Grade XI (2025-26)

Number of Paper:1Time:3 HoursMax Marks:80

No.	Units	Marks	
I	Numbers, Quantification and	09	
	Numerical Applications		
II	Algebra	15	
	Mathematical Reasoning	06	
IV	Calculus	10	
V	Probability	08	
VI	Descriptive Statistics	12	
VII	Basics of Financial Mathematics	15	
VIII	Coordinate Geometry	05	
	Total		
	Internal Assessment		

	<u>CLASS- XI</u>			
SI. No.	Contents	Learning Outcomes: Students will be able to	Notes / Explanation	
UNIT	-1 NUMBERS	, QUANTIFICATION AND NUM	ERICAL APPLICATIONS	
Numb	pers & Quantific	ation		
1.1	Binary Numbers	 Express decimal numbers in binary system Express binary numbers in decimal system 	 Definition of number system (decimal and binary) Conversion from decimal to binary system and vice - versa 	
1.2	Indices, Logarithm and Antilogarithm	 Relate indices and logarithm /antilogarithm Find logarithm and antilogarithms of given Number 	 Applications of rules of indices Introduction of logarithm and antilogarithm Common and Natural logarithm 	
1.3	Laws and properties of logarithms	 Enlist the laws and properties of logarithms Apply laws of logarithm 	 Fundamental laws of logarithm 	
1.4	Simple applications of logarithm and Antilogarithm	 Use logarithm in different applications 	 Express the problem in the form of an equation and apply logarithm/ antilogarithm 	
Nume	erical Applicatio	ns		
1.5	Clock	 Evaluate the angular value of a minute Calculate the angle formed between two hands of clock at given time Calculate the time for which hands of clock Meet 	 Number of rotations of minute hand / hour hand of a clock in a day Number of times minute hand and hour hand coincides in a day 	
1.6	Calendar	 Determine Odd days in a month/ year/ century Decode the day for the given date 	 Definition of odd days Odd days in a year/ century. Day corresponding to a given date 	
1.7	Time, Work and Distance	 Establish the relationship between work and time Compare the work done by the individual / group w.r.t. time Calculate the time taken/ distance covered/ Work done from the given data 	 Basic concept of time and work Problems on time taken / distance covered / work done 	

1.8	Seating arrangement	 Create suitable seating plan/ draft as per given conditions (Linear/circular) Locate the position of a person in a seating arrangement 	 Linear and circular seating arrangement Position of a person in a seating arrangement
UNIT	-2 ALGEBRA		
Sets			
2.1	Introduction to sets – definition	 Define set as well- defined collection of objects 	 Definition of a Set Examples and Non-examples of Set
2.2	Representation of sets	 Represent a set in Roster form and Set builder form 	 Write elements of a set in Set Builder form and Roster Form Convert a set given in Roster form into Set builder form and vice-versa
2.3	Types of sets and their notations	 Identify different types of sets on the basis of number of elements in the set Differentiate between equal set and equivalence set 	 Types of Sets: Finite Set, Infinite Set, Empty Set, Singleton Set
2.4	Subsets	 Enlist all subsets of a set Find number of subsets of a given set Find number of elements of a power set 	 Subset of a given set Familiarity with terms like Superset, Improper subset, Universal set, Power set
2.5	Intervals	 Express subset of real numbers as intervals 	 Open interval, closed interval, semi open interval and semi closed interval
2.6	Venn diagrams	 Apply the concept of Venn diagram to understand the relationship between sets Solve problems using Venn diagram 	 Venn diagrams as the pictorial representation of relationship between sets Practical Problems based on Venn Diagrams

2.7	Operations on sets	 Perform operations on sets to solve practical problems 	 Operations on sets include i) Union of sets ii) Intersection of sets iii) Difference of sets iv) Complement of a set v) De Morgan's Laws
Relatio	ons		
2.8	Ordered pairs Cartesian product of two sets	 Explain the significance of specific arrangement of elements in a pair Write Cartesian product of two sets Find the number of elements in a Cartesian product of two sets 	 Ordered pair, order of elements in an ordered pair and equality of ordered pairs Cartesian product of two non- empty sets
2.9	Relations	 Express relation as a subset of Cartesian product Find domain and range of a relation 	 Definition of Relation, examples pertaining to relations in the real number system
Seque	nces and Series		
2.10	Sequence and Series	Differentiate between sequence and series	• Sequence: $a_1, a_2, a_3,, a_n$ • Series: $a_1 + a_2 + a_3 + + a_n$
2.11	Arithmetic Progression	 Identify Arithmetic Progression (AP) Establish the formulae of finding nth term and sum of n terms Solve application problems based on AP Find arithmetic mean (AM) of two positive numbers 	• General term of A P: $t_n = a + (n - 1)d$ • Sum of <i>n</i> terms of A P: $S_n = \frac{n}{2}[2a + (n - 1)d]$ • AM of <i>a</i> and $b = \frac{a+b}{2}$
2.12	Geometric Progression	Identify Geometric Progression (GP)	• General term of GP: $t_n = a r^{n-1}$
		 Derive the nth term and sum of n terms of a given GP 	• Sum of <i>n</i> terms of A P: $S_n = \frac{a(r^n - 1)}{r - 1}$
		 Solve problems based on applications of GP 	• Sum of infinite terms of GP = $\frac{a}{1-r}$, where $-1 < r < 1$
		 Find geometric mean (GM) of two positive numbers Solve problems based 	• Geometric mean of a and $b = \sqrt{ab}$ • For two positive numbers a and b.
		on relation between AM and GM	AM \geq GM i.e., $\frac{a+b}{2} \geq \sqrt{ab}$

2.13	Applications of AP and GP	 Apply appropriate formulas of AP and GP to solve application problems 	Applications based onEconomy StimulationThe Virus spread
Perm	utations and Co	mbinations	
2.14	Factorial	 Define factorial of a number Calculate factorial of a number 	 Definition of factorial: n! = n(n-1)(n-2) 3.2.1 Usage of factorial in counting principles
2.15	Fundamental Principle of Counting	 Appreciate how to count without counting 	 Fundamental Principle of Addition Fundamental Principle of Multiplication
2.16	Permutations	 Define permutation Apply the concept of permutation to solve simple problems 	• Permutation as arrangement of objects in a definite order taken some or all at a time. Theorems under different conditions resulting in ${}^{n}P_{r} = \frac{n!}{(n-r)!}$ or n^{r} or $\frac{n!}{n_{1}!n_{2}!n_{k}!}$ arrangements.
2.17	Combinations	 Define combination Differentiate between permutation and combination Apply the formula of combination to solve the related problems 	•The number of combinations of n different objects taken r at a time is given by ${}^{n}C_{r} = \frac{n!}{r!(n-r)!}$ Some results on Combinations: • ${}^{n}C_{0} = 1 = {}^{n}C_{n}$ • ${}^{n}C_{a} = {}^{n}C_{b} \Rightarrow a = b \text{ or } a + b = n$ • ${}^{n}C_{r} = {}^{n}C_{n-r}$ • ${}^{n}C_{r} + {}^{n}C_{r-1} = {}^{n+1}C_{r}$
UNIT	-3 MATHEM	ATICAL REASONING	
3.1	Logical reasoning	 Solve logical problems involving odd man out, syllogism, blood relation and coding decoding 	 Odd man out Syllogism Blood relations Coding Decoding
UNIT –	4 CALCULUS		
4.1	Functions	 Identify dependent and independent variables Define a function using dependent and independent variable 	 Dependent variable and independent variable Function as a rule or law that defines a relationship between one variable (the independent variable) and another variable (the dependent variable)

4.2	Domain and Range of a function	 Define domain, range and co-domain of a given function 	 Domain as a set of all values of independent variable Co-domain as a set of all values of dependent variable Range of a function as set of all possible resulting values of dependent variable
4.3	Types of functions and their graphical representation	 Define various types of functions Identify domain, co-domain and range of the function Representation of function graphically 	 Following types of functions with definitions, characteristics and their graphs. Constant function, Identity function, Polynomial function, Rational function, Composite function, Logarithm function, Exponential function, Modulus function, Algebraic function.
4.4	Concepts of limits and continuity of a function	 Define limit of a function Solve problems based on the algebra of limits Define continuity of a function 	 Left hand limit, Right hand limit, Limit of a function, Continuity of a function
4.5	Instantaneous rate of change	 Define instantaneous rate of change 	• The ratio $\frac{\Delta y}{\Delta x} = \frac{f(x+\Delta x)-f(x)}{\Delta x}$ as instantaneous rate of change, where Δy is change in y and Δx is change in x at any instant.
4.6	Differentiation as a process of finding derivative	 Find the derivative of the functions 	 Derivatives of functions (non- trigonometric only)
4.7	Derivatives of algebraic functions using Chain Rule	 Find the derivative of function of a function 	• If $y = f(u)$ where $u = g(x)$ then differential coefficient of y w.r.t x is $\frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx}$
UNIT	-5 PROBABIL	ITY	
5.1	Introduction	 Appreciate the use of probability in daily life situations 	 Probability as quantitative measure of uncertainty Use of probability in determining the insurance premium, weather forecasts etc.
5.2	Random experiment and sample space	Define random experiment and sample space with suitable examples	Sample space as set of all possible outcomes
5.3	Event	 Define an event Recognize and differentiate different types of events and find their probabilities 	• Types of Events: Impossible and sure event, Independent and dependent event, mutually exclusive and exhaustive event.

5.4	Conditional Probability	 Define the concept of conditional probability Apply reasoning skills to solve problems based on conditional probability 	• Conditional Probability of event E given that F has occurred is: $P(E F) = \frac{P(E \cap F)}{P(F)}, P(F) \neq 0$
UNIT-	6 DESCRIP	TIVE STATISTICS	
6.1	Data Interpretation – Measure of Dispersion	 Understand meaning of dispersion in a data set Differentiate between range, quartile deviation, mean deviation and standard deviation Calculate range, quartile deviation, mean deviation and standard deviation and standard deviation for ungrouped and grouped data set Choose appropriate measure of dispersion to calculate spread of data 	 Mean deviation around mean and median Standard deviation and variance Examples of different kinds of data helping students to choose and compare different measures of dispersion
6.2	Percentile rank	 Define Percentile rank Calculate and interpret Percentile rank of scores in a given ungrouped data set 	 Emphasis on visualizing, analysing and interpreting percentile rank scores
6.3	Correlation	 Define correlation in values of two data sets Calculate Spearman's rank correlation for ungrouped data Interpret the coefficient of correlation 	 Emphasis on application, analysis and interpreting the results of coefficient of correlation using practical examples
UNIT	-7 FINANCIA	L MATHEMATICS	
7.1	Interest and Interest Rates	 Define the concept of Interest Rates Compare the difference between Nominal Interest Rate, Effective Rate and Real Interest Rate Solve Practical applications of interest rate 	 Impact of high interest rates and low interest rates on the business.

7.2	Accumulation with simple and compound interest	 Interpret the concept of simple and compound interest Calculate Simple Interest and Compound Interest 	 Meaning and significance of simple and compound interest Compound interest rates applications on various financial products
7.3	Simple and compound interest rates with equivalency	 Explain the meaning, nature and concept of equivalency Analyze various examples for understanding annual equivalency rate 	 Concept of Equivalency Annual Equivalency Rate
7.4	Effective rate of interest	 Define with examples the concept of effective rate of interest 	• Effective Annual Interest Rate $\left(1+\frac{i}{n}\right)^n - 1$ where: i = Nominal Interest Rate n = No. of Periods
7.5	Annuities, Calculating value of Regular Annuity	 Explain the concept of Immediate Annuity, Annuity due and Deferred Annuity Calculate General Annuity 	 Definition, Formulae and Examples
7.6	Simple applications of regular annuities (up to 3 period)	 Calculate the future value of regular annuity, annuity due Apply the concept of Annuity in real life situations 	 Examples of regular annuity: Mortgage Payment, Car Loan Payments, Leases, Rent Payment, Insurance payouts etc.
7.7	Tax, calculation of tax, simple applications of tax calculation in Goods and service tax, Income Tax	 Explain fundamentals of taxation Differentiate between Direct and indirect tax Define and explain GST Calculate GST Explain rules -under State Goods and Services Tax (SGST) Central Goods and Services Tax (CGST) and Union Territory. Goods and Services Tax (UTGST) 	 Computation of income tax Add Income from salary, house property, business or profession, capital gain, other sources, etc. Less deductions: PF, PPF, LIC, Housing Ioan, FD, NSC etc. Assess the Individuals under Income Tax Act Formula for GST – Different Tax heads under GST

7.8	Bills, tariff rates, fixed charge, surcharge, service charge	 Describe the meaning of bills and its various types Analyze the meaning and rules determining tariff rates Explain the concept of fixed charge 	 Tariff rates- its basis of determination Concept of fixed charge service charge and their applications in various sectors of Indian economy
7.9	Calculation and interpretation of electricity bill, water supply bill and other supply bills	 To interpret and analyze electricity bills, water bills and other supply bills Evaluate how to calculate units consumed under electricity bills/water bill. 	 Components of electricity bill/water bill and other supply bills: i) overcharging of electricity ii) units consumed in water supply bills iii) units consumed in electricity bills
	-8 COORDINA	TE GEOMETRY	
8.1	Straight line	 Find the slope and equation of line in various form Find angle between the two lines Find the perpendicular distance of a given point from a line Find the distance between two parallel lines 	 Gradient of a line Equation of line: Parallel to axes, point-slope form, two-points form, slope intercept form, intercept form Application of the straight line in demand curve related to economics problems
8.2	Circle	 Define a circle Find different form of equations of a circle Solve problems based on applications of circle 	 Circle as a locus of a point in a plane Equation of a circle in standard form, central form, diameter form and general form
8.3	Parabola	 Define parabola and related terms 	 Parabola as a locus of a point in a plane. Equation of a parabola in standard form.

Practical: Use of spreadsheet

Calculating average, interest (simple and compound), creating pictographs, drawing pie chart, bar graphs, calculating central tendency visualizing graphs (straight line, circles and parabola using real-time data)

Suggested practical using spreadsheet

- 1. Plot the graph of functions on excel study the nature of function at various points, drawing lines of tangents
- 2. Create a budget of income and spending
- 3. Create and compare sheet of price & features to buy a product
- 4. Prepare the best option plan to buy a product by comparing cost, shipping charges, tax and other hidden costs
- 5. Smart purchasing during sale season
- 6. Prepare a report card using scores of the last four exams and compare the performance
- 7. Collect the data on weather, price, inflation, and pollution. Sketch different types of graphs and analyze the results.

BIOLOGY Subject Code – 044 Classes XI - XII (2025-26)

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 links the discoveries and innovations in biology to everyday life such as environment, industry, health and agriculture. The Biology curriculum is expected to enable the students to:

- develop capacities for observation, experimentation, documentation, and familiarity with quantitative reasoning and multi-disciplinary approaches.
- engender sensitivity towards biological issues (environment, health) in their surroundings and be aware of how citizens can contribute to their local communities and to science.
- be aware of bioethical concerns that arise in biology today.
- understand the integration of different fields of biology and highlight the interconnections between these fields.
- be exposed to diverse careers in the life sciences.

This curriculum of Biology will help in achieving the following curricular goals and competencies delineated in the National Curriculum Framework for School Education 2023:

CG-3	C-3.1 Explains the role of cellular components (nucleus,			
Explores the structure and function of	on of mitochondria, endoplasmic reticulum, vacuoles, chloroplast, cell			
the living world at the cellular level	wall), including the semi permeability of cell membrane in making			
	cell the structural basis of living organisms and functional basis of			
	life processes			
	C-3.2 Analyses similarities and differences in the life processes			
	involved in nutrition (photosynthesis in plants; absorption of nutrients			
	in fungi; digestion in animals), transport (transport of water in plants;			
	circulation in animals), exchange of materials (respiration and			
	excretion), and reproduction			
	C-3.3 Describes mechanisms of heredity (in terms of DNA, genes,			
	chromosomes) and variation (as changes in the sequence of DNA)			
CG-4	C-4.1 Applies the knowledge of cellular diversity in organisms along			
Explores interconnectedness	with the ecological role organisms play (autotrophic/ heterotrophic			
between organisms and their	nutrition) to classify them into five-kingdoms			

environment	C-4.2 Illustrates different levels of organisations of living organisms
	(from molecules to organisms)
	C-4.3 Analyses different levels of biological organisation from
	organisms to ecosystems and biomes along with interactions that
	take place at each level
	C-4.4 Analyses patterns of inheritance of traits in terms of Mendel's
	laws and its consequences at a population level (using models
	and/or simulations)
	C 4 5 Analysis avidences of high right avalution demonstration the
	C-4.5 Analyses evidences of biological evolution demonstrating the
	consequences of the process of hatural selection in terms of
	of organisms
CG-5	C-5.3 Applies scientific principles to explain phenomena in other
Draws linkages between scientific	subjects (sound pitch, octave, and amplitude in music; use of
knowledge and knowledge across	muscles in dance form and sports)
other curricular areas	
CG-6	C-6.1 Knows and explains the significant contributions of India to all
Understands and appreciates the	matters (concepts, explanations, methods) that are studied within
contribution of India through history	the curriculum in an integrated manner
and the present times to the overall	
field of Science, including the	
disciplines that constitute it	0.7.4. 0.4
CG-7	C-7.1 States concepts that represent the most current
Develops awareness of the most	understanding of the matter being studied — ranging from mere
current discoveries, ideas, and	familiarity to conceptual understanding of the matter as appropriate
trontiers in all areas of scientific	to the developmental stage of the students
knowledge in order to appreciate that	C-7.2 States questions related to matters in the curriculum for which
Science is ever evolving, and that	current scientific understanding is well-recognised to be inadequate
questions	
	C.8.1. Develope accurate and appropriate models (including
CG-o	C-o. 1 Develops accurate and appropriate models (including
doing Science by	geometric, mathematical, graphical) to represent real-life events and
doing Science	phenomena using scientific principles and use these models to
	חמווישטומני אמוזמטופט מוזע שופטוכו ופטוונט
	C-8.2 Designs and implements a plan for scientific inquiry
	(formulates hypotheses, makes predictions, identifies variables,
	accurately uses scientific instruments, represents data — primary
	and secondary — in multiple modes, draws inferences based on
	and secondary in maniple modes, draws interences based on
	data and understanding of scientific concepts, theories, laws, and

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. (NCFSE-2023)

Attainment of the competencies shall be done through transaction of the curriculum using appropriate pedagogy; these shall be assessed through an integrated evaluation scheme.

COURSE STRUCTURE CLASS XI (2025-26) (THEORY)

Time: 03 Hours

Max. Marks: 70

Unit	Title	Marks
Ι	Diversity of Living Organisms	15
=	Structural Organization in Plants and Animals	10
III	Cell: Structure and Function	15
IV	Plant Physiology	12
V	Human Physiology	18
	Total	70

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 and Angiosperms.

Chapter-4: Animal Kingdom

Salient features and classification of animals, non-chordates up to phyla level and chordates upto 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 Plants and Animals

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, and 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-11: 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; C3 and C4 pathways; factors affecting photosynthesis.

Chapter-12: 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-13: 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; plant growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA.

Unit-V Human Physiology

Chapter-14: 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-15: 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-16: 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-17: 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-18: 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-19: 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.

The following topics are included in the syllabus but will be assessed only formatively to reinforce understanding without adding to summative assessments. The reduces academic stress while ensuring meaningful learning. Schools can integrate these with existing chapters as they align well. Relevant NCERT textual material is enclosed for reference.

Digestion and Absorption (Please Refer to CBSE Reading Material)

Alimentary canal and digestive glands, role of digestive enzymes and gastrointestinal hormones; Peristalsis, digestion, absorption and assimilation of proteins, carbohydrates and fats; calorific values of proteins, carbohydrates and fats; egestion; nutritional and digestive disorders - PEM, indigestion, constipation, vomiting, jaundice, diarrhoea.

PRACTICALS

Time: 03 Hours

Max. Marks: 30

Evaluation S	Marks	
One Major Experiment Part A (Exp	eriment 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 student's	4 Marks
Project Record + Viva Vocework over the academic session may be given)		5 Marks
Total		30 Marks

A: List of Experiments

- 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.
- 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,* liver fluke, *Ascaris*, leech, earthworm, prawn, silkworm, honey bee, snail, starfish, shark, rohu, frog, lizard, pigeon and rabbit.
- 4. Mitosis in onion root tip cells and animal's cells (grasshopper) from permanent slides.
- 5. 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 /equipment /animal and plant material / chemicals for assessment in practicals (All experiments)
- **B.** Equipment compound microscope, test tube, petri dish, 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, Honeycomb, 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

- 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 (including multimedia).
- 3. Biology supplementary Material (Revised). Available on CBSE Website.
- 4. Reading Material Biology Class XI.

CHEMISTRY Subject Code: 043 Classes XI-XII (2025-26)

Rationale

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

The new and updated curriculum is based on a disciplinary approach with rigor and depth taking care that the syllabus is not heavy and at the same time it is comparable to that at the international level. The pedagogy of Chemistry has undergone tremendous changes in recent times. Many new areas like green chemistry, material science, biomolecules, and industrial chemistry deserve to be an integral part of the chemistry syllabus at this stage. Globally, nomenclature of elements and compounds, symbols and units of physical quantities recommended by scientific bodies like IUPAC and CGPM are of immense importance and also need to be incorporated in the updated syllabus. The proposed syllabus adequately addresses these issues.

Objectives

The curriculum of Chemistry at the second phase of Secondary stage has been designed to:

- equip the learners with tools to understand the working of Chemistry rather than mere facts of it;
- develop the necessary conceptual foundations of chemistry and ability to apply them to real life situations;
- enable the learners to represent chemical phenomena at macroscopic, molecular, and symbolic levels;
- make the learners identify patterns and form connections that underlie various chemical phenomena;
- prepare the learners to contribute to frontier research areas related to climate change, environmental issues, materials science, biology and medicine etc.:
- inculcate problem solving skills in the learners and integrate life skills and values in the context of chemistry; and
- apprise learners of the interface of chemistry with other disciplines of science such as physics, biology, geology, engineering etc.

COURSE STRUCTURE CLASS XI THEORY

Time: 3 Hours

Total Marks: 70

S. No	UNIT	Marks
1	Some Basic Concepts of Chemistry	7
2	Structure of Atom	9
3	Classification of Elements and Periodicity in Properties	6
4	Chemical Bonding and Molecular Structure	7
5	Chemical Thermodynamics	9
6	Equilibrium	7
7	Redox Reactions	4
8	Organic Chemistry: Some basic Principles and	11
	Techniques	
9	Hydrocarbons	10
	TOTAL	70

Unit 1: Some Basic Concepts of Chemistry

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 2: Structure of Atom

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 3: Classification of Elements and Periodicity in Properties

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, lonization enthalpy, electron gain enthalpy, electronegativity, valiancy, Nomenclature of elements with atomic number greater than 100.

Unit 4: Chemical Bonding and Molecular Structure

Valence electrons, ionic bond, covalent bond, bond parameters, Lewis 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 5: Chemical Thermodynamics

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 ΔU and ΔH , 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 6: Equilibrium

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 7: Redox Reactions

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 8: Organic Chemistry – Some Basic Principles and Techniques

General introduction, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds. Electronic displacements in a covalent bond: inductive effect, electrometric 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 9: Hydrocarbons

Aliphatic Hydrocarbons

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

Alkenes - Nomenclature, 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, 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 functional group in mono substituted benzene, carcinogenicity and toxicity

Note: The following topics are included in the syllabus but will be assessed only formatively to reinforce understanding without adding to summative assessments. This reduces academic stress while ensuring meaningful learning. Schools can integrate these with existing chapters as they align well. Relevant NCERT textual material is enclosed for reference.

1. s & p Block Elements

Electronic configuration, atomic & lonic radii, lonization Enthalpy, Hydration Enthalpy and general trends in physical and chemical properties of s and p block elements across the periods and down the groups; unique behavior of the first element in each group.

2. The Gaseous State

Qualitative treatment of Gas laws, Ideal gas equation and deviations from it.

PRACTICAL

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

PRACTICAL SYLLABUS

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 a universal indicator.
- 2. Study the pH change by common-ion in case of weak acids and weak bases.

D.Chemical Equilibrium

Any one of the following experiments:

- Study the shift in equilibrium between ferric ions and thiocyanate ions by increasing/decreasing the concentration of either of the ions.
- Study the shift in equilibrium between $[Co(H_2O)_6]^{2+}$ 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

Cations: $Pb^{2+}, Cu^{2+}, Al^{3+}, Fe^{3+}, Mn^{2+}, Ni^{2+}, Zn^{2+}, Co^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}, Mg^{2+}, NH_4^+$

Anions: $CO_3^{2-}, S^{2-}, SO_3^{2-}, NO_3^{-}, NO_2^{-}, Cl^-, Br^-, I^-, SO_4^{2-}, PO_4^{3-}, CH_3COO^-$ (Note: Insoluble salts excluded)

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

PROJECTS

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

A few suggested Projects

- a) Checking the bacterial contamination in drinking water by testing sulphide ion
- b) Study of the methods of purification of water
- c) 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).

- d) Investigation of the foaming capacity of different washing soaps and the effect of addition of Sodium carbonate on it
- e) Study the acidity of different samples of tea leaves.
- f) Determination of the rate of evaporation of different liquids
- g) Study the effect of acids and bases on the tensile strength of fibers.
- h) 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 Challenged Students Class XI

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

List of apparatus for identification for assessment in practicals (All experiments) Beaker, tripod stand, wire gauze, glass rod, funnel, filter paper, Bunsen burner, test tube, test tube stands, dropper, test tube holder, ignition tube, china dish, tongs, standard flask, pipette, burette, conical flask, clamp stand, dropper, wash bottle

- Odor detection in qualitative analysis.
- Procedure/Setup of the apparatus.

List of Experiments

A. Characterization and Purification of Chemical Substances Crystallization of an impure sample of any one of the following:

copper sulphate, benzoic acid.

B. 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.

C. 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 $[Co(H_2O)_6]^{2+}$ and chloride ions by changing the concentration of either of the ions.

D. 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.

E. Qualitative Analysis

- Determination of one anion and one cation in a given salt Cations - NH₄⁺
 Anions: CO₃²⁻,S²⁻, SO₃²⁻, Cl⁻, CH₃COO⁻
 (Note: insoluble salts excluded)
- 2. Detection of Nitrogen in the given organic compound.
- 3. 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. Manual of Microscale Chemistry laboratory kit.

Links for NCERT textbooks:

- 1. https://ncert.nic.in/textbook.php?kech1=0-6
- 2. <u>https://ncert.nic.in/textbook.php?kech2=0-3</u>
- 3. https://ncert.nic.in/division/dek/pdf/Manual_01.pdf

COMPUTER SCIENCE Subject Code - 083 Class XI (2025-26)

1. Learning Outcomes

Students should be able to:

- a) develop basic computational thinking
- b) explain and use data types
- c) appreciate the notion of algorithms
- d) develop a basic understanding of computer systems- architecture and operating system
- e) explain cyber ethics, cyber safety, and cybercrime
- f) understand the value of technology in societies along with consideration of gender and disability issues.

Unit No.	Unit Name	Marks
1	Computer Systems and Organisation	10
2	Computational Thinking and Programming -1	45
3	Society, Law, and Ethics	15
	Total	70

2. Distribution of Marks

3. Unit wise Syllabus

Unit 1: Computer Systems and Organisation

- Basic computer organisation: Introduction to Computer System, hardware, software, input device, output device, CPU, memory (primary, cache and secondary), units of memory (bit, byte, KB, MB, GB, TB, PB)
- Types of software: System software (Operating systems, system utilities, device drivers), programming tools and language translators (assembler, compiler, and interpreter), application software
- Operating System(OS): functions of the operating system, OS user interface
- Boolean logic: NOT, AND, OR, NAND, NOR, XOR, truth tables and De Morgan's laws, Logic circuits
- Number System: Binary, Octal, Decimal and Hexadecimal number system;

conversion between number systems

• Encoding Schemes: ASCII, ISCII, and Unicode (UTF8, UTF32)

Unit 2: Computational Thinking and Programming - I

- Introduction to Problem-solving: Steps for Problem-solving (Analyzing the problem, developing an algorithm, coding, testing, and debugging), representation of algorithms using flowchart and pseudocode, decomposition
- Familiarization with the basics of Python programming: Introduction to Python, Features of Python, executing a simple "hello world" program, execution modes: interactive mode and script mode, Python character set, Python tokens(keyword, identifier, literal, operator, punctuator), variables, concept of I-value and r-value, use of comments
- Knowledge of data types: Number(integer, floating point,complex), boolean, sequence(string, list, tuple), None, Mapping(dictionary), mutable and immutable data types.
- Operators: arithmetic operators, relational operators, logical operators, assignment operators, augmented assignment operators, identity operators (is, is not), membership operators (in not in)
- Expressions, statement, type conversion, and input/output: precedence of operators, expression, evaluation of an expression, type-conversion (explicit and implicit conversion), accepting data as input from the console and displaying output.
- Errors- syntax errors, logical errors, and run-time errors
- Flow of Control: introduction, use of indentation, sequential flow, conditional and iterative flow
- Conditional statements: if, if-else, if-elif-else, flowcharts, simple programs: e.g.: absolute value, sort 3 numbers and divisibility of a number.
- Iterative Statement: for loop, range(), while loop, flowcharts, break and continue statements, nested loops, suggested programs: generating pattern, summation of series, finding the factorial of a positive number, etc.
- Strings: introduction, string operations (concatenation, repetition, membership and slicing), traversing a string using loops, built-in functions/methods-len(), capitalize(), title(), lower(), upper(), count(), find(), index(), endswith(), startswith(), isalnum(), isalpha(), isdigit(), islower(), isupper(), isspace(),lstrip(), rstrip(), strip(), replace(), join(), partition(), split()
- Lists: introduction, indexing, list operations (concatenation, repetition, membership and slicing), traversing a list using loops, built-in functions/methods–len(), list(), append(), extend(), insert(), count(), index(), remove(), pop(), reverse(), sort(), sorted(), min(), max(), sum(); nested lists, suggested programs: finding the maximum, minimum, mean of numeric values stored in a list; linear search on list of numbers and counting the frequency of elements in a list.
- Tuples: introduction, indexing, tuple operations (concatenation, repetition, membership and slicing); built-in functions/methods len(), tuple(), count(), index(), sorted(), min(), max(), sum(); tuple assignment, nested tuple; suggested programs: finding the minimum, maximum, mean of values stored in a tuple; linear

search on a tuple of numbers, counting the frequency of elements in a tuple.

- Dictionary: introduction, accessing items in a dictionary using keys, mutability of a dictionary (adding a new term, modifying an existing item), traversing a dictionary, built-in functions/methods len(), dict(), keys(), values(), items(), get(), update(), del, clear(), fromkeys(), copy(), pop(), popitem(), setdefault(), max(), min(), sorted(); Suggested programs: count the number of times a character appears in a given string using a dictionary, create a dictionary with names of employees, their salary and access them.
- Introduction to Python modules: Importing module using 'import <module>' and using from statement, importing math module (pi, e, sqrt(), ceil(), floor(), pow(), fabs(), sin(), cos(), tan()); random module (random(), randint(), randrange()), statistics module (mean(), median(), mode()).

Unit 3: Society, Law and Ethics

- Digital Footprints
- Digital Society and Netizen: net etiquettes, communication etiquettes, social media etiquettes
- Data Protection: Intellectual property rights (copyright, patent, trademark), violation of IPR (plagiarism, copyright infringement, trademark infringement), open source software and licensing (Creative Commons, GPL and Apache)
- Cyber Crime: definition, hacking, eavesdropping, phishing and fraud emails, ransomware, cyber trolls, cyber bullying
- Cyber safety: safely browsing the web, identity protection, confidentiality
- Malware: viruses, trojans, adware
- E-waste management: proper disposal of used electronic gadgets.
- Information Technology Act (IT Act)
- Technology and society: Gender and disability issues while teaching and using computers

4. Practical

S.No.	Unit Name	Marks (Total=30)
1.	Lab Test (12 marks)	
	Python program (60% logic + 20% documentation + 20% code quality)	12
2.	Report File + Viva (10 marks)	
	Report file: Minimum 20 Python programs	7
	Viva voce	3
3.	Project (that uses most of the concepts that have been learnt)	8

5. Suggested Practical List

Python Programming

- Input a welcome message and display it.
- Input two numbers and display the larger / smaller number.
- Input three numbers and display the largest / smallest number.
- Generate the following patterns using nested loops:

Pattern-1	Pattern-2	Pattern-3
*	12345	A
**	1234	AB
***	123	ABC
****	12	ABCD
****	1	ABCDE

- Write a program to input the value of x and n and print the sum of the following series:
 - > $1 + x + x^2 + x^3 + x^4 + \dots x^n$ > $1 - x + x^2 - x^3 + x^4 - \dots x^n$ > $x + \frac{x^2}{2} + \frac{x^3}{3} + \frac{x^4}{4} + \dots \frac{x^n}{n}$ > $x + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \dots \frac{x^n}{n!}$
- Determine whether a number is a perfect number, an Armstrong number or a palindrome.
- Input a number and check if the number is a prime or composite number.
- Display the terms of a Fibonacci series.
- Compute the greatest common divisor and least common multiple of two integers.
- Count and display the number of vowels, consonants, uppercase, lowercase characters in string.
- Input a string and determine whether it is a palindrome or not; convert the case of characters in a string.
- Find the largest/smallest number in a list/tuple
- Input a list of numbers and swap elements at the even location with the elements at the odd location.
- Input a list/tuple of elements, search for a given element in the list/tuple.
- Create a dictionary with the roll number, name and marks of n students in a class

and display the names of students who have marks above 75.

6. Suggested Reading Material

- NCERT Textbook for Computer Science (Class XI)
- Support Material on CBSE website

ENGLISH CORE Subject Code-301 Classes-XI- XII (2025-26)

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. Additionally, for another large group, the higher secondary stage may be a preparation for entry into the professional domain. The Core Course caters 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 recorded 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 and 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 reference materials, 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.
- recognize multilingual nature of Indian society by reading different genres.

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 wide ranging 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 both online and offline.
- 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.

Note: The creative writing section shall assess the prescribed competencies for writing skills, irrespective of any word limit.

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 CLASS –XI (2025-26)

Section A Reading Skills-- 26 Marks

I. Reading Comprehension through Unseen Passages

- 1. One unseen passage to assess comprehension, interpretation, analysis, inference and vocabulary. The passage may be factual, descriptive or literary.
- 2. One unseen case-based factual passage with verbal/visual inputs like statistical data, charts etc.to assess comprehension, interpretation, analysis, inference and evaluation.
- *Note:* The combined word limit for both the passages will be 600-750. Multiple Choice Questions / Objective Type Questions will be asked.
- 3. Note Making and Summarization based on a passage of approximately 200-250 words.

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

Section B Grammar and Creative Writing Skills– 23 Marks

II. Grammar

- 4. Questions on Gap filling (Tenses, Clauses)
- 5. Questions on re-ordering/transformation of sentences

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

III. Creative Writing Skills

6. 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)

7 Marks

10+8=18 Marks

16 Marks

- 7. Short writing task –Poster up to 50 words. One out of the two given questions to be answered.
 (3 marks: Format: 1 / Content: 1 / Expression: 1)
- Long Writing task: Speech in 120-150 words based on verbal / visual cues related to contemporary / age-appropriate topic. One out of the two given questions to be answered. (5 Marks: Format: 1 / Content: 2 / Expression: 2)
- Long Writing Task: Debate based on visual/verbal inputs in 120-150 words, thematically related to contemporary, topical issues. One out of the two given questions to be answered. (5 Marks: Format: 1 / Content: 2 / Expression: 2)

Section C

Literature Text Book and Supplementary Reading Text-31 Marks

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, interpretation, analysis, evaluation and extrapolation beyond the text.

- 10. One Poetry extract out of two, from the book Hornbill, to assess comprehension, interpretation, analysis, inference and appreciation.
 3x1=3 Marks
- **11.** One Prose extract out of two, from the book Hornbill, to assess comprehension,
interpretation, analysis, evaluation and appreciation.**3x1=3 Marks**
- 12. One prose extract out of two, from the book Snapshots, to assess comprehension, interpretation, analysis, inference and appreciation. **4x1=4 Marks**
- Two Short answer type questions (one from Prose and one from Poetry, from the book Hornbill), outof four, to be answered in 40-50 words. Questions should elicit inferential responses through critical thinking.
 3x2=6 Marks
- One Short answer type question, from the book Snapshots, to be answered in 40- 50 words. Questions should elicit inferential responses through critical thinking. One out of two questions to be done.
 3x1=3 Marks
- 15. One Long answer type question, from Prose/Poetry of 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 the student. Any one out of two questions to be done.

1x6=6 Marks

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 analytical and evaluative responses, using incidents, events, themes, as reference points. Any one out of two 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 Assessment of Speaking Skills Project Work

- 05 marks.
- 05 Marks
- 10 Marks

Physical Education (Subject Code 048)

CLASS XI (2025-26)

UNIT NO.		THE WEIGHTAGE (MARKS) ALLOTTED	
UNIT 1	Changing Trends & Career in Physical Education	04 + 04 b *	
UNIT 2	Olympic Value Education	05	
UNIT 3	Yoga	06+01 b *	
UNIT 4	Physical Education & Sports for CWSN	04+03 b *	
UNIT 5	Physical Fitness, Wellness	05	
UNIT 6	Test, Measurements & Evaluation	08	
UNIT 7	Fundamentals of Anatomy and Physiology in Sports	08	
UNIT 8	Fundamentals of Kinesiology and Biomechanics in Sports	04+04 b *	
UNIT 9	Psychology and Sports	07	
UNIT 10	Training & Doping in Sports	07	
PRACTICAL (LAB) [#]	Including 3 Practical	30	
TOTAL	Theory 10 + Practical 3	Theory 70 + Practical 30 = 100	
Note: b*are the Concept based questions like Tactile diagram/data interpretation/ case base study for visually Impaired Child.			

CLASS XI

COURSE CONTEMT

Unit No.	Unit Name & Topics	Specific learning	Suggested Teaching Learning	Learning Outcomes with specific Competencies
		objectives	process	
Unit 1	 Changing Trends and Careers in Physical Education Concept, Aims & Objectives of Physical Education Development t of Physical Education in India – Post Independenc e Changing Trends in Sports- playing surface, wearable gear and sports equipment, technological advancements Career options in Physical Education Khelo-India Program and Fit – India Program 	 To make the students understand the meaning, aims, and objectives of Physical Education. To Teach students about the development of physical education in India after Independen ce. To educate students about the development of sports surfaces, wearable gear, sports equipment, and technology. To make students know the different career options available in the field. To make them know about the Khelo India Program 	 Lecture-based instruction, Technolo gy-based learning, Group learning, Individual learning, Inquiry-based learning, Kinesthetic learning and Expeditionary learning. 	 After completing the unit, the students will be able to: Recognize the concept, aim, and objectives of Physical Education. Identify the Post-independence development in Physical Education. Categorize Changing Trends in Sports-playing surface, wearable gear, sports equipment, technological Explore different career options in the field of Physical Education. Make out the development of Khelo India and Fit India Program.

Unit 2	Olympism Value Education			After completing the unit, the students
	1. Olympism – Concept and Olympics Values (Excellence, Friendship & Respect)	 To make the students aware of Concepts and Olympics Values (Excellence, Friendship & Respect) 	 Lecture-based instruction, Technology- based learning, Group learning, 	 Incorporate values of Olympism in your life. Differentiate between Modern
	2. Olympic Value Education – Joy of Effort, Fair Play, Respect for Others, Pursuit of Excellence, Balance Among Body, Will & Mind	 To make students learn about Olympic Value Education – Joy of Effort, Fair Play, Respect for Others, Pursuit of Excellence, Balance Among Body, Will & Mind 	 Individual learning, Inquiry-based learning, Kinesthetic learning, Game-based learning and Expeditionary learning. 	 and Ancient Olympic Games, Paralympics, and Special Olympic games Identity the Olympic Symbol and Ideals Describe the structure of the Olympic movement
	3. Ancient and Modern Olympics	 To make students understand ancient and modern Olympic 		structure
	 Olympics - Symbols, Motto, Flag, Oath, and Anthem Olympic Movement Structure - IOC, NOC, IFS, Other members 	 games. To make the students aware of Olympics - Symbols, Motto, Flag, Oath, and Anthem To make students learn about the working and functioning of IOC, NOC and IFS, and other members 		

Unit	Yoga	 To make the 	Lecture-based	After completing
Unit	 Yoga Meaning and importance of Yoga Introduction to Astanga Yoga Yogic Kriyas (Shat Karma) Pranayama and its types. Active Lifestyle and stress management through Yoga 	 To make the students aware of the meaning and importance of yoga To make them learn about Astanga yoga. To teach students about yogic kriya, specially shat karmas. To make the learn and practice types of Pran To make them learn the importance of yoga in stress management. 	 Lecture-based instruction, Technology- based learning, Group learning, Individual learning, Inquiry-based learning, Kinesthetic learning, Game-based learning and Expeditionary learning. 	 After completing the unit, the students will be able to: Recognize the concept of yoga and be aware of the importance ; of it Identify the elements of yoga Identify the Asanas, Pranayama' s, meditation, and yogic kriyas Classify various yogic activities for the enhancement of concentration Know about relaxation technique s for improving concentrat
Unit 4	Physical Education and Sports for Children with Special Needs1. Concept of Disability and Disorder2. Types of Disability, its causes & nature (Intellectual disability, Physical disability)	 To make the students aware concept of Disability and Disorder. To make students aware of different types of disabilities. To make students learn about Disability Etiquette 	 Lecture-based instruction, Technology- based learning, Group learning, Individual learning, Inquiry-based learning, Kinesthetic learning, Game-based learning and Expeditionary learning 	After completing the unit, the students will be able to: Identify the concept of Disability and Disorder. Outline types of disability and describe their causes and nature.

	 Disability Etiquette Aim and objectives of Adaptive physical Education Role of various professionals for children with special needs (Counselor, Occupational Therapist, Physiotherapi st, Physical Education Teacher, Speech Therapist, and Special Educator) 	 To make the students Understand the aims and objectives Adaptive Physical Education To make students aware of role of various professionals for children with special needs. 		 and respect children with special needs by following etiquettes. Identify possibilities and scope in adaptive physical education Relate various types of professional support for children with special needs along with their roles and responsibilitie s.
Unit 5	 Physical Fitness, Wellness, and Lifestyle Meaning & importance of Wellness, Health, and Physical Fitness. Components/ Dimensions of Wellness, Health, and Physical Fitness Traditional Sports & Regional Games for 	 To make the students understand the Meaning & importance of Wellness, Health, and Physical Fitness To make students aware of the Components/ Dimensions of Wellness, Health, and Physical Fitness To make students learn Traditional Sports & Regional Games to 	 Lecture-based instruction, Technology- based learning, Group learning, Individual learning, Inquiry-based learning, Kinesthetic learning, Game-based learning and Expeditiona ry learning. 	 After completing the unit, the students will be able to: Explain wellness and its importance and define the components of wellness. Classify physical fitness and recognize its importance in life. Distinguish between skill- related and health-related

	 promoting wellness 4. Leadership through Physical Activity and Sports 5. Introduction to First Aid – PRICE 	 promote wellness To develop Leadership qualities through Physical Activity and Sports in students To make students learn First Aid and its management skills 		 components of physical fitness. Illustrate traditional sports and regional games to promote wellness. Relate leadership through physical activity and sports Illustrate the different steps used in first aid - PRICE.
Unit 6	 Test, Measurement & Evaluation 1. Define Test, Measureme nts and Evaluation. 2. Importance of Test, Measurem ents and Evaluation in Sports. 3. Calculation of BMI, Waist – Hip Ratio, Skin fold measuremen t (3-site) 4. Somato Types (Endomorphy Mesomorphy & Ectomorphy 	 To Introduce the students with the terms like test, measurement and evaluation along with its importance To Introducing them the methods of calculating BMI, Waist- hip ratio and Skin fold measurement. To make the students aware of the different somatotypes. To make the students learn the method to measure health-related fitness. 	 Lecture-based instruction, Technology- based learning, Group learning, Individual learning, Inquiry-based learning, Kinesthetic learning, Game-based learning and Expeditionary learning. 	 After completing the unit, the student s will be able to: Define the terms test, measurement, and evaluation, Differentiate norm and criterion referenced standards, Differentiate formative and summative evaluation, Discuss the importance of measurement and evaluation processes, Understand

	5. Measuremen ts of health- related fitness			 BMI: A popular clinical standard and its computation Differentiate between Endomorphy, Mesomorphy & Ectomorphy h describe the procedure of Anthropometric Measurement
Unit 7	 Fundamentals of Anatomy, Physiology in Sports 1. Definition and importance of Anatomy and Physiology in Exercise and Sports. 2. Functions of Skeletal System, Classification of Bones, and Types of Joints. 3. Properties and Functions of Muscles. 4. Structure and Functions of Circulatory System and Heart. 	 The students will learn the meaning and definition & identify the importance of anatomy, physiology, and kinesiology. Students will understand the main functions and Classification of Bone and the Types of Joints. The students will learn the Properties and Functions of Muscles. The students will learn the Structure and Functions of the Circulatory System and Heart. 	 Lecture-based instruction, Technology- based learning, Group learning, Individual learning, Inquiry-based learning, Kinesthetic learning, Game - based learning and Expeditionary learning. 	 After completing the unit, the students will be able to: Identify the importance of anatomy and physiology. Recognize the functions of the skeleton. Understand the functions of bones and identify various types of joints. Figure out the properties and functions of muscles and understand how they work. Understand the anatomy of the respiratory system and describe it's working. Identify and analyses the layout and
	5. Structure and Functions of Respiratory System.	 The students will learn the Structure and Functions of Respiratory System. 		functions of Circulatory System.

Unit 8	Fundamentals Of Kinesiology And Biomechanics in Sports 1. Definition and Importance of Kinesiology and Biomechanic s in Sports.	 The students will learn the meaning and definition & identify the importance of Kinesiology and Biomechanics in sports. To make the students learn 	 Lecture-based instruction, Technology- based learning, Group learning Individual learning, Inquiry-based learning, Kinesthetic learning 	After completing the unit, the students will be able to: • Understand Kinesiology and Biomechanics with their application in sports
	 Principles of Biomechanic s Kinetics and 	 the principles of biomechanics To make the students understand the 	 Game-based learning and Expeditionary learning. 	 Explain biomechanical principles and their utilization in sports and physical
	 Kinematics in Sports 4. Types of Body Movements - Flexion, Extension, Abduction, Adduction, Rotation, Circumductio n, Supination & Pronation 5. Axis and Planes – Concept and its application in body movements 	 concept of Kinetics and Kinematics in Sports To make the students learn about different types of body movements. To make the students understand the concept of Axis and Planes and its application in body movements. 		 education. Illustrate fundamental body movements and their basic patterns. Learn about the Axis and Planes and their application with body movements
Unit 9	Psychology and Sports1. Definition & Importance of Psychology in Physical Education & Sports;2. Develop-	 The students will identify the definition and importance of Psychology in Physical Education and sports. The students will 	 Lecture-based instruction, Technology- based learning, Group learning, Individual learning, 	After completing the unit, the students will be able to: • Identify the role of Psychology in Physical Education and Sports

	 mental Characteristics at Different Stages of Development. 3. Adolescent Problems & their Manageme nt; 4. Team Cohesion and Sports; 5. Introduction to Psychological Attributes: Attention, Resilience, Mental Toughness 	 be able to differentiate characteristics of growth and development at different stages. Students will be able to identify the issues and management related to adolescents The students will be able to understand the importance of team cohesion in sports Students will distinguish different Psychological Attributes like Attention, Resilience, and Mental Toughness. 	 Inquiry-based learning, Kinesthetic learning, Game-based learning and Expeditionary learning Expeditionary learning Explain the issues related to adolescent behavior and Team Cohesion in Sports Correlate the psychological concepts with the sports and athlete specific situations
Unit 10	 Training & Doping in Sports 1. Concept and Principles of Sports Training 2. Training Load: Over Load, Adaptation, and Recovery 3. Warming-up & Limbering Down – Types, Method & Importance. 4. Concept of Skill, Technique, Tactics & 	 To make the students aware about of concepts and principles of sports training. To make students learn and understand the Training Load, Over Load, Adaptation, and Recovery concepts. To make students Understand the importance of warning up and limbering down exercises. To introduce the terms like Skills, Techniques, Tactics, and Strataging to the students 	 Lecture-based instruction, Technology- based learning, Group learning, Individual learning, Inquiry-based learning, Kinesthetic learning, Game-based learning and Expeditionary learning Expeditionary learning Understand the concept. Summarise training load and its concept. Understand the concept of warming up & limbering down in sports training and their types, method & importance.

F	<u>п</u>	T	
	Strategies	students.	 Acquire the ability to
	5. Concept of Doping and its disadvantage s	• To make students aware of the doping substances and their disadvantages in sports.	differentiate between the skill, technique, tactics & strategies in sports training
			 Interpret concept of doping.

GUIDELINES FOR INTERNAL ASSESSMENT

(PRACTICAL/ PROJECTS ETC.)

PRACTICAL (Max. Marks 30)			
Physical Fitness Test: SAI Khelo India Test, Brockport Physical Fitness Test	6 Marks		
(BPF1)*			
Proficiency in Games and Sports	7 Marks		
(Skill of any one IOA recognized Sport/Game of Choice)**			
Yogic Practices	7 Marks		
Record File ***	5 Marks		
Viva Voce (Health/ Games & Sports/ Yoga)	5 Marks		

- Test for CWSN (any 4 items out of 27 items. One item from each component: Aerobic Function, Body Composition, Muscular strength & Endurance, Range of Motion or Flexibility)
- **CWSN (Children with Special Needs Divyang): Bocce/ Boccia, Sitting Volleyball, Wheel Chair Basketball, Unified Badminton, Unified Basketball, Unified Football, Blind Cricket, Goalball, Floorball, Wheel Chair Races and Throws, or any other Sport/Game of choice.
- **Children with Special Needs can also opt any one Sport/Game from the list as alternative to Yogic Practices. However, the Sport/ Game must be different from Test -'Proficiency in Games and Sports'

***Record File shall include:

- > **Practical-1:** Fitness tests administration. (SAI Khelo India Test)
- Practical-2: Procedure for Asanas, Benefits & Contraindication for any two Asanas for each lifestyle disease.
- Practical-3: Anyone one IOA recognized Sport/Game of choice. Labelled diagram of Field & Equipment. Also mention its Rules, Terminologies & Skills.

PHYSICS (Code No. 042) COURSE STRUCTURE

Class XI - 2025-26 (Theory)

Time: 3 hrs.

Max Marks: 70

UNIT	CHAPTERS	MARKS		
Unit–I	Physical World and Measurement			
	Chapter-1: Units and Measurements			
Unit-II	Kinematics			
	Chapter-2: Motion in a Straight Line			
	Chapter–3: Motion in a Plane			
Unit–III	Laws of Motion			
	Chapter-4: Laws of Motion			
Unit–IV	Work, Energy and Power			
	Chapter–5: Work, Energy and Power			
Unit–V	Motion of System of Particles and Rigid Body			
	Chapter-6: System of Particles and Rotational Motion	17		
Unit-VI	it-VI Gravitation			
	Chapter-7: Gravitation			
Unit–VII	Properties of Bulk Matter			
	Chapter-8: Mechanical Properties of Solids			
	Chapter–9: Mechanical Properties of Fluids			
	Chapter–10: Thermal Properties of Matter			
Unit–VIII	Thermodynamics	20		
	Chapter-11: Thermodynamics			
Unit–IX	Behaviour of Perfect Gases and Kinetic Theory of Gases			
	Chapter–12: Kinetic Theory			
Unit–X	Oscillations and Waves			
	Chapter-13: Oscillations			
	Chapter-14: Waves			
	Total	70		

Unit I: Physical World and Measurements

Chapter-1: Units and Measurements

Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. significant figures, Determining the uncertainty in result. Dimensions of physical quantities, dimensional analysis and its applications.

Unit II: Kinematics

Chapter-2: 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, average speed and average velocity and instantaneous velocity, uniformly accelerated motion, velocity - time and position-time graphs. Relations for uniformly accelerated motion (graphical and calculus treatment).

Chapter-3: 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

Chapter-4: 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

Chapter- 5: 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

Chapter-6: 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

Chapter – 7: Gravitation

Kepler's laws of planetary motion, universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth.

Gravitational potential energy and gravitational potential, escape speed, orbital velocity of a satellite, energy of an orbiting satellite.

Unit VII: Properties of Bulk Matter

Chapter-8: 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. Application of elastic behavior of materials (qualitative idea only).

Chapter-9: 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 (Torricelli's law and Dynamic lift).

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–10: Thermal Properties of Matter

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

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

Unit VIII: Thermodynamics

Chapter-11: Thermodynamics

Thermal equilibrium and definition of temperature, zeroth law of thermodynamics, heat, work and internal energy. First law of thermodynamics, Second law of thermodynamics: Thermodynamic state variable and equation of state. Change of condition of gaseous state isothermal, adiabatic, reversible, irreversible, and cyclic processes.

Unit IX: Behavior of Perfect Gases and Kinetic Theory of Gases

Chapter-12: 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

Chapter-13: Oscillations

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

Simple harmonic motion (S.H.M), uniform circular motion 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-14: 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

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

Торіс	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
Total	30

SECTION-A

Experiments

- 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 graph and use it to find the effective length of second's pendulum.
- 8. To study variation of time period of a simple pendulum of a given length by taking bobs of same size but different masses and interpret the result.
- 9. To study the relationship between force of limiting friction and normal reaction and to find the co- efficient of friction between a block and a horizontal surface.
- 10. To find the downward force, along an inclined plane, acting on a roller due to gravitational pull of the earth and study its relationship with the angle of inclination θ by plotting graph between force and Sin θ .

Activities

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

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.
- 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 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:

The content indicated in NCERT textbooks as excluded for the year 2025-26 is not to be tested by schools.