The content indicated in NCERT textbooks as excluded for the year 2022-23 is not to be tested by schools.**

**CLASS XII (2022-23) (THEORY)****Time: 3 Hours****70 Marks**

S.No.	Title	No. of Periods	Marks
1	Solutions	15	7
2	Electrochemistry	18	9
3	Chemical Kinetics	15	7
4	d -and f -Block Elements	18	7
5	Coordination Compounds	18	7
6	Haloalkanes and Haloarenes	15	6
7	Alcohols, Phenols and Ethers	14	6
8	Aldehydes, Ketones and Carboxylic Acids	15	8
9	Amines	14	6
10	Biomolecules	18	7
	<b>Total</b>	<b>160</b>	<b>70</b>

**Unit II: Solutions****15 Periods**

Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor.

**Unit III: Electrochemistry****18 Periods**

Redox reactions, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, Relation between Gibbs energy change and EMF of a cell, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis and law of electrolysis (elementary idea), dry cell-electrolytic cells and Galvanic cells, lead accumulator, fuel cells, corrosion.

**Unit IV: Chemical Kinetics****15 Periods**

Rate of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst; order and molecularity of a reaction, rate law and specific rate constant, integrated rate equations and half-life (only for zero and first order reactions), concept of collision theory (elementary idea, no mathematical treatment), activation energy, Arrhenius equation.

**Unit VIII: d and f Block Elements****18 Periods**

General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first-row transition metals – metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic

properties, interstitial compounds, alloy formation, preparation and properties of  $K_2Cr_2O_7$  and  $KMnO_4$ .

### **Lanthanoids –**

Electronic configuration, oxidation states, chemical reactivity and lanthanoid contraction and its consequences.

**Actinoids** - Electronic configuration, oxidation states and comparison with lanthanoids.

## **Unit IX: Coordination Compounds**

**18 Periods**

Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT, and CFT; structure and stereoisomerism, the importance of coordination compounds (in qualitative analysis, extraction of metals and biological system).

## **Unit X: Haloalkanes and Haloarenes.**

**15 Periods**

**Haloalkanes:** Nomenclature, nature of C–X bond, physical and chemical properties, optical rotation mechanism of substitution reactions.

**Haloarenes:** Nature of C–X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only). Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.

## **Unit XI: Alcohols, Phenols and Ethers**

**14 Periods**

**Alcohols:** Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration, uses with special reference to methanol and ethanol.

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

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

## **Unit XII: Aldehydes, Ketones and Carboxylic Acids**

**15 Periods**

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

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

## **Unit XIII: Amines**

**14 Periods**

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

**Diazonium salts:** Preparation, chemical reactions and importance in synthetic organic chemistry.

#### Unit XIV: Biomolecules

18 Periods

**Carbohydrates** - Classification (aldoses and ketoses), monosaccharides (glucose and fructose), D-L configuration oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen); Importance of carbohydrates.

**Proteins** -Elementary idea of - amino acids, peptide bond, polypeptides, proteins, structure of proteins - primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins; enzymes. Hormones - Elementary idea excluding structure.

**Vitamins** - Classification and functions.

**Nucleic Acids:** DNA and RNA.

#### Note:

*The content indicated in NCERT textbooks as excluded for the year 2022-23 is not to be tested by schools.*

#### PRACTICALS 3 HOURS/ 30 MARKS

Evaluation Scheme for Examination	Marks
Volumetric Analysis	08
Salt Analysis	08
Content Based Experiment	06
Project Work	04
Class record and viva	04
<b>Total</b>	<b>30</b>

#### PRACTICAL SYLLABUS

60 Periods

Micro-chemical methods are available for several of practical experiments.

Wherever possible, such techniques should be used.

##### A. Surface Chemistry

- (a) Preparation of one lyophilic and one lyophobic sol

Lyophilic sol - starch, egg albumin and gum

Lyophobic sol - aluminium hydroxide, ferric hydroxide, arsenous sulphide.

- (b) Dialysis of sol-prepared in (a) above.  
(c) Study of the role of emulsifying agents in stabilizing the emulsion of different oils.

##### B. Chemical Kinetics

- (a) Effect of concentration and temperature on the rate of reaction between Sodium Thiosulphate and Hydrochloric acid.  
(b) Study of reaction rates of any one of the following:  
(i) Reaction of Iodide ion with Hydrogen Peroxide at room temperature using different concentrations of Iodide ions.

- (ii) Reaction between Potassium Iodate, ( $\text{KIO}_3$ ) and Sodium Sulphite: ( $\text{Na}_2\text{SO}_3$ ) using starch solution as an indicator (clock reaction).

### C. Thermochemistry

Any one of the following experiments

- Enthalpy of dissolution of Copper Sulphate or Potassium Nitrate.
- Enthalpy of neutralization of strong acid (HCl) and strong base (NaOH).
- Determination of enthalpy change during interaction (Hydrogen bond formation) between Acetone and Chloroform.

### D. Electrochemistry

Variation of cell potential in  $\text{Zn/Zn}^{2+}||\text{Cu}^{2+}/\text{Cu}$  with change in concentration of electrolytes ( $\text{CuSO}_4$  or  $\text{ZnSO}_4$ ) at room temperature.

### E. Chromatography

- Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of  $R_f$  values.
- Separation of constituents present in an inorganic mixture containing two cations only (constituents having large difference in  $R_f$  values to be provided).

### F. Preparation of Inorganic Compounds

Preparation of double salt of Ferrous Ammonium Sulphate or Potash Alum. Preparation of Potassium Ferric Oxalate.

### G. Preparation of Organic Compounds

Preparation of any one of the following compounds

- Acetanilide
- Di-benzalacetone
- p-Nitroacetanilide
- Aniline yellow or 2-Naphthol Anilinedye.

### H. Tests for the functional groups present in organic compounds:

Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (Primary) groups.

### I. Characteristic tests of carbohydrates, fats and proteins in pure samples and their detection in given foodstuffs.

### J. Determination of concentration/ molarity of $\text{KMnO}_4$ solution by titrating it against a standard solution of:

- Oxalic acid,
- Ferrous Ammonium Sulphate

(Students will be required to prepare standard solutions by weighing themselves).

### K. Qualitative analysis

Determination of one anion and one cation in a given salt

#### Cation:

$\text{Pb}^{2+}$ ,  $\text{Cu}^{2+}$ ,  $\text{As}^{3+}$ ,  $\text{Al}^{3+}$ ,  $\text{Fe}^{3+}$ ,  $\text{Mn}^{2+}$ ,  $\text{Zn}^{2+}$ ,  $\text{Ni}^{2+}$ ,  $\text{Ca}^{2+}$ ,  $\text{Sr}^{2+}$ ,  $\text{Ba}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{NH}_4^+$

#### Anions:

$(\text{CO}_3)^{2-}$ ,  $\text{S}^{2-}$ ,  $(\text{SO}_3)^{2-}$ ,  $(\text{NO}_2)^-$ ,  $(\text{SO}_4)^{2-}$ ,  $\text{Cl}^-$ ,  $\text{Br}^-$ ,  $\text{I}^-$ ,  $(\text{PO}_4)^{3-}$ ,  $(\text{C}_2\text{O}_4)^{2-}$ ,  $\text{CH}_3\text{COO}^-$ ,  $\text{NO}_3^-$   
**(Note: Insoluble salts excluded)**

### INVESTIGATORY PROJECT

Scientific investigations involving laboratory testing and collecting information from other sources A few suggested Projects.

- Study of the presence of oxalate ions in guava fruit at different stages of ripening.
- Study the quantity of casein present in different samples of milk.
- Preparation of soybean milk and its comparison with natural milk with respect to curd formation, the effect of temperature, etc.
- Study of the effect of Potassium Bisulphate as a food preservative under various conditions (temperature, concentration, time, etc.)
- Study of digestion of starch by salivary amylase and effect of pH and temperature on it.
- Comparative study of the rate of fermentation of the following materials: wheat flour, gram flour, potato juice, carrot juice, etc.
- Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).
- Study of common food adulterants in fat, oil, butter, sugar, turmeric power, chilli powder and pepper.

**Note:** Any other investigatory project, which involves about 10 periods of work, can be chosen with the approval of the teacher.

### Practical Examination for Visually Impaired Students of Classes XI and XII Evaluation Scheme

Time Allowed: Two hours

Max. Marks:30

Topic	Marks
Identification/Familiarity with the apparatus	5
Written test (based on given/prescribed practicals)	10
Practical Record	5
Viva	10
<b>Total</b>	<b>30</b>

### General Guidelines

- The practical examination will be of two hours duration.
- A separate list of ten experiments is included here.
- The written examination in practicals for these students will be conducted at the time of the practical examination of all other students.
- The written test will be of 30 minutes duration.
- 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.
- A writer may be allowed to such students as per CBSE examination rules.



- All questions included in the question papers should be related to the listed practical. Every question should require about two minutes to be answered.
- These students are also required to maintain a practical file. A student is expected to record at least five of the listed experiments as per the specific instructions for each subject. These practicals should be duly checked and signed by the internal examiner.
- The format of writing any experiment in the practical file should include aim, apparatus required, simple theory, procedure, related practical skills, precautions etc.
- 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.

### **1. Items for Identification/Familiarity of the apparatus for assessment in practical (All experiments)**

Beaker, glass rod, tripod stand, wire gauze, Bunsen burner, Whatman filter paper, gas jar, capillary tube, pestle and mortar, test tubes, tongs, test tube holder, test tube stand, burette, pipette, conical flask, standard flask, clamp stand, funnel, filter paper

Hands-on Assessment

- Identification/familiarity with the apparatus
- Odour detection in qualitative analysis

### **2. List of Practicals**

**The experiments have been divided into two sections:**

**Section A and Section B.**

**The experiments mentioned in Section B are mandatory.**

#### **SECTION- A**

##### **A Surface Chemistry**

- 1 Preparation of one lyophilic and one lyophobic sol - starch, egg albumin and gum
- 2 Preparation of one lyophobic sol– Ferric hydroxide

##### **B Chromatography**

Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of  $R_f$  values (distance values may be provided).

##### **C Tests for the functional groups present in organic compounds:**

- (1) Alcoholic and Carboxylic groups.
- (2) Aldehydic and Ketonic

**D Characteristic tests of carbohydrates and proteins in the given foodstuffs.**

**E Preparation of Inorganic Compounds- Potash Alum**

**SECTION-B (Mandatory)**

**F Quantitative analysis**

- (1) (a) Preparation of the standard solution of Oxalic acid of a given volume
- (b) Determination of molarity of  $\text{KMnO}_4$  solution by titrating it against a standard solution of Oxalic acid.
- (2) The above exercise [F 1 (a) and (b)] to be conducted using Ferrous ammonium sulphate (Mohr's salt)

**G Qualitative analysis:**

- (1) Determination of one cation and one anion in a given salt. Cation  $-\text{NH}_4^+$   
Anions  $-\text{CO}_3^{2-}$ ,  $\text{S}^{2-}$ ,  $\text{SO}_3^{2-}$ ,  $\text{Cl}^-$ ,  $\text{CH}_3\text{COO}^-$   
(Note: Insoluble salts excluded)

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

**PRESCRIBED BOOKS**

1. Chemistry Part -I, Class-XII, Published by NCERT.
2. Chemistry Part -II, Class-XII, Published by NCERT.
3. Laboratory Manual of Chemistry, Class XI Published by NCERT
4. Other related books and manuals of NCERT including multimedia and online sources

**QUESTION PAPER DESIGN CLASSES –XI and XII (2022-23)**

S.No	Domains	Marks	%
1	<b>Remembering and Understanding:</b> Exhibit memory of previously learned material by recalling facts, terms, basic concepts and answers. Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions and stating main ideas.	28	40
2	<b>Applying:</b> Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	21	30
3	<b>Analyzing, Evaluating and Creating:</b> Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations. Present and defend opinions by making judgments about information, the validity of ideas or quality of work based on a set of criteria. Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.	21	30

**For more details kindly refer to Sample Question Paper of class XII for the year 2022-23 to be published by CBSE at its website.**

## **ENGLISH (CORE)**

**Code No. 301**

**(2022-23)**

### **Background**

Students are expected to have acquired a reasonable degree of language proficiency in English Language by the time they come to class XI, and the course aims, essentially, at promoting the higher-order language skills.

For a large number of students, the higher secondary stage will be a preparation for the university, where a fairly high degree of proficiency in English may be required. But for another large group, the higher secondary stage may be a preparation for entry into the professional domain. The Core Course should cater to both groups by promoting the language skills required for academic study as well as the language skills required for the workplace.

### **Competencies to be focused on:**

The general objectives at this stage are to:

- listen and comprehend live as well as record in writing oral presentations on a variety of topics
- develop greater confidence and proficiency in the use of language skills necessary for social and academic purpose to participate in group discussions, interviews by making short oral presentation on given topics
- perceive the overall meaning and organisation of the text (i.e., correlation of the vital portions of the text)
- identify the central/main point and supporting details, etc., to build communicative competence in various lexicons of English
- promote advanced language skills with an aim to develop the skills of reasoning, drawing inferences, etc. through meaningful activities
- translate texts from mother tongue(s) into English and vice versa
- develop ability and acquire knowledge required in order to engage in independent reflection and enquiry
- read and comprehend extended texts (prescribed and non-prescribed) in the following genres: science fiction, drama, poetry, biography, autobiography, travel and sports literature, etc.
- text-based writing (i.e., writing in response to questions or tasks based on prescribed or unseen texts) understand and respond to lectures, speeches, etc.
- write expository / argumentative essays, explaining or developing a topic, arguing a case, etc. write formal/informal letters and applications for different purposes

- make use of contextual clues to infer meanings of unfamiliar vocabulary
- select, compile and collate information for an oral presentation
- produce unified paragraphs with adequate details and support
- use grammatical structures accurately and appropriately
- write items related to the workplace (minutes, memoranda, notices, summaries, reports etc.
- filling up of forms, preparing CV, e-mail messages., making notes from referencematerials, recorded talks etc.

The core course should draw upon the language items suggested for class IX-X and delve deeper into their usage and functions. Particular attention may, however, be given to the following areas of grammar:

- The use of passive forms in scientific and innovative writings.
- Convert one kind of sentence/clause into a different kind of structure as well as other items to exemplify stylistic variations in different discourses modal auxiliaries- uses based on semantic considerations.

### **A. Specific Objectives of Reading**

Students are expected to develop the following study skills:

- skim for main ideas and scan for details
- refer to dictionaries, encyclopedia, thesaurus and academic reference material in any format
- select and extract relevant information, using reading skills of skimming and scanning
- understand the writer's purpose and tone
- comprehend the difference between the literal and the figurative
- differentiate between claims and realities, facts and opinions, form business opinions on the basis of latest trends available
- comprehend technical language as required in computer related fields, arrive at personal conclusion and logically comment on a given text.
- Specifically develop the ability to be original and creative in interpreting opinion, develop the ability to be logically persuasive in defending one's opinion and making notes based on a text.

### **Develop literary skills as enumerated below:**

- respond to literary texts
- appreciate and analyse special features of languages that differentiate literary texts from non-literary ones, explore and evaluate features of character, plot, setting, etc.
- understand and appreciate the oral, mobile and visual elements of drama. Identify the elements of style such as humour, pathos, satire and irony, etc.
- make notes from various resources for the purpose of developing the extracted ideas into sustained pieces of writing

## **B. Listening and Speaking**

Speaking needs a very strong emphasis and is an important objective leading to professional competence. Hence, testing of oral skills must be made an important component of the overall testing pattern. To this end, speaking and listening skills are overtly built into the material to guide the teachers in actualization of the skills.

### **Specific Objectives of Listening & Speaking**

Students are expected to develop the ability to:

- take organized notes on lectures, talks and listening passages
- listen to news bulletins and to develop the ability to discuss informally a wideranging issues like current national and international affairs, sports, business, etc.
- respond in interviews and to participate in formal group discussions.
- make enquiries meaningfully and adequately and to respond to enquiries for the purpose of travelling within the country and abroad.
- listen to business news and to be able to extract relevant important information.
- to develop public speaking skills.

## **C. Specific Objectives of Writing**

**The students will be able to:**

- write letters to friends, relatives, etc. to write business and official letters.
- open accounts in post offices and banks. To fill in railway/airline reservation forms.
- draft notices, advertisements and design posters effectively and appropriately
- write on various issues to institutions seeking relevant information, lodge complaints, express gratitude or render apology.
- write applications, fill in application forms, prepare a personal bio-data for admission into colleges, universities, entrance tests and jobs.
- write informal reports as part of personal letters on functions, programmes and activities held in school (morning assembly, annual day, sports day, etc.)
- write formal reports for school magazines/events/processes/ or in local newspapers about events or occasions.
- express opinions, facts, arguments in the form of speech or debates, using a variety of accurate sentence structures
- draft papers to be presented in symposia.
- take down notes from talks and lectures.
- write examination answers according to the requirement of various subjects.
- summarise a text.

## **D. More About Reading**

Inculcating good reading habits in children has always been a concern for all stakeholders in education. The purpose is to create independent thinking individuals with the ability to not only create their own knowledge but also critically interpret, analyse and evaluate it with objectivity and fairness. This will also help students in learning and acquiring better language skills.

Creating learners for the 21st century involves making them independent learners who can learn, unlearn and relearn. If our children are in the habit of reading, they will learn to reinvent themselves and deal with the many challenges that lie ahead of them.

Reading is not merely decoding information or pronouncing words correctly. It is an interactive dialogue between the author and the reader in which the reader and the author share their experiences and knowledge with each other. Good readers are critical readers with an ability to arrive at a deeper understanding of not only the world presented in the book but also of the real world around them.

Consequently, they become independent thinkers capable of taking their own decisions in life rationally. Hence, a few activities are suggested below which teachers may use as a part of the reading project.

- Short review / dramatization of the story
- Commentary on the characters
- Critical evaluation of the plot, storyline and characters
- Comparing and contrasting the characters within the story, with other characters in stories by the same author or by different authors
- Extrapolating about the story read or life of characters after the story ends defending characters actions in the story
- Making an audio story out of the novel/text to be read aloud.
- Interacting with the author
- Holding a literature fest where students role-play as various characters to interact with each other
- Role playing as authors/poets/dramatists, to defend their works and characters
- Symposiums and seminars for introducing a book, an author, or a theme
- Creating graphic novels out of novel or short stories they read
- Dramatizing incidents from a novel or a story
- Creating their own stories
- Books of one genre to be read by the whole class.

Teachers may select books and e-books suitable to the age and level of the learners. Care ought to be taken to choose books that are appropriate in terms of language, theme and content and which do not hurt the sensibilities of a child.

Teachers may later suggest books from other languages by dealing with the same themes as an extended activity. The Project should lead to independent learning/reading skills and hence the chosen book should not be taught in class, but may be introduced through activities and be left for the students to read at their own pace. Teachers may, however, choose to assess a student's progress or success in reading the book by asking for verbal or written progress reports, looking at their diary entries, engaging in a discussion about the book, giving a short quiz or a work sheet about the book/short story. A befitting mode of assessment may be chosen by the teacher.

### **Methods and Techniques**

The techniques used for teaching should promote habits of self-learning and reduce dependence on the teacher. In general, we recommend a multi-skill, learner-centred, activity based approach, of which there can be many variations. The core classroom activity is likely to be that of silent reading of prescribed/selected texts for comprehension, which can lead to other forms of language learning activities such as role-play, dramatization, group discussion, writing, etc., although many such activities could be carried out without the preliminary use of textual material. It is important that students be trained to read independently and intelligently, interacting actively with texts, with the use of reference materials (dictionary, thesaurus, etc.) where necessary. Some pre-reading activity will generally be required, and the course books should suggest suitable activities, leaving teachers free to devise other activities when desired. So also, the reading of texts should be followed by post reading activities. It is important to remember that students should be encouraged to interpret texts in different ways.

Group and pair activities can be resorted to when desired, although many useful language activities can be carried out individually. In general, teachers should encourage students to interact actively with texts and with each other. Oral activity (group discussion, etc.) should be encouraged.

**ENGLISH CORE  
CODE NO. 301  
CLASS – XI (2022-23)**

**Section A  
Reading Skills**

**Reading Comprehension through Unseen Passage** **18 Marks**

**I.** One unseen passage to assess comprehension, interpretation inference and vocabulary. The passage may be factual, descriptive or literary.

**II.** One unseen **case-based** passage with verbal/visual inputs like statistical data, charts etc.

*Note: The combined word limit for both the passages will be 600-750.*

Multiple Choice Questions / Objective Type Questions will be asked. **(10+8 = 18 Marks)**

**III.** Note Making and Summarization based on a passage of approximately 200-250 words.

- |            |                            |   |                |
|------------|----------------------------|---|----------------|
| <b>i.</b>  | Note Making:               |   | <b>5 Marks</b> |
|            | ○ Title:                   | 1 |                |
|            | ○ Numbering and indenting: | 1 |                |
|            | ○ Key/glossary:            | 1 |                |
|            | ○ Notes:                   | 2 |                |
| <b>ii.</b> | Summary (up to 50 words):  |   | <b>3 Marks</b> |
|            | ○ Content:                 | 2 |                |
|            | ○ Expression:              | 1 |                |

**Section B**

**IV. Grammar** **7 Marks**

i. Questions on Gap filling (Tenses, Clauses)

ii. Questions on re-ordering/transformation of sentences

**(Total seven questions to be done out of the eight given).**

**V. Creative Writing Skills** **16 Marks**

i. Short writing task – Classified Advertisements up to 50 words. One out of the two given questions to be answered **(3 Marks: Format : 1 / Content : 1 / Expression : 1)**



- ii. Short writing task –**Poster** up to 50 words. One out of the two given questions to be answered. **(3marks:Format : 1 / Content : 1 / Expression : 1)**
- iii. Writing a Speech in 120-150 words based on verbal / visual cues related to some contemporary / age-appropriate topic.
- iv. Writing a Debate based on visual/verbal inputs in 120-150 words. The theme should be contemporary topical issues. One out of the two given questions to be answered. **(5 Marks: Format: 1 / Content: 2 / Expression: 2)**

### **Section C**

**This section will have variety of assessment items including Multiple Choice Questions, Objective Type Questions, Short Answer Type Questions and Long Answer Type Questions to assess comprehension, analysis, interpretation and extrapolation beyond the text.**

#### **VI. Reference to the Context**

- i. One Poetry extract out of two from the book **Hornbill** to assess comprehension, interpretation, analysis and appreciation. **(3x1=3 Marks)**
- ii. One Prose extract out of two from the book **Hornbill** to assess comprehension, interpretation, analysis and appreciation. **(3x1=3 Marks)**
- iii. One prose extract out of two from the book **Snapshots** to assess comprehension, interpretation and analysis. **(4x1=4 Marks)**

**VII.** Two Short answer type question (one from Prose and one from Poetry from the book **Hornbill**), out of four, to be answered in 40-50 words. Questions should elicit inferential responses through critical thinking. **(3x2=6 Marks)**

**VIII.** One Short answer type question, from the book **Snapshots**, to be answered in 40- 50 words. Questions should elicit inferential responses through critical thinking. Any 1 out of 2 questions to be done. **(3x1=3 Marks)**

**IX.** One Long answer type question, from **Prose/Poetry Hornbill**, to be answered in 120-150 words. Questions can be based on incident / theme / passage / extract / event as reference points to assess extrapolation beyond and across the text. The question will elicit analytical and evaluative response from student. Any 1 out of 2 questions to be done. **(1x6=6 Marks)**

**X.** One Long answer type question, based on the chapters from the book **Snapshots** to be answered in 120-150 words to assess global comprehension and extrapolation beyond the text. Questions to provide evaluative and analytical responses using incidents, events, themes as reference points. Any 1 out of 2 questions to be done. **(1x6=6 Marks)**

### **Prescribed Books**

**1. Hornbill:** English Reader published by National Council of Education Research and Training, New Delhi

- The Portrait of a Lady (Prose)
- A Photograph (Poem)
- “We’re Not Afraid to Die... if we can be together
- Discovering Tut: the Saga Continues
- The Laburnum Top (Poem)
- The Voice of the Rain (Poem)
- Childhood (Poem)
- The Adventure
- Silk Road (Prose)
- Father to Son

**2. Snapshots:** Supplementary Reader published by National Council of Education Research and Training, New Delhi

- The Summer of the Beautiful White Horse (Prose)
- The Address (Prose)
- Mother’s Day (Play)
- Birth (Prose)
- The Tale of Melon City

### **INTERNAL ASSESSMENT**

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

## Question Paper Design 2022-23 English

### CORE XI (Code No. 301)

Section	Competencies	Total marks
<b>Reading Skills</b>	Conceptual understanding, decoding, Analyzing, inferring, interpreting, appreciating, literary, conventions and vocabulary, summarizing and using appropriate format/s.	26
<b>Creative Writing Sills</b>	Conceptual Understanding, application of rules, Analysis, Reasoning, appropriacy of style and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity.	23
<b>Literature Text Books and Supplementary Reading Texts</b>	Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, Critical Thinking.	31
	<b>TOTAL</b>	<b>80</b>
	Assessment of Listening and Speaking Skills	<b>10</b>
	Internal Assessment <ul style="list-style-type: none"><li>• Listening</li><li>• Speaking</li><li>• Project Work</li></ul>	5 5 10
	<b>GRAND TOTAL</b>	<b>100</b>

**ENGLISH CORE**  
**CODE NO. 301**  
**CLASS – XII 2022-23**

**Section A**  
**Reading Skills**

**Reading Comprehension through Unseen Passage**

**20 Marks**

I. One unseen passage to assess comprehension, interpretation and inference. Vocabulary and inference of meaning will also be assessed. The passage may be factual, descriptive or literary.

**(10x1=10**

**Marks)**

II. One unseen **case-based** passage with verbal/visual inputs like statistical data, charts etc.

**(10x1=10 Marks)**

Note: The combined word limit for both the passages will be 700-750 words.

Multiple Choice Questions / Objective Type Questions will be asked.

**Section B**

**III. Creative Writing Skills**

**20 Marks**

The section has Short and Long writing tasks.

- i. Notice up to 50 words. One out of the two given questions to be answered. **(5 Marks:** Format : 1 / Organisation of Ideas: 1/Content : 2 / Accuracy of Spelling and Grammar : 1 ).
- ii. Formal/Informal Invitation and Reply up to 50 words. One out of the two given questions to be answered. **(5 Marks:** Format : 1 / Organisation of Ideas: 1/Content : 2 / Accuracy of Spelling and Grammar :1 ).
- iii. Letters based on verbal/visual input, to be answered in approximately 120-150 words. Letter types include application for a job with bio data or resume. Letters to the editor (giving suggestions or opinion on issues of public interest) . One out of the two given questions to be answered . **(5 Marks:** Format : 1 / Organisation of Ideas: 1/Content : 2 / Accuracy of Spelling and Grammar :1 ).
- iv. Article/ Report Writing, descriptive and analytical in nature, based on verbal inputs, to be answered in 120-150 words. One out of the two given questions to be . **(5 Marks:** Format : 1 / Organisation of Ideas: 1/Content : 2 / Accuracy of Spelling and Grammar :1 ).

### Section C

This section will have variety of assessment items including Multiple Choice Questions, Objective Type Questions, Short Answer Type Questions and Long Answer Type Questions to assess comprehension, analysis, interpretation and extrapolation beyond the text.

#### IV. Reference to the Context

40 Marks

- i. One Poetry extract out of two from the book **Flamingo** to assess comprehension, interpretation, analysis and appreciation. **(6x1=6 Marks)**
  - ii. One Prose extract out of two from the book **Vistas** to assess comprehension, interpretation, analysis and appreciation. **(4x1=4 Marks)**
  - iii. One prose extract out of two from the book **Flamingo** to assess comprehension, interpretation and analysis. **(6x1=6Marks)**
- V.** Short answer type question (**from Prose and Poetry from the book Flamingo**), to be answered in 40-50 words. Questions should elicit inferential responses through critical thinking. Five questions out of the six given are to be answered. **(5x2=10 Marks)**
- VI.** Short answer type question, from **Prose (Vistas)**, to be answered in 40- 50 words. Questions should elicit inferential responses through critical thinking. Any 2 out of 3 questions to be done. **(2x2=4 Marks)**
- VII.** One Long answer type question, from **Prose/Poetry (Flamingo)**, to be answered in 120-150 words. Questions can be based on incident / theme / passage / extract / event as reference points to assess extrapolation beyond and across the text. The question will elicit analytical and evaluative response from student. Any 1 out of 2 questions to be done. **(1x5=5 Marks)**
- VIII.** One Long answer type question, based on the chapters from the book **Vistas**,to be answered in 120-150 words to assess global comprehension and extrapolation beyond the text. Questions to provide evaluative and analytical responses using incidents, events, themes as reference points. Any 1 out of 2 questions to be done. **(1x5=5 Marks)**

## **Prescribed Books**

1. **Flamingo:** English Reader published by National Council of Education Research and Training, New Delhi

### **(Prose)**

- The Last Lesson
- Lost Spring
- Deep Water
- The Rattrap
- Indigo
- Poets and Pancakes
- The Interview
- Going Places

### **(Poetry)**

- My Mother at Sixty-Six
- Keeping Quiet
- A Thing of Beauty
- A Roadside Stand
- Aunt Jennifer's Tigers

2. **Vistas:** Supplementary Reader published by National Council of Education Research and Training, New Delhi

- The Third Level
- The Tiger King
- Journey to the end of the Earth
- The Enemy
- On the Face of It
- Memories of Childhood
  - The Cutting of My Long Hair
  - We Too are Human Beings

## **INTERNAL ASSESSMENT**

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

**Question Paper Design 2022-23**  
**Code No. 301**  
**English CORE XII**

<b>Section</b>	<b>Competencies</b>	<b>Total marks</b>
<b>Reading Skills</b>	Conceptual understanding, decoding, Analyzing, inferring, interpreting, appreciating, literary, conventions and vocabulary, summarizing and using appropriate format/s.	20
<b>Creative Writing Sills</b>	Conceptual Understanding, application of rules, Analysis, Reasoning, appropriacy of style and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity.	20
<b>Literature Text Books and Supplementary Reading Texts</b>	Recalling, reasoning, critical thinking, appreciating literary convention, inference, analysis, creativity with fluency.	40
	<b>TOTAL</b>	<b>80</b>
	Assessment of Listening and Speaking Skills	<b>10</b>
	Internal Assessment <ul style="list-style-type: none"> <li>• Listening</li> <li>• Speaking</li> <li>• Project Work</li> </ul>	5 5 10
	<b>GRAND TOTAL</b>	<b>100</b>

## Guidelines for Internal Assessment

### Classes XI-XII

ALS must be seen as an integrated component of all four language skills rather than a compartment of two. Suggested activities, therefore, take into consideration an integration of the four language skills but during assessment, emphasis will be given to speaking and listening, since reading and writing are already being assessed in the written exam.

#### Classes XI-XII Total Marks: 20

#### Assessment of Listening and Speaking Skills: (5+5=10 Marks)

**i. Activities:**

- Subject teachers must refer to books prescribed in the syllabus.
- In addition to the above, teachers may plan their own activities and create their own material for assessing the listening and speaking skills.

**ii. Parameters for Assessment:** The listening and speaking skills are to be assessed on the following parameters:

- a. Interactive competence (Initiation & turn taking, relevance to the topic)
- b. Fluency (cohesion, coherence and speed of delivery)
- c. Pronunciation
- d. Language (grammar and vocabulary)

A suggestive rubric is given below:

	1.	2.	3.	4.	5.
<b>Interaction</b>	<ul style="list-style-type: none"> <li>• Contributions are mainly unrelated to those of other speakers</li> <li>• Shows hardly any initiative in the development of conversation</li> <li>• Very limited interaction</li> </ul>	<ul style="list-style-type: none"> <li>• Contributions are often unrelated to those of the other speaker</li> <li>• Generally passive in the development of conversation</li> </ul>	<ul style="list-style-type: none"> <li>• Develops interaction adequately, makes however minimal effort to initiate conversation</li> <li>• Needs constant prompting to take turns</li> </ul>	<ul style="list-style-type: none"> <li>• Interaction is adequately initiated and develop</li> <li>• Can take turn but needs little prompting</li> </ul>	<ul style="list-style-type: none"> <li>• Can initiate &amp; logically develop simple conversation on familiar topics</li> <li>• Can take turns appropriately</li> </ul>
<b>Pronunciation</b>	<ul style="list-style-type: none"> <li>• Insufficient accuracy in pronunciation; many grammatical errors</li> <li>• Communication is severely affected</li> </ul>	<ul style="list-style-type: none"> <li>• Frequently unintelligible articulation</li> <li>• Frequent phonological errors</li> <li>• Major communication problems</li> </ul>	<ul style="list-style-type: none"> <li>• Largely correct pronunciation &amp; clear articulation except occasional errors</li> <li>• Some expressions cause stress without compromising with understanding of spoken discourse.</li> </ul>	<ul style="list-style-type: none"> <li>• Mostly correct pronunciation &amp; clear articulation</li> <li>• Can be clearly understood most of the time; very few phonological errors</li> </ul>	<ul style="list-style-type: none"> <li>• Can pronounce correctly &amp; articulate clearly</li> <li>• Is always comprehensible ; uses appropriate intonation</li> </ul>



<b>Fluency &amp; Coherence</b>	<b>1.</b> <ul style="list-style-type: none"> <li>Noticeably/ long pauses; rate of Speech is slow</li> <li>Frequent repetition and/or self- correction</li> <li>Links only basic sentences; breakdown of coherence evident</li> </ul>	<b>2.</b> <ul style="list-style-type: none"> <li>Usually fluent; produces simple speech fluently, but loses coherence in complex communication</li> <li>Often hesitates and/or resorts to slow speech</li> <li>Topics partly developed; not always concluded logically</li> </ul>	<b>3.</b> <ul style="list-style-type: none"> <li>Is willing to speak at length, however repetition is noticeable</li> <li>Hesitates and/or self corrects; occasionally loses coherence</li> <li>Topics mainly developed, but usually not logically concluded</li> </ul>	<b>4.</b> <ul style="list-style-type: none"> <li>Speaks without noticeable effort, with a little repetition</li> <li>Demonstrates hesitation to find words or use correct grammatical structures and/or self-correction</li> <li>Topics not fully developed to merit</li> </ul>	<b>5.</b> <ul style="list-style-type: none"> <li>Speaks fluently almost with no repetition &amp; minimal hesitation</li> <li>Develops topic fully &amp; coherently</li> </ul>
<b>Vocabulary &amp; Grammar</b>	<ul style="list-style-type: none"> <li>Demonstrates almost no flexibility, and mostly struggles for appropriate words</li> <li>Uses very basic vocabulary to express view-points.</li> </ul>	<ul style="list-style-type: none"> <li>Communicates with limited flexibility and appropriacy on some of the topics</li> <li>Complex forms and sentence structures are rare; exhibits limited vocabulary to express new ideas</li> </ul>	<ul style="list-style-type: none"> <li>Communicate s' with limited flexibility and appropriacy on most of the topics</li> <li>Sometimes uses complex forms and sentence structures; has limited vocabulary to describe/ express new points</li> </ul>	<ul style="list-style-type: none"> <li>Can express with some flexibility and appropriacy on most of the topics</li> <li>Demonstrates ability to use complex forms and sentence structures most of the time; expresses with adequate vocabulary</li> </ul>	<ul style="list-style-type: none"> <li>Can express with some flexibility and appropriacy on a variety of topics such as family, hobbies, work, travel and current events</li> <li>Frequently uses complex forms and sentence structures; has enough vocabulary to express himself/ herself</li> </ul>

**iii. Schedule:**

- The practice of listening and speaking skills should be done throughout the academic year.
- The final assessment of the skills is to be done as per the convenience and schedule of the school.

**Project Work + Viva: 10 Marks**

Out of ten marks, 5 marks will be allotted for the project report/script /essay etc. and 5 marks for the viva.

**I. Schedule:**

- Schools may refer to the suggestive timeline given in these guidelines for the planning, preparation and viva-voce of ALS based projects.
- The final assessment of the skills may be done on the basis of parameters suggested by the Board. Language teachers, however, have the option to adopt/ modify these parameters according to their school specific requirements.

**II. Suggestions for Project Work:**

- The Project can be inter-disciplinary in theme. The ideas/issues highlighted in the chapters/ poems/ drama given the prescribed books can also be developed in the form of a project. Students can also take up any relevant and age-appropriate theme.
- Such topics may be taken up that provide students with opportunities for listening and speaking.

Some suggestions are as follows:

**a. Interview-Based research:**

**Example:**

- Students can choose a topic on which to do their research/ interview, e.g. a student can choose the topic : “Evolving food tastes in my neighbourhood” or “Corona pandemic and the fallout on families.” Read the available literature.
  - The student then conducts interviews with a few neighbours on the topic. For an interview, with the help of the teacher, student will frame questions based on the preliminary research/background.
  - The student will then write an essay/ write up / report etc. up to 1000 words on his/her research and submit it. He / She will then take a viva on the research project. The project can be done in individually or in pairs/ groups
- b.** Listen to podcasts/ interviews/radio or TV documentary on a topic and prepare a report countering or agreeing with the speakers. Write an 800 - 1000 words report and submit. Take a viva on the report.
- c.** Students create their own video/ Audio, after writing a script. Before they decide a format, the following elements can be taken into consideration:
- Theme/topic of the audio / video. Would the child like to pick a current issue or something artistic like theatre?
  - What are the elements that need to be part of the script?
  - Will the video/audio have an interview with one or more guests?
  - Would they prefer to improvise while chatting with guests, or work from a script?
  - What would be the duration?
  - How would they present the script/report to the teacher, e.g. Can it be in the form of a narrative?
- d. Write, direct and present a theatrical production, /One act play**  
This will be a project which will be done as a team. It will involve planning, preparation and presentation. In short, various language skills will be utilised. There will be researching, discussion, writing the script, auditioning and ultimately producing the play. The project will end with a presentation and subsequently a viva. Teachers will be able to assess the core language skills of the students and help them grow as 21<sup>st</sup> century critical thinkers.

### **III. Instructions for the Teachers:-**

- 1. Properly orient students about the Project work, as per the present Guidelines.**
- 2. Facilitate the students in the selection of theme and topic.**
- 3. Create a rubric for assessment and share with the students before they start so that they know the parameters of assessment:**
  - Teachers need to familiarize themselves with the method of assessing students with the rubric-- a table with different criteria and a grading scale.
  - Choose the criteria on which you will grade students and list them along the left side of the page.
  - Create an even number of columns along the top of the page. These columns will represent potential skill levels of the students.
  - Assessing students on four/five criteria is an easy way to begin. For each criterion, define the ability that a student would exhibit at each of the levels.
- The more detailed you make your criteria, the easier it will be to evaluate each student and define the level at which the student is presenting.  
**{Sample Rubric is attached at the end for reference}**

### **IV. Parameters for Overall Assessment:-**

#### **1. Pronunciation:**

- When evaluating the pronunciation of the students, teachers must listen for clearly articulated words, pronunciation of unusual spellings and intonation.
- Assess the students for the pronunciation skills and determine at which level the student needs improvement.

#### **2. Vocabulary:**

- After noting their pronunciation levels, evaluate the students on the use of extensive and appropriate **vocabulary** during the viva. Check if students are using vocabulary appropriate to the context about which they are speaking.

#### **3. Accuracy:**

- Grammar has always been an important component of language skills. As students speak/ answer the questions during the viva, listen to their **grammatical structures**. *Are they competent enough to use multiple tenses? Is their word order correct in a given sentence?* An effective speaker will automatically use the correct grammatical structures of his language.

#### 4. Communication:

- Assessing the **communication skills** of the students means looking at more than language. Look at how creatively students use the language to make their points understood. Students with a low level of vocabulary and grammar may still have good communication skills if they are able to make the teacher understand their point of view.

#### 5. Interaction:

- During the viva teachers need to ask the students some questions. Questions need to be based on the projects that have been suggested or chosen by the students.
- It is imperative for a teacher to read the essays/project reports before they can be ready to ask questions.
- Teachers need to observe how students answer the questions that are posed to them: *Are they able to understand and answer questions independently or can they answer only when the questions are translated into simpler words or repeated? Are they able to give appropriate responses in a conversation?*
- These elements of **interaction** are necessary for clear and effective communication. A student with effective interaction skills will be able to answer questions with relative ease and follow the flow of conversation.

#### 6. Fluency:

- Fluency may be the easiest quality to judge in the students' speech: *How comfortable are they as they speak and express themselves? How easily do the words come out? Are there inappropriate pauses and gaps in the way a student speaks?*
- **Fluency** is a judgement of this communication and is an important criterion when evaluating speaking skills. These criteria: pronunciation, vocabulary, accuracy, interaction and fluency are all the hallmarks of a student's overall speaking abilities.
- Teachers must also remember that some **students may excel in one area and struggle in another**. Helping the students understand these issues will enable them to become effective speakers in future. Let your students know that you will be assessing them in these various areas when you evaluate their progress and encourage them to work and improve in these areas.
- **Finally**, teachers must remember that a proper evaluation of the students will take into consideration **more than just one oral interview on the final ASL project**. Teachers must take note of a student's progress throughout the academic year.

#### V. Project-Portfolio/ Project Report

The **Project-Portfolio/Project Report** is a compilation of the work that the students produce during the process of working on their ALS Project.

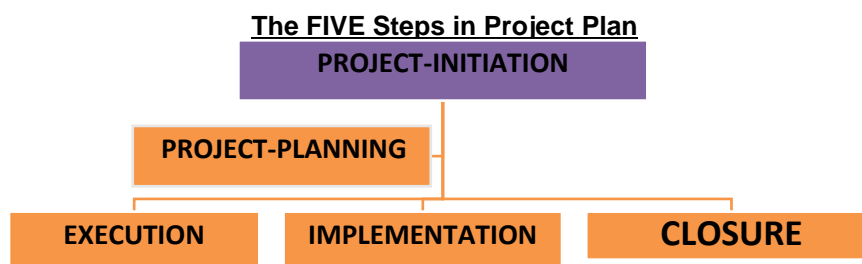
##### The Project-Portfolio may include the following:

- Cover page, with title of project, school details/details of students.
- Statement of purpose/objectives/goals
- Certificate of completion under the guidance of the teacher.
- Action plan for the completion of assigned tasks.
- Materials such as scripts for the theatre/role play, questionnaires for interview, written assignments, essays, survey-reports and other material evidence of learning progress and academic accomplishment.
- The 800-1000 words essay/Script/Report.
- Student/group reflections.
- If possible, Photographs that capture the positive learning experiences of the student(s).
- List of resources/bibliography.

##### The following points must be kept for consideration while assessing the project portfolios:

- Quality of content of the project
- Accuracy of information
- Adherence to the specified timeline
- Content in respect of (spellings, grammar ,punctuation)
- Clarity of thoughts and ideas
- Creativity
- Contributions by group members
- Knowledge and experience gained

VI. Suggestive Timeline:



Month	Objectives
<b>Planning and Research for the Project Work</b>  Preferably till November-December	<ul style="list-style-type: none"> <li>● Teachers plan a day to orient students about the ALS projects, details are shared with all stakeholders.</li> <li>● Students choose a project, select team members and develop project- plan.</li> <li>● Group meets (preferably online) and reports to the team leader about the progress: shortfalls and successes are detailed.</li> <li>● Team leader apprises teacher-mentor.</li> <li>● Students working individually or in pairs also update the teachers.</li> <li>● A logical, deliverable and practical plan is drafted by the team/ pair/individual. Goals/objectives are clearly defined for all.</li> <li>● Work is delegated to team members by the team leader. Students wishing to work alone develop their own plan of Action.</li> <li>● Detailed project schedules are shared with the teacher.</li> </ul>
<b>December-January</b>	<ul style="list-style-type: none"> <li>● Suggestions and improvements are shared by the teacher, wherever necessary.</li> <li>● Group members coordinate and keep communication channels open for interaction.</li> <li>● Gaps ( if any) are filled with the right skill sets by the Team Leader/ individual student.</li> </ul>
<b>January-February</b>	<ul style="list-style-type: none"> <li>● The final draft of the project portfolio/ report is prepared and submitted for evaluation.</li> </ul>
<b>January-February</b>	<ul style="list-style-type: none"> <li>● Students are assessed on their group/pair/individual presentations on allotted days. Final Viva is conducted by the External/Internal examiner.</li> </ul>
<b>February-March or as per the timelines given by the Board</b>	<ul style="list-style-type: none"> <li>● Marks are uploaded on the CBSE website.</li> </ul>

**SAMPLE RUBRIC FOR ALS Project Work  
(For Theatre/Role Play/Oral presentation/Interview/Podcast)**

CATEGORY	1	2	3	4	5
<b>TIME LIMIT</b>	Presentation is less than or more than 5 minutes long	Presentation exceeded or less than specified time limit by 4 to 5 minutes	Presentation exceeded or less than specified time limit by 3 to 4 minutes	Presentation exceeded or less than specified time limit by 2 to 3 minutes	Student/ group adhered to the given time limit
<b>CONTENT/SCRIPT/ QUESTIONNAIRE</b>	Script is not related to topic or issue	Well written script/ content shows little understanding of parts of topic	Well written script/ content shows good understanding of parts of topic	Well written script/ content shows a good understanding of subject topic	Well written script/ content shows full understanding of subject topic
<b>CREATIVITY</b>	No props/costumes/ stage presentation lack-lustre	Some work done, average stage set- up and costumes	Well organized presentation, could have improved	Logical use of props ,reasonable work done, creative	Suitable props / honest effort seen/ considerable work done/ creative and relevant costumes
<b>PREPAREDNESS</b>	Student /group seems to be unprepared	Some preparedness visible, but rehearsal is lacking	Somewhat prepared, rehearsal is lacking	Good preparedness ,but need better rehearsal	Complete preparedness/ rehearsed presentation
<b>CLARITY OF SPEECH</b>	Lack of clarity in presentation many words mispronounced	Speaks clearly, some words are mispronounced	Speaks clearly 90% of the time/ a few mispronounced words	Speaks clearly and distinctly 95% of time/ few mispronounced words	Speaks clearly distinctly 95% of time/ fluency in pronunciation
<b>USE OF PROPS ( Theatre/Role Play)</b>	Only 1/no relevant props used	1 to 2 relevant props used	2 to 3 relevant props used	3 to 4 relevant props used	4 to 5 relevant props used
<b>EXPRESSION/ BODY LANGUAGE</b>	Very little use of facial expressions/ body language, does not generate much interest	Little Use of facial expressions and body language	Facial expressions and body language are used to try to generate some enthusiasm	Facial expression and body language sometimes generate strong enthusiasm with the topic	Facial expression and body language generate strong enthusiasm with the topic
<b>PORTFOLIO- PRESENTATION</b>	Inadequate & unimpressive	Somewhat suitable & convincing	Adequate & relevant	Interesting, enjoyable & relevant	Brilliant, creative & exceptional

## हिंदी (आधार) (कोड सं.- 302) कक्षा 11वीं-12वीं (2022 -23 )

### प्रस्तावना :

दसवीं कक्षा तक हिंदी का अध्ययन करने वाला शिक्षार्थी समझते हुए पढ़ने व सुनने के साथ-साथ हिंदी में सोचने और उसे मौखिक एवं लिखित रूप में व्यक्त कर पाने की सामान्य दक्षता अर्जित कर चुका होता है। उच्चतर माध्यमिक स्तर पर आने के बाद इन सभी दक्षताओं को सामान्य से ऊपर उस स्तर तक ले जाने की आवश्यकता होती है, जहाँ भाषा का प्रयोग भिन्न-भिन्न व्यवहार-क्षेत्रों की मांगों के अनुरूप किया जा सके। आधार पाठ्यक्रम, साहित्यिक बोध के साथ-साथ भाषाई दक्षता के विकास को ज्यादा महत्त्व देता है। यह पाठ्यक्रम उन शिक्षार्थियों के लिए उपयोगी साबित होगा, जो आगे विश्वविद्यालय में अध्ययन करते हुए हिंदी को एक विषय के रूप में पढ़ेंगे या विज्ञान/सामाजिक विज्ञान के किसी विषय को हिंदी माध्यम से पढ़ना चाहेंगे। यह उनके लिए भी उपयोगी साबित होगा, जो उच्चतर माध्यमिक स्तर की शिक्षा के बाद किसी तरह के रोजगार में लग जाएंगे। वहाँ कामकाजी हिंदी का आधारभूत अध्ययन काम आएगा। जिन शिक्षार्थियों की रुचि जनसंचार माध्यमों में होगी, उनके लिए यह पाठ्यक्रम एक आरंभिक पृष्ठभूमि निर्मित करेगा। इसके साथ ही यह पाठ्यक्रम सामान्य रूप से तरह-तरह के साहित्य के साथ शिक्षार्थियों के संबंध को सहज बनाएगा। शिक्षार्थी भाषिक अभिव्यक्ति के सूक्ष्म एवं जटिल रूपों से परिचित हो सकेंगे। वे यथार्थ को अपने विचारों में व्यवस्थित करने के साधन के तौर पर भाषा का अधिक सार्थक उपयोग कर पाएँगे और उनमें जीवन के प्रति मानवीय संवेदना एवं सम्यक् दृष्टि का विकास हो सकेगा।

राष्ट्रीय पाठ्यचर्या की रूपरेखा, नई शिक्षा नीति 2020 तथा केंद्रीय माध्यमिक शिक्षा बोर्ड द्वारा समय-समय पर दक्षता आधारित शिक्षा, कला समेकित अधिगम, अनुभवात्मक अधिगम को अपनाने की प्रेरणा दी गई है जो शिक्षार्थियों की प्रतिभा को उजागर करने, खेल-खेल में सीखने पर बल देने, आनंदपूर्ण ज्ञानार्जन और विद्यार्जन के विविध तरीकों को अपनाने तथा अनुभव के द्वारा सीखने पर बल देती है।

दक्षता आधारित शिक्षा से तात्पर्य है सीखने और मूल्यांकन करने का एक ऐसा दृष्टिकोण जो शिक्षार्थी के सीखने के प्रतिफल और विषय में विशेष दक्षता को प्राप्त करने पर बल देता है। दक्षता वह क्षमता, कौशल, ज्ञान और दृष्टिकोण है जो व्यक्ति को वास्तविक जीवन में कार्य करने में सहायता करता है। इससे शिक्षार्थी यह सीख सकते हैं कि ज्ञान और कौशल को किस प्रकार प्राप्त किया जाए तथा उन्हें वास्तविक जीवन की समस्याओं पर कैसे लागू किया जाए। प्रत्येक विषय, प्रत्येक पाठ को जीवनोपयोगी बनाकर प्रयोग में लाना ही दक्षता आधारित शिक्षा है। इसके लिए उच्च स्तरीय चिंतन कौशल पर विशेष बल देने की आवश्यकता है।

कला समेकित अधिगम को शिक्षण-अधिगम प्रक्रिया में सुनिश्चित करना अत्यधिक आवश्यक है। कला के संसार में कल्पना की एक अलग ही उड़ान होती है। कला एक व्यक्ति की रचनात्मक अभिव्यक्ति है। कला समेकित अधिगम से तात्पर्य है कला के विविध रूपों संगीत, नृत्य, नाटक, कविता, रंगशाला, यात्रा, मूर्तिकला, आभूषण बनाना, गीत लिखना, नुक्कड़ नाटक, कोलाज, पोस्टर, कला प्रदर्शनी को शिक्षण अधिगम की प्रक्रिया का अभिन्न हिस्सा बनाना। किसी विषय को आरंभ करने के लिए आइस ब्रेकिंग गतिविधि के रूप में तथा सामंजस्यपूर्ण समझ पैदा करने के लिए अंतरविषयक या बहुविषयक परियोजनाओं के रूप में कला समेकित अधिगम का प्रयोग किया जाना चाहिए। इससे पाठ अधिक रोचक एवं ग्राह्य हो जाएगा।

अनुभवात्मक अधिगम या आनुभविक ज्ञानार्जन का उद्देश्य शैक्षिक वातावरण को शिक्षार्थी केंद्रित बनाने के साथ-साथ स्वयं मूल्यांकन करने, आलोचनात्मक रूप से सोचने, निर्णय लेने तथा ज्ञान का निर्माण कर उसमें पारंगत होने से है। यहाँ शिक्षक की भूमिका मार्गदर्शक की रहती है। ज्ञानार्जन अनुभव सहयोगात्मक अथवा स्वतंत्र

होता है और यह शिक्षार्थी को एक साथ कार्य करने तथा स्वयं के अनुभव द्वारा सीखने पर बल देता है। यह सिद्धांत और व्यवहार के बीच की दूरी को कम करता है।

इस पाठ्यक्रम के अध्ययन से:

1. शिक्षार्थी अपनी रुचि और आवश्यकता के अनुरूप साहित्य का गहन और विशेष अध्ययन जारी रख सकेंगे।
2. विश्वविद्यालय स्तर पर निर्धारित हिंदी-साहित्य से संबंधित पाठ्यक्रम के साथ सहज संबंध स्थापित कर सकेंगे।
3. लेखन-कौशल के व्यावहारिक और सृजनात्मक रूपों की अभिव्यक्ति में सक्षम हो सकेंगे।
4. रोजगार के किसी भी क्षेत्र में जाने पर भाषा का प्रयोग प्रभावी ढंग से कर सकेंगे।
5. यह पाठ्यक्रम शिक्षार्थी को जनसंचार तथा प्रकाशन जैसे विभिन्न-क्षेत्रों में अपनी क्षमता व्यक्त करने का अवसर प्रदान कर सकता है।
6. शिक्षार्थी दो भिन्न पाठों की पाठ्यवस्तु पर चिंतन करके उनके मध्य की संबद्धता पर अपने विचार अभिव्यक्त करने में सक्षम हो सकेंगे।
7. शिक्षार्थी रटे-रटाए वाक्यों के स्थान पर अभिव्यक्तिपरक/ स्थिति आधारित/ उच्च चिंतन क्षमता प्रश्नों पर सहजता से अपने विचार प्रकट कर सकेंगे।

**उद्देश्य :**

- संप्रेषण के माध्यम और विधाओं के लिए उपयुक्त भाषा प्रयोग की इतनी क्षमता उनमें आ चुकी होगी कि वे स्वयं इससे जुड़े उच्चतर पाठ्यक्रमों को समझ सकेंगे।
- भाषा के अंदर सक्रिय सत्ता संबंध की समझ।
- सृजनात्मक साहित्य की समझ और आलोचनात्मक दृष्टि का विकास।
- शिक्षार्थियों के भीतर सभी प्रकार की विविधताओं (धर्म, जाति, लिंग, क्षेत्र एवं भाषा संबंधी) के प्रति सकारात्मक एवं विवेकपूर्ण रवैये का विकास।
- पठन-सामग्री को भिन्न-भिन्न कोणों से अलग-अलग सामाजिक, सांस्कृतिक चिंताओं के परिप्रेक्ष्य में देखने का अभ्यास करवाना तथा आलोचनात्मक दृष्टि का विकास करना।
- शिक्षार्थी में स्तरीय साहित्य की समझ और उसका आनंद उठाने की क्षमता तथा साहित्य को श्रेष्ठ बनाने वाले तत्वों की संवेदना का विकास।
- विभिन्न ज्ञानानु शासनों के विमर्श की भाषा के रूप में हिंदी की विशिष्ट प्रकृति और उसकी क्षमताओं का बोध।
- कामकाजी हिंदी के उपयोग के कौशल का विकास।
- जनसंचार माध्यमों (प्रिंट और इलेक्ट्रॉनिक) में प्रयुक्त हिंदी की प्रकृति से परिचय और इन माध्यमों की आवश्यकता के अनुरूप मौखिक एवं लिखित अभिव्यक्ति का विकास।
- शिक्षार्थी में किसी भी अपरिचित विषय से संबंधित प्रासंगिक जानकारी के स्रोतों का अनुसंधान और व्यवस्थित ढंग से उनकी मौखिक और लिखित प्रस्तुति की क्षमता का विकास।

**शिक्षण-युक्तियाँ**

- कुछ बातें इस स्तर पर हिंदी शिक्षण के लक्ष्यों के संदर्भ में सामान्य रूप से कही जा सकती हैं। एक तो यह है कि कक्षा में दबाव एवं तनाव मुक्त माहौल होने की स्थिति में ही ये लक्ष्य हासिल किए जा सकते हैं। चूँकि इस पाठ्यक्रम में तैयारशुदा उत्तरों को कंठस्थ कर लेने की कोई अपेक्षा नहीं है, इसलिए विषय को समझने और उस समझ के आधार पर उत्तर को शब्दबद्ध करने की योग्यता विकसित करना ही शिक्षक का काम है। इस योग्यता के विकास के लिए कक्षा में शिक्षार्थियों और शिक्षिका के बीच निर्बाध

संवाद जरूरी है। शिक्षार्थी अपनी शंकाओं और उलझनों को जितना ही अधिक व्यक्त करेंगे, उतनी ही ज्यादा स्पष्टता उनमें आ पाएगी।

- भाषा की कक्षा से समाज में मौजूद विभिन्न प्रकार के द्वंद्वों पर बातचीत का मंच बनाना चाहिए। उदाहरण के लिए संविधान में किसी शब्द विशेष के प्रयोग पर निषेध को चर्चा का विषय बनाया जा सकता है। यह समझ जरूरी है कि शिक्षार्थियों को सिर्फ सकारात्मक पाठ देने से काम नहीं चलेगा बल्कि उन्हें समझाकर भाषिक यथार्थ का सीधे सामना करवाने वाले पाठों से परिचय होना जरूरी है।
- शंकाओं और उलझनों को रखने के अलावा भी कक्षा में शिक्षार्थियों को अधिक-से-अधिक बोलने के लिए प्रेरित किया जाना जरूरी है। उन्हें यह अहसास कराया जाना चाहिए कि वे पठित सामग्री पर राय देने का अधिकार और ज्ञान रखते हैं। उनकी राय को प्राथमिकता देने और उसे बेहतर तरीके से पुनः प्रस्तुत करने की अध्यापकीय शैली यहाँ बहुत उपयोगी होगी।
- शिक्षार्थियों को संवाद में शामिल करने के लिए यह भी जरूरी होगा कि उन्हें एक नामहीन समूह न मानकर अलग-अलग व्यक्तियों के रूप में अहमियत दी जाए। शिक्षकों को अक्सर एक कुशल संयोजक की भूमिका में स्वयं देखना होगा, जो किसी भी इच्छुक व्यक्ति को संवाद का भागीदार बनने से वंचित नहीं रखते, उसके कच्चे-पक्के वक्तव्य को मानक भाषा-शैली में ढाल कर उसे एक आभा दे देते हैं और मौन को अभिव्यंजना मान बैठे लोगों को मुखर होने पर बाध्य कर देते हैं।
- अप्रत्याशित विषयों पर चिंतन तथा उसकी मौखिक व लिखित अभिव्यक्ति की योग्यता का विकास शिक्षकों के सचेत प्रयास से ही संभव है। इसके लिए शिक्षकों को एक निश्चित अंतराल पर नए-नए विषय प्रस्तावित कर उन पर लिखने तथा संभाषण करने के लिए पूरी कक्षा को प्रेरित करना होगा। यह अभ्यास ऐसा है, जिसमें विषयों की कोई सीमा तय नहीं की जा सकती। विषय की असीम संभावना के बीच शिक्षक यह सुनिश्चित कर सकते हैं कि उसके शिक्षार्थी किसी निबंध-संकलन या कुंजी से तैयारशुदा सामग्री को उतार भर न ले। तैयार शुदा सामग्री के लोभ से, बाध्यतावश ही सही मुक्ति पाकर शिक्षार्थी नये तरीके से सोचने और उसे शब्दबद्ध करने के लिए तैयार होंगे। मौखिक अभिव्यक्ति पर भी विशेष ध्यान देने की जरूरत है, क्योंकि भविष्य में साक्षात्कार, संगोष्ठी जैसे मौकों पर यही योग्यता शिक्षार्थी के काम आती है। इसके अभ्यास के सिलसिले में शिक्षकों को उचित हावभाव, मानक उच्चारण, पॉज, बलाघात, हाजिरजवाबी इत्यादि पर खास बल देना होगा।
- काव्य की भाषा के मर्म से शिक्षार्थी का परिचय कराने के लिए जरूरी होगा कि किताबों में आए काव्यांशों की लयबद्ध प्रस्तुतियों के ऑडियो-वीडियो कैसेट तैयार किए जाएँ। अगर आसानी से कोई गायक/गायिका मिले तो कक्षा में मध्यकालीन साहित्य के शिक्षण में उससे मदद ली जानी चाहिए।
- एन सी ई आर टी, शिक्षा मंत्रालय के विभिन्न संगठनों तथा स्वतंत्र निर्माताओं द्वारा उपलब्ध कराए गए कार्यक्रम/ ई-सामग्री, वृत्तचित्रों और सिनेमा को शिक्षण सामग्री के तौर पर इस्तेमाल करने की जरूरत है। इनके प्रदर्शन के क्रम में इन पर लगातार बातचीत के जरिए सिनेमा के माध्यम से भाषा के प्रयोग की विशिष्टता की पहचान कराई जा सकती है और हिंदी की अलग-अलग छटा दिखाई जा सकती है। शिक्षार्थियों को स्तरीय परीक्षा करने को भी कहा जा सकता है।
- कक्षा में सिर्फ एक पाठ्यपुस्तक की उपस्थिति से बेहतर यह है कि शिक्षक के हाथ में तरह-तरह की पाठ्यसामग्री को शिक्षार्थी देख सकें और शिक्षक उनका कक्षा में अलग-अलग मौकों पर इस्तेमाल कर सकें।
- भाषा लगातार ग्रहण करने की क्रिया में बनती है, इसे प्रदर्शित करने का एक तरीका यह भी है कि शिक्षक खुद यह सिखा सकें कि वे भी शब्दकोश, साहित्यकोश, संदर्भग्रंथ की लगातार मदद ले रहे हैं। इससे शिक्षार्थियों में इसका इस्तेमाल करने को लेकर तत्परता बढ़ेगी। अनुमान के आधार पर निकटतम अर्थ तक पहुँचकर संतुष्ट होने की जगह वे सही अर्थ की खोज करने के लिए प्रेरित होंगे। इससे शब्दों की अलग-अलग रंगत का पता चलेगा और उनमें संवेदनशीलता बढ़ेगी। वे शब्दों के बारीक अंतर के प्रति और सजग हो पाएँगे।



- कक्षा-अध्यापन के पूरक कार्य के रूप में सेमिनार, ट्यूटोरियल कार्य, समस्या-समाधान कार्य, समूहचर्चा, परियोजनाकार्य, स्वाध्याय आदि पर बल दिया जाना चाहिए। पाठ्यक्रम में जनसंचार माध्यमों से संबंधित अंशों को देखते हुए यह जरूरी है कि समय-समय पर इन माध्यमों से जुड़े व्यक्तियों और विशेषज्ञों को भी विद्यालय में बुलाया जाए तथा उनकी देख-रेख में कार्यशालाएँ आयोजित की जाएं।
- भिन्न क्षमता वाले शिक्षार्थियों के लिए उपयुक्त शिक्षण सामग्री का इस्तेमाल किया जाए तथा उन्हें किसी भी प्रकार से अन्य शिक्षार्थियों से कमतर या अलग न समझा जाए।
- कक्षा में शिक्षक को हर प्रकार की विविधताओं (लिंग जाति, धर्म, वर्ग आदि) के प्रति सकारात्मक और संवेदनशील वातावरण निर्मित करना चाहिए।

### श्रवण तथा वाचन परीक्षा हेतु दिशा-निर्देश

**श्रवण (सुनना) (5 अंक)** : वर्णित या पठित सामग्री को सुनकर अर्थग्रहण करना, वार्तालाप करना, वाद-विवाद, भाषण, कवितापाठ आदि को सुनकर समझना, मूल्यांकन करना और अभिव्यक्ति के ढंग को समझना।

**वाचन (बोलना) (5 अंक)**: भाषण, सस्वर कविता-पाठ, वार्तालाप और उसकी औपचारिकता, कार्यक्रम-प्रस्तुति, कथा-कहानी अथवा घटना सुनाना, परिचय देना, भावानुकूल संवाद-वाचन।

**टिप्पणी**: वार्तालाप की दक्षताओं का मूल्यांकन निरंतरता के आधार पर परीक्षा के समय ही होगा। निर्धारित 10 अंकों में से 5 श्रवण (सुनना) कौशल के मूल्यांकन के लिए और 5 वाचन (बोलना) कौशल के मूल्यांकन के लिए होंगे।

### वाचन (बोलना) एवं श्रवण (सुनना) कौशल का मूल्यांकन:

- परीक्षक किसी प्रासंगिक विषय पर एक अनुच्छेद का स्पष्ट वाचन करेगा। अनुच्छेद तथ्यात्मक या सुझावात्मक हो सकता है। अनुच्छेद लगभग 250 शब्दों का होना चाहिए।  
या  
परीक्षक 2-3 मिनट का श्रव्य अंश (ऑडियो क्लिप) सुनवाएगा। अंश रोचक होना चाहिए। कथ्य /घटना पूर्ण एवं स्पष्ट होनी चाहिए। वाचक का उच्चारण शुद्ध, स्पष्ट एवं विराम चिह्नों के उचित प्रयोग सहित होना चाहिए।
- परीक्षार्थी ध्यानपूर्वक परीक्षक/ऑडियो क्लिप को सुनने के पश्चात परीक्षक द्वारा पूछे गए प्रश्नों का अपनी समझ से मौखिक उत्तर देंगे। (1x5 =5)
- किसी निर्धारित विषय पर बोलना : जिससे शिक्षार्थी अपने व्यक्तिगत अनुभवों का प्रत्यास्मरण कर सकें।
- कोई कहानी सुनाना या किसी घटना का वर्णन करना।
- परिचय देना।  
(स्व/ परिवार/ वातावरण/ वस्तु/ व्यक्ति/ पर्यावरण/ कवि /लेखक आदि)

### परीक्षकों के लिए अनुदेश :-

- परीक्षण से पूर्व परीक्षार्थी को तैयारी के लिए कुछ समय दिया जाए।
- विवरणात्मक भाषा में वर्तमान काल का प्रयोग अपेक्षित है।
- निर्धारित विषय परीक्षार्थी के अनुभव-जगत के हों।
- जब परीक्षार्थी बोलना आरंभ करें तो परीक्षक कम से कम हस्तक्षेप करें।

## कौशलों के अंतरण का मूल्यांकन

(इस बात का निश्चय करना कि क्या शिक्षार्थी में श्रवण और वाचन की निम्नलिखित योग्यताएँ हैं)

क्र.	श्रवण (सुनना)		वाचन (बोलना)
1	परिचित संदर्भों में प्रयुक्त शब्दों और पदों को समझने की सामान्य योग्यता है।	1	केवल अलग-अलग शब्दों और पदों के प्रयोग की योग्यता प्रदर्शित करता है।
2	छोटे सुसंबद्ध कथनों को परिचित संदर्भों में समझने की योग्यता है।	2	परिचित संदर्भों में केवल छोटे संबद्ध कथनों का सीमित शुद्धता से प्रयोग करता है।
3	परिचित या अपरिचित दोनों संदर्भों में कथित सूचना को स्पष्ट समझने की योग्यता है।	3	अपेक्षाकृत दीर्घ भाषण में जटिल कथनों के प्रयोग की योग्यता प्रदर्शित करता है।
4	दीर्घ कथनों की शृंखला को पर्याप्त शुद्धता से समझने के ढंग और निष्कर्ष निकाल सकने की योग्यता है।	4	अपरिचित स्थितियों में विचारों को तार्किक ढंग से संगठित कर धारा-प्रवाह रूप में प्रस्तुत करता है।
5	जटिल कथनों के विचार-बिंदुओं को समझने की योग्यता प्रदर्शित करने की क्षमता है।	5	उद्देश्य और श्रोता के लिए उपयुक्त शैली को अपना सकता है।

### परियोजना कार्य

विषय वस्तु

भाषा एवं प्रस्तुति

शोध एवं मौलिकता

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कुल अंक 10

5 अंक

3 अंक

2 अंक

- हिन्दी भाषा और साहित्य से जुड़े विविध विषयों/ विधाओं / साहित्यकारों / समकालीन लेखन / साहित्यिक वादों / भाषा के तकनीकी पक्ष / प्रभाव / अनुप्रयोग / साहित्य के सामाजिक संदर्भों एवं जीवन मूल्य संबंधी प्रभावों आदि पर परियोजना कार्य दिए जाने चाहिए।
- सत्र के प्रारंभ में ही शिक्षार्थी को विषय चुनने का अवसर मिले ताकि उसे शोध, तैयारी और लेखन के लिए पर्याप्त समय मिल सके।
- वाचन - श्रवण कौशल एवं परियोजना कार्य का मूल्यांकन विद्यालय स्तर पर आंतरिक परीक्षक द्वारा ही किया जाएगा।

## परियोजना-कार्य

'परियोजना' शब्द योजना में 'परि' उपसर्ग लगाने से बना है। 'परि' का अर्थ है 'पूर्णता' अर्थात् ऐसी योजना जो अपने आप में पूर्ण हो परियोजना कहलाती है। किसी विशेष लक्ष्य की प्राप्ति हेतु जो योजना बनाई और कार्यान्वित की जाती है, उसे परियोजना कहते हैं। यह किसी समस्या के निदान या किसी विषय के तथ्यों को प्रकाशित करने के लिए तैयार की गई एक पूर्ण विचार योजना होती है।

राष्ट्रीय पाठ्यचर्चा की रूपरेखा, नई शिक्षा नीति 2020 तथा केन्द्रीय माध्यमिक शिक्षा बोर्ड द्वारा समय-समय पर अनुभवात्मक अधिगम, आनंदपूर्ण अधिगम की बात की कही गई है। उच्चतर माध्यमिक स्तर पर शिक्षार्थियों के लिए हिंदी का अध्ययन एक सृजनात्मक, साहित्यिक, सांस्कृतिक और विभिन्न प्रयुक्तियों की भाषा के रूप में करने और करवाने के लिए परियोजना कार्य अत्यंत महत्वपूर्ण व लाभदायक सिद्ध होता है।

## परियोजना का महत्व

- व्यक्तिगत स्तर पर खोज, कार्यवाही और ग्यारहवीं - बारहवीं कक्षा के दौरान अर्जित ज्ञान और कौशल, विचारों आदि पर चिंतन का उपयोग ।
- सैद्धांतिक निर्माणों और तर्कों का उपयोग करके वास्तविक दुनिया के परिदृश्यों का विश्लेषण और मूल्यांकन
- एक स्वतंत्र और विस्तारित कार्य का निर्माण करने के लिए महत्वपूर्ण और रचनात्मक चिंतन, कौशल और क्षमताओं के अनुप्रयोग का प्रदर्शन
- उन विषयों पर कार्य करने का अवसर जिनमें शिक्षार्थियों की रुचि है।
- नए ज्ञान की ओर अग्रसर
- खोजी प्रवृत्ति में वृद्धि
- भाषा ज्ञान समृद्ध एवं व्यावहारिक
- समस्या समाधान की क्षमता का विकास

## परियोजना कार्य निर्धारित करते समय ध्यान देने योग्य बातें

- परियोजना कार्य शिक्षार्थियों में योग्यता आधारित क्षमता को ध्यान में रखकर दिए जाएँ जिससे वे विषय के साथ जुड़ते हुए उसके व्यावहारिक पक्ष को समझ सकें। वर्तमान समय में उसकी प्रासंगिकता पर भी ध्यान दिया जाए।
- सत्र के प्रारम्भ में ही शिक्षार्थियों को विषय चुनने का अवसर मिले ताकि उसे शोध, तैयारी और लेखन के लिए पर्याप्त समय मिल सके।
- अध्यापिका/अध्यापक द्वारा कक्षा में परियोजना-कार्य को लेकर विस्तारपूर्वक चर्चा की जाए जिससे शिक्षार्थी उसके अर्थ, महत्व व प्रक्रिया को भली-भाँति समझने में सक्षम हो सकें।
- हिंदी भाषा और साहित्य से जुड़े। विविध विषयों/ विधाओं/ साहित्यकारों/ समकालीन लेखन/ भाषा के तकनीकी पक्ष/ प्रभाव/ अनुप्रयोग/ साहित्य के सामाजिक संदर्भों एवं जीवन-मूल्य संबंधी प्रभावों आदि पर परियोजना कार्य दिए जाने चाहिए।
- शिक्षार्थी को उसकी रुचि के अनुसार विषय का चयन करने के छूट दी जानी चाहिए तथा अध्यापक/ अध्यापिका को मार्गदर्शक के रूप में उसकी सहायता करनी चाहिए।
- परियोजना – कार्य करते समय निम्नलिखित आधार को अपनाया जा सकता है-
  1. प्रमाण – पत्र
  2. आभार ज्ञापन
  3. विषय-सूची
  4. उद्देश्य
  5. समस्या का बयान
  6. परिकल्पना
  7. प्रक्रिया (साक्ष्य संग्रह, साक्ष्य का विश्लेषण)
  8. प्रस्तुतीकरण (विषय का विस्तार)
  9. अध्ययन का परिणाम
  10. अध्ययन की सीमाएँ
  11. स्रोत
  12. अध्यापक टिप्पणी

- परियोजना – कार्य में शोध के दौरान सम्मिलित किए गए चित्रों और संदर्भों के विषय में उचित जानकारी दी जानी चाहिए। उनके स्रोत को अवश्य अंकित करना चाहिए।
- चित्र, रेखाचित्र, विज्ञापन, ग्राफ, विषय से संबंधित आँकड़े, विषय से संबंधित समाचार की कतरनें एकत्रित की जानी चाहिए।
- प्रमाणस्वरूप सम्मिलित किए गए आँकड़े, चित्र, विज्ञापन आदि के स्रोत अंकित करने के साथ-साथ समाचार-पत्र, पत्रिकाओं के नाम एवं दिनांक भी लिखने चाहिए।
- साहित्यकोश, संदर्भ-ग्रंथ, शब्दकोश की सहायता लेनी चाहिए।
- परियोजना-कार्य में शिक्षार्थियों के लिए अनेक संभावनाएँ हैं। उनके व्यक्तिगत विचार तथा उनकी कल्पना के विस्तृत संसार को अवश्य सम्मिलित किया जाए।

### **परियोजना – कार्य के कुछ विषय सुझावात्मक रूप में दिए जा रहे हैं।**

भाषा और साहित्य से जुड़े विविध विषयों/ विधाओं/ साहित्यकारों/ समकालीन लेखन के आधार पर

- **हिंदी कविता में प्रकृति चित्रण (पाठ – उषा / बगुलों के पंख कविता)**
- विभिन्न कवियों की कविताओं का तुलनात्मक अध्ययन,
- भाषा शैली, विशेषताएँ
- वर्तमान के साथ प्रासंगिकता इत्यादि।
- **भारतीय ग्रामीण का जीवन (पाठ – पहलवान की ढोलक)**
  - आज़ादी से पहले, बाद में तथा वर्तमान में स्थिति
  - सुधार की आवश्यकताएँ
  - आपकी भूमिका/ योगदान/ सुझाव
- **समकालीन विषय**
  - कोविड -19 और हम
  - भूमिका – क्या है, क्यों है आदि का विवरण
  - विभिन्न देशों में प्रभाव
  - भारत के साथ तुलनात्मक अध्ययन
  - कारण और निवारण
  - आपकी भूमिका/ योगदान/ सुझाव

उपर्युक्त विषय सुझाव के रूप में प्रस्तुत किए गए हैं। आप दिशानिर्देशों के आधार पर अन्य विषयों का चयन कर सकते हैं।

**हिंदी (आधार) (कोड सं. 302) कक्षा -11वीं (2022 -23 )**  
**परीक्षा हेतु पाठ्यक्रम विनिर्देशन**

- प्रश्न-पत्र दो खण्डों - खंड 'अ' और 'ब' का होगा।
- खंड 'अ' में 45 वस्तुपरक प्रश्न पूछे जाएँगे जिनमें से केवल 40 प्रश्नों के ही उत्तर देने होंगे।
- खंड 'ब' में वर्णनात्मक प्रश्न पूछे जाएँगे। प्रश्नों में उचित आंतरिक विकल्प दिए जाएँगे।

**भारांक 100**

**निर्धारित समय 3 घंटे**

<b>खंड अ (वस्तुपरक प्रश्न)</b>		
<b>विषयवस्तु</b>		<b>भार</b>
<b>1</b>	<b>अपठित गद्यांश</b>	<b>15</b>
<b>अ</b>	एक अपठित गद्यांश (अधिकतम 300 शब्दों का) (1 अंक x 10 प्रश्न)	10
<b>ब</b>	दो अपठित पद्यांशों में से कोई एक पद्यांश (अधिकतम 150 शब्दों का) (1 अंक x 5 प्रश्न)	05
<b>2</b>	<b>पाठ्यपुस्तक अभिव्यक्ति और माध्यम की इकाई एक से पाठ संख्या 1 तथा 2 पर आधारित</b>	<b>05</b>
	बहुविकल्पात्मक प्रश्न (1 अंक x 5 प्रश्न)	05
<b>3</b>	<b>पाठ्यपुस्तक आरोह भाग - 1 से बहुविकल्पात्मक प्रश्न</b>	<b>10</b>
<b>अ</b>	पठित काव्यांश पर पाँच बहुविकल्पी प्रश्न (1 अंक x 05 प्रश्न)	05
<b>ब</b>	पठित गद्यांश पर पाँच बहुविकल्पी प्रश्न (1 अंक x 05 प्रश्न)	05
<b>4</b>	<b>पूरक पाठ्यपुस्तक वितान भाग-1 से बहुविकल्पात्मक प्रश्न</b>	<b>10</b>
<b>अ</b>	पठित पाठों पर दस बहुविकल्पी प्रश्न (1 अंक x 10 प्रश्न)	10
<b>खंड - ब (वर्णनात्मक प्रश्न)</b>		
<b>विषयवस्तु</b>		<b>भार</b>
<b>5</b>	<b>पाठ्यपुस्तक अभिव्यक्ति और माध्यम से सृजनात्मक लेखन और व्यावहारिक लेखन पाठ संख्या 1, 2, 9, 10, 14, 15 तथा 16 पर आधारित</b>	<b>20</b>
<b>1</b>	दिए गए चार अप्रत्याशित विषयों में से किसी एक विषय पर लगभग 120 शब्दों में रचनात्मक लेखन (6 अंक x 1 प्रश्न)	05
<b>2</b>	औपचारिक पत्र लेखन। (5 अंक x 1 प्रश्न) (विकल्प सहित)	05
<b>3</b>	डायरी लेखन, कथा - पटकथा विषयों पर लेखन पर आधारित दो प्रश्न (3 अंक x 2 प्रश्न) (विकल्प सहित) (लगभग 60 शब्दों में)	06

4	स्ववृत्त लेखन और रोजगार संबंधी आवेदन पत्र तथा शब्दकोश, संदर्भ ग्रंथों की उपयोगी विधि और परिचय पर आधारित तीन में से दो प्रश्न (2 अंक x 2 प्रश्न) (विकल्प सहित) (लगभग 40 शब्दों में)	04
<b>6</b>	<b>पाठ्यपुस्तक आरोह भाग - 1</b>	<b>20</b>
1	काव्य खंड पर आधारित तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर (लगभग 60 शब्दों में) (3 अंक x 2 प्रश्न)	6
2	काव्य खंड पर आधारित तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर (लगभग 40 शब्दों में) (2 अंक x 2 प्रश्न)	4
3	गद्य खंड पर आधारित तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर (लगभग 60 शब्दों में) (3 अंक x 2 प्रश्न)	6
4	गद्य खंड पर आधारित तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर (लगभग 40 शब्दों में) (2 अंक x 2 प्रश्न)	4
<b>7</b>	<b>(अ) श्रवण तथा वाचन</b>	<b>10</b>
	<b>(ब) परियोजना कार्य</b>	<b>10</b>
<b>कुल अंक</b>		<b>100</b>

प्रस्तावित पुस्तकें :

1. आरोह, भाग-1, एन.सी.ई.आर.टी., नई दिल्ली द्वारा प्रकाशित
2. वितान भाग-1, एन.सी.ई.आर.टी., नई दिल्ली द्वारा प्रकाशित
3. अभिव्यक्ति और माध्यम, एन.सी.ई.आर.टी., नई दिल्ली द्वारा प्रकाशित

नोट - पाठ्यक्रम के निम्नलिखित पाठ हटा दिए गए हैं।

आरोह भाग - 1	काव्य खंड	<ul style="list-style-type: none"> <li>• कबीर (पद 2) - संतो देखत जग बौराना</li> <li>• मीरा (पद 2) - पग घुंगरू बांधि मीरा नाची</li> <li>• रामनरेश त्रिपाठी - पथिक (पूरा पाठ)</li> <li>• सुमित्रानंदन पंत - वे आँखें (पूरा पाठ)</li> </ul>
	गद्य खंड	<ul style="list-style-type: none"> <li>• कृष्णनाथ - स्पीति में बारिश (पूरा पाठ)</li> <li>• सैयद हैदर रज़ा - आत्मा का ताप (पूरा पाठ)</li> </ul>

हिंदी (आधार) (कोड सं. 302) कक्षा – 12वीं (2022-23) परीक्षा हेतु पाठ्यक्रम विनिर्देशन

- प्रश्न-पत्र दो खण्डों - खंड 'अ' और 'ब' का होगा।
- खंड 'अ' में 45 वस्तुपरक प्रश्न पूछे जाएँगे जिनमें से केवल 40 प्रश्नों के ही उत्तर देने होंगे।
- खंड 'ब' में वर्णनात्मक प्रश्न पूछे जाएँगे। प्रश्नों में उचित आंतरिक विकल्प दिए जाएँगे।

भारांक 100

निर्धारित समय 3 घंटे

खंड अ (वस्तुपरक प्रश्न)		
विषयवस्तु		भार
1	अपठित गद्यांश	15
	अ एक अपठित गद्यांश (अधिकतम 300 शब्दों का) (1 अंक x 10 प्रश्न)	10
	ब दो अपठित पद्यांशों में से कोई एक पद्यांश (अधिकतम 150 शब्दों का) (1 अंक x 5 प्रश्न)	05
2	पाठ्यपुस्तक अभिव्यक्ति और माध्यम की इकाई एक से पाठ संख्या 3, 4 तथा 5 पर आधारित	05
	बहुविकल्पात्मक प्रश्न (1 अंक x 5 प्रश्न)	05
3	पाठ्यपुस्तक आरोह भाग – 2 से बहुविकल्पात्मक प्रश्न	10
	अ पठित काव्यांश पर पाँच बहुविकल्पी प्रश्न (1 अंक x 05 प्रश्न)	05
	ब पठित गद्यांश पर पाँच बहुविकल्पी प्रश्न (1 अंक x 05 प्रश्न)	05
4	पूरक पाठ्यपुस्तक वितान भाग-2 से बहुविकल्पात्मक प्रश्न	10
	अ पठित पाठों पर दस बहुविकल्पी प्रश्न (1 अंक x 10 प्रश्न)	10
खंड – ब (वर्णनात्मक प्रश्न)		
विषयवस्तु		भार
5	पाठ्यपुस्तक अभिव्यक्ति और माध्यम से जनसंचार और सृजनात्मक लेखन पाठ संख्या 3, 4, 5, 11, 12 तथा 13 पर आधारित	20
	1 दिए गए चार अप्रत्याशित विषयों में से किसी एक विषय पर लगभग 120 शब्दों में रचनात्मक लेखन (6 अंक x 1 प्रश्न)	06
	2 कहानी का नाट्यरूपांतरण / रेडियो नाटक / अप्रत्याशित विषयों पर लेखन पर आधारित दो प्रश्न (3 अंक x 2 प्रश्न) (विकल्प सहित) (लगभग 60 शब्दों में)	06
	3 पत्रकारिता और जनसंचार माध्यमों के लिए लेखन पर आधारित तीन में से दो प्रश्न (4 अंक x 2 प्रश्न) (विकल्प सहित) (लगभग 80 शब्दों में)	08
6	पाठ्यपुस्तक आरोह भाग – 2	20

1	काव्य खंड पर आधारित तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर (लगभग 60 शब्दों में) (3 अंक x 2 प्रश्न)	6
2	काव्य खंड पर आधारित तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर (लगभग 40 शब्दों में) (2 अंक x 2 प्रश्न)	4
3	गद्य खंड पर आधारित तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर (लगभग 60 शब्दों में) (3 अंक x 2 प्रश्न)	6
4	गद्य खंड पर आधारित तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर (लगभग 40 शब्दों में) (2 अंक x 2 प्रश्न)	4
7	(अ) श्रवण तथा वाचन	10
	(ब) परियोजना कार्य	10
<b>कुल अंक</b>		<b>100</b>

**प्रस्तावित पुस्तकें :**

1. **आरोह, भाग-2**, एन.सी.ई.आर.टी., नई दिल्ली द्वारा प्रकाशित
2. **वितान, भाग-2**, एन.सी.ई.आर.टी., नई दिल्ली द्वारा प्रकाशित
3. **'अभिव्यक्ति और माध्यम'**, एन.सी.ई.आर.टी., नई दिल्ली द्वारा प्रकाशित

**नोट - पाठ्यक्रम के निम्नलिखित पाठ हटा दिए गए हैं**

<b>आरोह भाग - 2</b>	काव्य खंड	<ul style="list-style-type: none"> <li>• गजानन माधव मुक्तिबोध - सहर्ष स्वीकारा है (पूरा पाठ)</li> <li>• फ़िराक गोरखपुरी - गज़ल</li> </ul>
	गद्य खंड	<ul style="list-style-type: none"> <li>• विष्णु खरे - चार्ली चैप्लिन यानी हम सब (पूरा पाठ)</li> <li>• रज़िया सज्जाद ज़हीर - नमक (पूरा पाठ)</li> </ul>
<b>वितान भाग - 2</b>		<ul style="list-style-type: none"> <li>• एन फ्रैंक - डायरी के पन्ने</li> </ul>

कक्षा बारहवीं हेतु प्रश्न पत्र का विस्तृत प्रारूप जानने के लिये कृपया बोर्ड द्वारा जारी आदर्श प्रश्न पत्र देखें।



## **MATHEMATICS (XI-XII)**

**(Code No. 041)**

**Session – 2022-23**

The Syllabus in the subject of Mathematics has undergone changes from time to time in accordance with growth of the subject and emerging needs of the society. Senior Secondary stage is a launching stage from where the students go either for higher academic education in Mathematics or for professional courses like Engineering, Physical and Biological science, Commerce or Computer Applications. The present revised syllabus has been designed in accordance with National Curriculum Framework 2005 and as per guidelines given in Focus Group on Teaching of Mathematics 2005 which is to meet the emerging needs of all categories of students. Motivating the topics from real life situations and other subject areas, greater emphasis has been laid on application of various concepts.

### **Objectives**

The broad objectives of teaching Mathematics at senior school stage intend to help the students:

- to acquire knowledge and critical understanding, particularly by way of motivation and visualization, of basic concepts, terms, principles, symbols and mastery of underlying processes and skills.
- to feel the flow of reasons while proving a result or solving a problem.
- to apply the knowledge and skills acquired to solve problems and wherever possible, by more than one method.
- to develop positive attitude to think, analyze and articulate logically.
- to develop interest in the subject by participating in related competitions.
- to acquaint students with different aspects of Mathematics used in daily life.
- to develop an interest in students to study Mathematics as a discipline.
- to develop awareness of the need for national integration, protection of environment, observance of small family norms, removal of social barriers, elimination of gender biases.
- to develop reverence and respect towards great Mathematicians for their contributions to the field of Mathematics.

**COURSE STRUCTURE**  
**CLASS XI (2022-23)**

One Paper

Total Period–240 [35 Minutes each]

**Three Hours**

**Max Marks: 80**

No.	Units	No. of Periods	Marks
I.	Sets and Functions	60	23
II.	Algebra	50	25
III.	Coordinate Geometry	50	12
IV.	Calculus	40	08
V.	Statistics and Probability	40	12
	Total	240	80
	Internal Assessment		20

\*No chapter/unit-wise weightage. Care to be taken to cover all the chapters.

**Unit-I: Sets and Functions**

**1. Sets (20) Periods**

Sets and their representations, Empty set, Finite and Infinite sets, Equal sets, Subsets, Subsets of a set of real numbers 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 & Functions (20) Periods**

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  $R \times R \times R$ ). 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 (20) Periods**

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  $\sin^2x + \cos^2x = 1$ , 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  $\sin x$ ,  $\sin y$ ,  $\cos x$  &  $\cos y$  and their simple applications. Deducing identities like the following:

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

$$\sin \alpha \pm \sin \beta = 2 \sin \frac{1}{2}(\alpha \pm \beta) \cos \frac{1}{2}(\alpha \mp \beta)$$

$$\cos \alpha + \cos \beta = 2 \cos \frac{1}{2}(\alpha + \beta) \cos \frac{1}{2}(\alpha - \beta)$$

$$\cos \alpha - \cos \beta = -2 \sin \frac{1}{2}(\alpha + \beta) \sin \frac{1}{2}(\alpha - \beta)$$

Identities related to  $\sin 2x$ ,  $\cos 2x$ ,  $\tan 2x$ ,  $\sin 3x$ ,  $\cos 3x$  and  $\tan 3x$ .

## Unit-II: Algebra

### 1. Complex Numbers and Quadratic Equations (10) Periods

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 (10) Periods

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

### 3. Permutations and Combinations (10) Periods

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

### 4. Binomial Theorem (10) Periods

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

### 5. Sequence and Series (10) Periods

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 (15) Periods**

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 Sections (25) Periods**

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 (10) Periods**

Coordinate axes and coordinate planes in three dimensions. Coordinates of a point. Distance between two points.

### **Unit-IV: Calculus**

#### **1. Limits and Derivatives (40) Periods**

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 relate it to slope 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 (20) Periods**

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

#### **2. Probability (20) Periods**

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.

**MATHEMATICS**  
**QUESTION PAPER DESIGN**  
**CLASS – XI (2022-23)**

**Time: 3 Hours**

**Max. Marks: 80**

S. No.	Typology of Questions	Total Marks	% Weight age
1	<p><b>Remembering:</b> Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.</p> <p><b>Understanding:</b> Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas</p>	44	55
2	<p><b>Applying:</b> Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.</p>	20	25
3	<p><b>Analysing :</b> Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations</p> <p><b>Evaluating:</b> Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.</p> <p><b>Creating:</b> Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions</p>	16	20
<b>Total</b>		80	100

- No chapter wise weightage. Care to be taken to cover all the chapters*
- Suitable internal variations may be made for generating various templates keeping the overall weightage to different form of questions and typology of questions same.*

**Choice(s):**

There will be no overall choice in the question paper.

However, 33% internal choices will be given in all the sections

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

Note: Please refer the guidelines given under XII Mathematics Syllabus:

**CLASS-XII**  
**(2022-23)**

**One Paper**

**Max Marks: 80**

No.	Units	No. of Periods	Marks
I.	Relations and Functions	30	08
II.	Algebra	50	10
III.	Calculus	80	35
IV.	Vectors and Three - Dimensional Geometry	30	14
V.	Linear Programming	20	05
VI.	Probability	30	08
	<b>Total</b>	240	80
	<b>Internal Assessment</b>		20

**Unit-I: Relations and Functions**

**1. Relations and Functions** **15 Periods**

Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions.

**2. Inverse Trigonometric Functions** **15 Periods**

Definition, range, domain, principal value branch. Graphs of inverse trigonometric functions.

**Unit-II: Algebra**

**1. Matrices** **25 Periods**

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

**2. Determinants** **25 Periods**

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

### Unit-III: Calculus

#### 1. Continuity and Differentiability

20 Periods

Continuity and differentiability, chain rule, derivative of inverse trigonometric functions, like  $\sin^{-1} x$ ,  $\cos^{-1} x$  and  $\tan^{-1} x$ , derivative of implicit functions. Concept of exponential and logarithmic functions.

Derivatives of logarithmic and exponential functions. Logarithmic differentiation, derivative of functions expressed in parametric forms. Second order derivatives.

#### 2. Applications of Derivatives

10 Periods

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

#### 3. Integrals

20 Periods

Integration as inverse process of differentiation. Integration of a variety of functions by substitution, by partial fractions and by parts, Evaluation of simple integrals of the following types and problems based on them.

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

Fundamental Theorem of Calculus (without proof). Basic properties of definite integrals and evaluation of definite integrals.

#### 4. Applications of the Integrals

15 Periods

Applications in finding the area under simple curves, especially lines, circles/ parabolas/ellipses (in standard form only)

#### 5. Differential Equations

15 Periods

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

$$\frac{dy}{dx} + py = q, \text{ where } p \text{ and } q \text{ are functions of } x \text{ or constants.}$$

$$\frac{dx}{dy} + px = q, \text{ where } p \text{ and } q \text{ are functions of } y \text{ or constants.}$$

#### **Unit-IV: Vectors and Three-Dimensional Geometry**

##### **1. Vectors**

**15 Periods**

Vectors and scalars, magnitude and direction of a vector. Direction cosines and direction ratios of a vector. Types of vectors (equal, unit, zero, parallel and collinear vectors), position vector of a point, negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar, position vector of a point dividing a line segment in a given ratio. Definition, Geometrical Interpretation, properties and application of scalar (dot) product of vectors, vector (cross) product of vectors.

##### **2. Three - dimensional Geometry**

**15 Periods**

Direction cosines and direction ratios of a line joining two points. Cartesian equation and vector equation of a line, skew lines, shortest distance between two lines. Angle between two lines.

#### **Unit-V: Linear Programming**

##### **1. Linear Programming**

**20 Periods**

Introduction, related terminology such as constraints, objective function, optimization, graphical method of solution for problems in two variables, feasible and infeasible regions (bounded or unbounded), feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints).

#### **Unit-VI: Probability**

##### **1. Probability**

**30 Periods**

Conditional probability, multiplication theorem on probability, independent events, total probability, Bayes' theorem, Random variable and its probability distribution, mean of random variable.



**MATHEMATICS (Code No. - 041)**  
**QUESTION PAPER DESIGN CLASS - XII**  
**(2022-23)**

Time: 3 hours

Max. Marks: 80

S. No.	Typology of Questions	Total Marks	% Weightage
1	<p><b>Remembering:</b> Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.</p> <p><b>Understanding:</b> Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas</p>	44	55
2	<p><b>Applying:</b> Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.</p>	20	25
3	<p><b>Analysing :</b> Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations</p> <p><b>Evaluating:</b> Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.</p> <p><b>Creating:</b> Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions</p>	16	20
	<b>Total</b>	80	100

- No chapter wise weightage. Care to be taken to cover all the chapters*
- Suitable internal variations may be made for generating various templates keeping the overall weightage to different form of questions and typology of questions same.*

**Choice(s):**

There will be no overall choice in the question paper.

However, 33% internal choices will be given in all the sections

<b>INTERNAL ASSESSMENT</b>	<b>20 MARKS</b>
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 each 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 as suggested in detail circular no.Acad-05/2017.
- 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. It is recommended that the teacher share best examples/performances of IA with the class to motivate all learners.

### **Assessment of Activity Work:**

Throughout the year any 10 activities shall be performed by the student from the activities given in the NCERT Laboratory Manual for the respective class (XI or XII) which is available on the link: <http://www.ncert.nic.in/exemplar/labmanuals.html> a record of the same may be kept by the student. An year end test on the activity may be conducted

The weightage are 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

### **Prescribed Books:**

- 1) Mathematics Textbook for Class XI, NCERT Publications
- 2) Mathematics Part I - Textbook for Class XII, NCERT Publication
- 3) Mathematics Part II - Textbook for Class XII, NCERT Publication
- 4) Mathematics Exemplar Problem for Class XI, Published by NCERT
- 5) Mathematics Exemplar Problem for Class XII, Published by NCERT
- 6) Mathematics Lab Manual class XI, published by NCERT
- 7) Mathematics Lab Manual class XII, published by NCERT

**PHYSICS**  
**Class XI-XII (Code No.42)**  
**(2022-23)**

Senior Secondary stage of school education is a stage of transition from general education to discipline-based focus on curriculum. The present updated syllabus keeps in view the rigor and depth of disciplinary approach as well as the comprehension level of learners. Due care has also been taken that the syllabus is comparable to the international standards. Salient features of the syllabus include:

- Emphasis on basic conceptual understanding of the content.
- Emphasis on use of SI units, symbols, nomenclature of physical quantities and formulations as per international standards.
- Providing logical sequencing of units of the subject matter and proper placement of concepts with their linkage for better learning.
- Reducing the curriculum load by eliminating overlapping of concepts/content within the discipline and other disciplines.
- Promotion of process-skills, problem-solving abilities and applications of Physics concepts.

**Besides, the syllabus also attempts to**

- Strengthen the concepts developed at the secondary stage to provide firm foundation for further learning in the subject.
- Expose the learners to different processes used in Physics-related industrial and technological applications.
- Develop process-skills and experimental, observational, manipulative, decision making and investigatory skills in the learners.
- Promote problem solving abilities and creative thinking in learners.
- Develop conceptual competence in the learners and make them realize and appreciate the interface of Physics with other disciplines.

**PHYSICS (Code No. 042)**  
**COURSE STRUCTURE**  
**Class XI – 2022-23 (Theory)**

Time: 3 hrs.

Max Marks: 70

		No. of Periods	Marks
<b>Unit-I</b>	<b>Physical World and Measurement</b>	<b>08</b>	<b>23</b>
	Chapter-2: Units and Measurements		
<b>Unit-II</b>	<b>Kinematics</b>	<b>24</b>	
	Chapter-3: Motion in a Straight Line		
	Chapter-4: Motion in a Plane		
<b>Unit-III</b>	<b>Laws of Motion</b>	<b>14</b>	
	Chapter-5: Laws of Motion		
<b>Unit-IV</b>	<b>Work, Energy and Power</b>	<b>14</b>	
	Chapter-6: Work, Energy and Power		
<b>Unit-V</b>	<b>Motion of System of Particles and Rigid Body</b>	<b>18</b>	
	Chapter-7: System of Particles and Rotational Motion		
<b>Unit-VI</b>	<b>Gravitation</b>	<b>12</b>	
	Chapter-8: Gravitation		
<b>Unit-VII</b>	<b>Properties of Bulk Matter</b>	<b>24</b>	<b>20</b>
	Chapter-9: Mechanical Properties of Solids		
	Chapter-10: Mechanical Properties of Fluids		
	Chapter-11: Thermal Properties of Matter		
<b>Unit-VIII</b>	<b>Thermodynamics</b>	<b>12</b>	
	Chapter-12: Thermodynamics		
<b>Unit-IX</b>	<b>Behaviour of Perfect Gases and Kinetic Theory of Gases</b>	<b>08</b>	
	Chapter-13: Kinetic Theory		
<b>Unit-X</b>	<b>Oscillations and Waves</b>	<b>26</b>	<b>10</b>
	Chapter-14: Oscillations		
	Chapter-15: Waves		
<b>Total</b>		<b>160</b>	<b>70</b>

**Unit I: Physical World and Measurement**

**08 Periods**

**Chapter–2: 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**

**24 Periods**

**Chapter–3: 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).

**Chapter–4: 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**

**14 Periods**

**Chapter–5: 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**

**14 Periods**

**Chapter–6: 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**

**18Periods**

**Chapter–7: 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**

**12 Periods**

**Chapter–8: 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 velocity,

orbital velocity of a satellite.

**Unit VII: Properties of Bulk Matter**

**24 Periods**

**Chapter–9: 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.

**Chapter–10: 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.

**Chapter–11: Thermal Properties of Matter**

Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity;  $C_p$ ,  $C_v$  - 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**

**12 Periods**

**Chapter–12: 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: Behavior of Perfect Gases and Kinetic Theory of Gases 08 Periods**

**Chapter–13: Kinetic Theory**

Equation of state of a perfect gas, work done in compressing a gas.

Kinetic theory of gases - assumptions, concept of pressure. 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**

**26 Periods**

**Chapter–14: Oscillations**

Periodic motion - time period, frequency, displacement as a function of time, periodic functions and their application.

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.

**Chapter–15: 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.

## PRACTICALS

**Total Periods: 60**

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.

## EVALUATION SCHEME

**Time 3 hours**

**Max. Marks: 30**

Topic	Marks
Two experiments one from each section	7+7
Practical record (experiment and activities)	5
One activity from any section	3
Investigatory Project	3
Viva on experiments, activities and project	5
<b>Total</b>	<b>30</b>

## 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  $L-T^2$  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  $\theta$  by plotting graph between force and  $\text{Sin}\theta$ .

### **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 Class XI**

**Note:** Same Evaluation scheme and general guidelines for visually impaired students as given for Class XII may be followed.

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

Spherical ball, Cylindrical objects, vernier calipers, 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 calipers.
2. To measure the internal diameter and depth of a given beaker/calorimeter using vernier 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<sup>2</sup> 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 practicals may be carried out in an experiential manner rather than recording observations.

**Prescribed Books:**

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
4. The list of other related books and manuals brought out by NCERT (consider multimedia also).

**Note:**

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**CLASS XII (2022-23)**  
**PHYSICS (THEORY)**

Time: 3 hrs.

Max Marks: 70

		No. of Periods	Marks
<b>Unit-I</b>	<b>Electrostatics</b>	<b>26</b>	<b>16</b>
	Chapter-1: Electric Charges and Fields		
	Chapter-2: Electrostatic Potential and Capacitance		
<b>Unit-II</b>	<b>Current Electricity</b>	<b>18</b>	
	Chapter-3: Current Electricity		
<b>Unit-III</b>	<b>Magnetic Effects of Current and Magnetism</b>	<b>25</b>	<b>17</b>
	Chapter-4: Moving Charges and Magnetism		
	Chapter-5: Magnetism and Matter		
<b>Unit-IV</b>	<b>Electromagnetic Induction and Alternating Currents</b>	<b>24</b>	
	Chapter-6: Electromagnetic Induction		
	Chapter-7: Alternating Current		
<b>Unit-V</b>	<b>Electromagnetic Waves</b>	<b>04</b>	
	Chapter-8: Electromagnetic Waves		
<b>Unit-VI</b>	<b>Optics</b>	<b>30</b>	<b>18</b>
	Chapter-9: Ray Optics and Optical Instruments		
	Chapter-10: Wave Optics		
<b>Unit-VII</b>	<b>Dual Nature of Radiation and Matter</b>	<b>8</b>	<b>12</b>
	Chapter-11: Dual Nature of Radiation and Matter		
<b>Unit-VIII</b>	<b>Atoms and Nuclei</b>	<b>15</b>	
	Chapter-12: Atoms		
	Chapter-13: Nuclei		
<b>Unit-IX</b>	<b>Electronic Devices</b>	<b>10</b>	<b>7</b>
	Chapter-14: Semiconductor Electronics: Materials, Devices and Simple Circuits		
<b>Total</b>		<b>160</b>	<b>70</b>

**Unit I: Electrostatics****26 Periods****Chapter–1: Electric Charges and Fields**

Electric charges, Conservation of charge, Coulomb's law-force between two-point charges, forces between multiple charges; superposition principle and continuous charge distribution.

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

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

**Chapter–2: Electrostatic Potential and Capacitance**

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

Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarization, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor (no derivation, formulae only).

**Unit II: Current Electricity****18 Periods****Chapter–3: Current Electricity**

Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility and their relation with electric current; Ohm's law, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity and conductivity, temperature dependence of resistance, Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel, Kirchhoff's rules, Wheatstone bridge.



**Unit III: Magnetic Effects of Current and Magnetism**

**25 Periods**

**Chapter–4: Moving Charges and Magnetism**

Concept of magnetic field, Oersted's experiment.

Biot - Savart law and its application to current carrying circular loop.

Ampere's law and its applications to infinitely long straight wire. Straight solenoid (only qualitative treatment), force on a moving charge in uniform magnetic and electric fields.

Force on a current-carrying conductor in a uniform magnetic field, force between two parallel current-carrying conductors-definition of ampere, torque experienced by a current loop in uniform magnetic field; Current loop as a magnetic dipole and its magnetic dipole moment, moving coil galvanometer-its current sensitivity and conversion to ammeter and voltmeter.

**Chapter–5: Magnetism and Matter**

Bar magnet, bar magnet as an equivalent solenoid (qualitative treatment only), magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis (qualitative treatment only), torque on a magnetic dipole (bar magnet) in a uniform magnetic field (qualitative treatment only), magnetic field lines.

Magnetic properties of materials- Para-, dia- and ferro - magnetic substances with examples, Magnetization of materials, effect of temperature on magnetic properties.

**Unit IV: Electromagnetic Induction and Alternating Currents**

**24 Periods**

**Chapter–6: Electromagnetic Induction**

Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Self and mutual induction.

## **Chapter–7: Alternating Current**

Alternating currents, peak and RMS value of alternating current/voltage; reactance and impedance; LCR series circuit (phasors only), resonance, power in AC circuits, power factor, wattless current.

AC generator, Transformer.

## **Unit V: Electromagnetic waves**

**04 Periods**

### **Chapter–8: Electromagnetic Waves**

Basic idea of displacement current, Electromagnetic waves, their characteristics, their transverse nature (qualitative idea only).

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

## **Unit VI: Optics**

**30 Periods**

### **Chapter–9: Ray Optics and Optical Instruments**

**Ray Optics:** Reflection of light, spherical mirrors, mirror formula, refraction of light, total internal reflection and optical fibers, refraction at spherical surfaces, lenses, thin lens formula, lens maker's formula, magnification, power of a lens, combination of thin lenses in contact, refraction of light through a prism.

Optical instruments: Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.

### **Chapter–10: Wave Optics**

**Wave optics:** Wave front and Huygen's principle, reflection and refraction of plane wave at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygen's principle. Interference, Young's double slit experiment and expression for fringe width (No derivation final expression only), coherent sources and sustained interference of light, diffraction due to a single slit, width of central maxima (qualitative treatment only).

**Unit VII: Dual Nature of Radiation and Matter**

**08 Periods**

**Chapter–11: Dual Nature of Radiation and Matter**

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

Experimental study of photoelectric effect

Matter waves-wave nature of particles, de-Broglie relation.

**Unit VIII: Atoms and Nuclei**

**15 Periods**

**Chapter–12: Atoms**

Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model of hydrogen atom, Expression for radius of nth possible orbit, velocity and energy of electron in his orbit, of hydrogen line spectra (qualitative treatment only).

**Chapter–13: Nuclei**

Composition and size of nucleus, nuclear force

Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission, nuclear fusion.

**Unit IX: Electronic Devices**

**10 Periods**

**Chapter–14: Semiconductor Electronics: Materials, Devices and Simple Circuits**

Energy bands in conductors, semiconductors and insulators (qualitative ideas only) Intrinsic and extrinsic semiconductors- p and n type, p-n junction

Semiconductor diode - I-V characteristics in forward and reverse bias, application of junction diode -diode as a rectifier.

## PRACTICALS

**Total Periods 60**

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.
- The Report of the project carried out by the students.

### Evaluation Scheme

**Max. Marks: 30**

**Time 3 hours**

Two experiments one from each section	7+7 Marks
Practical record [experiments and activities]	5 Marks
One activity from any section	3 Marks
Investigatory Project	3 Marks
Viva on experiments, activities and project	5 Marks
<b>Total</b>	<b>30 marks</b>

### Experiments

### SECTION–A

1. To determine resistivity of two / three wires by plotting a graph for potential difference versus current.
2. To find resistance of a given wire / standard resistor using metre bridge.
3. To verify the laws of combination (series) of resistances using a metre bridge.

**OR**

To verify the laws of combination (parallel) of resistances using a metre bridge.

4. To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.
5. To convert the given galvanometer (of known resistance and figure of merit) into a voltmeter of desired range and to verify the same.

**OR**

To convert the given galvanometer (of known resistance and figure of merit) into an ammeter of desired range and to verify the same.

6. To find the frequency of AC mains with a sonometer.

**Activities**

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

**SECTION-B**

**Experiments**

1. To find the value of  $v$  for different values of  $u$  in case of a concave mirror and to find the focal length.
2. To find the focal length of a convex mirror, using a convex lens.
3. To find the focal length of a convex lens by plotting graphs between  $u$  and  $v$  or between  $1/u$  and  $1/v$ .
4. To find the focal length of a concave lens, using a convex lens.
5. To determine angle of minimum deviation for a given prism by plotting a graph

between angle of incidence and angle of deviation.

6. To determine refractive index of a glass slab using a travelling microscope.
7. To find the refractive index of a liquid using convex lens and plane mirror.
8. To find the refractive index of a liquid using a concave mirror and a plane mirror.
9. To draw the I-V characteristic curve for a p-n junction diode in forward and reverse bias.

### **Activities**

1. To identify a diode, an LED, a resistor and a capacitor from a mixed collection of such items.
2. Use of multimeter to see the unidirectional flow of current in case of a diode and an LED and check whether a given electronic component (e.g., diode) is in working order.
3. To study effect of intensity of light (by varying distance of the source) on an LDR.
4. To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab.
5. To observe diffraction of light due to a thin slit.
6. To study the nature and size of the image formed by a (i) convex lens, or (ii) concave mirror, on a screen by using a candle and a screen (for different distances of the candle from the lens/mirror).
7. To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses.

### **Suggested Investigatory Projects**

1. To study various factors on which the internal resistance/EMF of a cell depends.
2. To study the variations in current flowing in a circuit containing an LDR because of a variation in
  - (a) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance).

(b) the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.

3. To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.
4. To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed transformer.
5. To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.
6. To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.
7. To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.
8. To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.

**Practical Examination for Visually Impaired Students of  
Classes XI and XII Evaluation Scheme**

**Time 2 hours**

**Max. Marks: 30**

Identification/Familiarity with the apparatus	5 marks
Written test (based on given/prescribed practicals)	10 marks
Practical Record	5 marks
Viva	10 marks
<b>Total</b>	<b>30 marks</b>

**General Guidelines**

- The practical examination will be of two-hour duration.
- A separate list of ten experiments is included here.
- The written examination in practicals for these students will be conducted at the time of practical examination of all other students.
- The written test will be of 30 minutes duration.
- 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.
- A writer may be allowed to such students as per CBSE examination rules.
- 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. A student is expected to record at least five of the listed experiments as per the specific instructions for each subject. These practicals should be duly checked and signed by the internal examiner.
- The format of writing any experiment in the practical file should include aim, apparatus required, simple theory, procedure, related practical skills, precautions etc.
- 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.



## Class XII

### A. Items for Identification/ familiarity with the apparatus for assessment in practicals (All experiments)

Meter scale, general shape of the voltmeter/ammeter, battery/power supply, connecting wires, standard resistances, connecting wires, voltmeter/ammeter, meter bridge, screw gauge, jockey Galvanometer, Resistance Box, standard Resistance, connecting wires, Potentiometer, jockey, Galvanometer, Lechlanche cell, Daniell cell [simple distinction between the two vis-à-vis their outer (glass and copper) containers], rheostat connecting wires, Galvanometer, resistance box, Plug-in and tapping keys, connecting wires battery/power supply, Diode, Resistor (Wire-wound or carbon ones with two wires connected to two ends), capacitors (one or two types), Inductors, Simple electric/electronic bell, battery/power supply, Plug-in and tapping keys, Convex lens, concave lens, convex mirror, concave mirror, Core/hollow wooden cylinder, insulated wire, ferromagnetic rod, Transformer core, insulated wire.

### B. List of Practicals

1. To determine the resistance per cm of a given wire by plotting a graph between voltage and current.
2. To verify the laws of combination (series/parallel combination) of resistances by Ohm's law.
3. To find the resistance of a given wire / standard resistor using a meter bridge.
4. To determine the resistance of a galvanometer by half deflection method.
5. To identify a resistor, capacitor, inductor and diode from a mixed collection of such items.
6. To observe the difference between
  - (i) a convex lens and a concave lens
  - (ii) a convex mirror and a concave mirror and to estimate the likely difference between the power of two given convex /concave lenses.
7. To design an inductor coil and to know the effect of
  - (i) change in the number of turns

(ii) Introduction of ferromagnetic material as its core material on the inductance of the coil.

8. To design a (i) step up (ii) step down transformer on a given core and know the relation between its input and output voltages.

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

**Prescribed Books:**

1. Physics, Class XI, Part -I and II, Published by NCERT.
2. Physics, Class XII, Part -I and II, Published by NCERT.
3. Laboratory Manual of Physics for class XII Published by NCERT.
4. The list of other related books and manuals brought out by NCERT (consider multimedia also).

**Note:**

**The content indicated in NCERT textbooks as excluded for the year 2022-23 is not to be tested by schools and will not be assessed in the Board examinations 2022-23.**

## QUESTION PAPER DESIGN

Theory (Class: XI/XII)

Maximum Marks: 70

Duration: 3 hrs.

S	Typology of Questions	Total Marks	Approximate Percentage
1	<b>Remembering:</b> Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers. <b>Understanding:</b> Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas	27	38 %
2	<b>Applying:</b> Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	22	32%
3	<b>Analysing :</b> Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations <b>Evaluating:</b> Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria. <b>Creating:</b> Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.	21	30%
	Total Marks	70	100
	Practical	30	
	Gross Total	100	

**Note:**

*The above template is only a sample. Suitable internal variations may be made for generating similar templates keeping the overall weightage to different form of questions and typology of questions same.*

**For more details kindly refer to Sample Question Paper of class XII for the year 2022-23 to be published by CBSE at its website.**