Delhi Board of School Education

Draft Class 11 Syllabus

Academic Year 2023 - 24

Contents

Section 1- STEM Schools

Term wise syllabus for Biology

Term 1

Chapter-1: The Living World

Conceptual knowledge of taxonomy and systematics, species, taxonomical hierarchy, binomial nomenclature. What are taxonomical aids? Brief discussion of museums, zoological parks, herbaria, botanical gardens, taxonomical keys, manuals and monographs.

Chapter-2: Biological Classification

Two kingdom classification, Five kingdom classification; three domains of life; Salient features (3-5 distinguishing features) and classification of Monera, Protista and Fungi into major groups: Lichens, Viruses, Viroids and Prions. 2 examples for each with one disease associated with these groups in both plants and animals.

Chapter-3: Plant Kingdom

Salient features (3-5 distinguishing features) and classification of plants into major groups - Algae, Bryophyta, Pteridophyta, Gymnospermae and Angiospermae; Angiosperms (classification upto class, characteristic features and examples; alternation of generation.

Chapter-4: Animal Kingdom

Salient features (3-5 distinguishing features with two examples each) and classification of animals: non-chordates up to phyla level and chordates up to class level.

**Damage and display of live animals is strictly prohibited.

Chapter-7: Structural Organisation in Animals

Brief account of different types of animal tissues

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; ultrastructure and function of different cell organelles and nucleus.

Chapter-9: Biomolecules

Chemical constituents of living cells: biomolecules, structure and function of proteins, carbohydrates, lipids, nucleic acids; Enzymes- types, properties, enzyme action.

Chapter-10: Cell Cycle and Cell Division

Cell cycle, mitosis, meiosis and their significance

Term 2

Chapter-13: Photosynthesis in Higher Plants

Structure of chloroplast, basic conceptual knowledge about pigments involved in photosynthesis cyclic and non-cyclic photophosphorylation; chemiosmotic hypothesis; photorespiration; C3 and C4 pathways; factors affecting photosynthesis. Blackman's law of limiting factors.

Chapter-14: Respiration in Plants

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

Chapter-15: Plant- Growth and Development

growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA; seed dormancy; vernalisation; photoperiodism.

Chapter-16: Digestion and Absorption

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.

Chapter-17: Breathing and Exchange of Gases

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

Chapter-18: Body Fluids and Circulation

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

Chapter-19: Excretory Products and Their Elimination

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

Chapter-20: Locomotion and Movement

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

Chapter-21: Neural Control and Coordination

Neuron and nerves; Nervous system in humans - central nervous system; peripheral nervous system and visceral nervous system; generation and conduction of nerve impulse; reflex action; sensory perception; sense organs

Chapter-22: Chemical Coordination and Integration

Endocrine system and the hormones. Different endocrine glands along with their associated hormones, their function and diseases associated with them if abnormal secretion occurs basic conceptual knowledge of mechanism of hormone action.

Biology lab

Criteria D:

Category A: Dry Lab: Observation and inference

1. Study of the parts of microscope
    - a dissecting microscope
    - a compound microscope.
2. Study of the 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. Study of virtual specimens/slides/models and identification with reasons –

Amoeba, Hydra, liverfluke, Ascaris, leech, earthworm, prawn, silkworm, honeybee, snail, starfish, shark, rohu, frog, lizard, pigeon and rabbit.

4. Study of tissues and diversity in shapes and sizes of plant and animal cells

palisade cells, guard cells, parenchyma, collenchyma, sclerenchyma, xylem, phloem, squamous epithelium, muscle fibres and mammalian blood smear through temporary/permanent slides.

5. Study of the different stages of cell division in mitosis from permanent slides.
6. Study of different modifications in (morphology of flowering plants will be delt in practical syllabus)
    - roots

- stems
- leaves
- types of inflorescences
- cymose: scorpioid, helicoid, cyme
- racemose: spike, umbel, corymb, raceme

7. Study of imbibition in seeds/raisins.
8. Observation and comments on the experimental set up for showing apical dominance
9. Study of human skeleton and different types of joints with the help of virtual images/models only. Chapter to be dealt in practical only

Category B: Investigation, observation and inference (wet lab and slide preparation)

1. Study and description of two locally available common flowering plants, one from each of the families Solanaceae and Liliaceae or any locally available plant (one from dicot and one from monocot) (morphology of flowering plants will be delt in practical syllabus)
2. Study of different tissues in T.S of (for primary growth only) (Anatomy of flowering plants to be dealt with practical syllabus)
   - Dicot root
   - Dicot stem
   - Monocot root
   - Monocot stem
   - Dicot leaf
- Monocot leaf
3. Study of osmosis by potato osmometer.
4. Study of plasmolysis in epidermal peels (e.g. Rhoeo leaves).
5. Study of distribution of stomata in the upper and lower surface of leaves.
6. Comparative study of the rates of transpiration in the upper and lower surface of leaves.
7. Test for the presence of sugar, starch, proteins and fats in suitable products.
8. Separation of plant pigments through paper chromatography.
9. Test of urine for the presence of
   - Urea
   - Sugar
   - Albumin

Internal assessment

- Exercise on key for identification as a taxonomical tool
- Preparation of herbaria with atleast 10 plants: strict protocols to be followed for preparing herbarium
- Difference in structure of stomata in 10 different locally available plants.
- Study the spores of different types of fungi/mushrooms/spore printing of mushrooms
- Study of photosynthesis in plants in different light conditions
- At-least **two internal non-pen and paper-based assessment** are to be conducted by the subject teachers.
- Internal assessments should be reported to DBSE as score obtained in different criteria adopted by DBSE on or before the dates mentioned in assessment calendar issued by the board.

Evaluation of lab work

The lab work is to be taken as per term wise syllabus. The given breakup is for each term			
S. No.	**Breakup of lab experimentation**	**Level points**	**Level description**
1.	One wet lab	8	Student can conduct experiments competently, interpret data drawn from a complex data set and is able to demonstrate insight. She/he can draw reasonable conclusions to resolve authentic problems
2.	One slide preparation	8	
3.	Dry lab: Observation and inference	6	Student can observe and interpret data drawn from a complex data set and is able to demonstrate insight. She/he can draw reasonable conclusions
4.	Internal assessment	6	investigations demonstrate an ability to undertake basic investigative approach
5.	Practical record + viva voce	4	investigations demonstrate insight and independence to design and complete innovative practical work and is able to answer logically
6.	Project record + viva voce	4	

Term wise syllabus for Mathematics

Term 1

Unit 1: Sets, Relations, and Functions

- Universal set, Subsets, Intervals.
- Operation on Sets: Union, Intersection, Difference, Complement of a set.
- Properties of Complement.
- Laws of Sets (Only Application): Idempotent, Associative, Commutative, Distributive, De Morgan's Law
- Venn diagrams (Only for 2 and 3 Sets): Representation and Application

Unit 2: Linear Inequality

- Algebraic solutions of linear inequalities in one variable and their representation on the number line.
- Graphical solution of linear inequalities in two variables.
- Graphical method of finding a solution of system of linear inequalities in two variables.

Unit 3: Trigonometric Functions

- Trigonometry as a circular function.
- Measurement of angles in Radians and Degrees
- Sign Convention of Trigonometric Functions in all four quadrants
- Graphs of Trigonometric Functions
- Trigonometric Identities of following types:
- Compound Angles $sin\ (x \pm y)$, $\cos(x \pm y)$, $\tan(x \pm y)$
- Transformation Formulae $(sin\ x \pm sin\ y)$, $(\cos x \pm \cos y)$
- Multiples and Submultiples of An Angle $Sin\ 2x, sin\ 3x$
- Trigonometric Equations: $sin\ x = 0, cos\ x = 0, tan\ x = 0, \sin x = \sin y, \cos x = \cos y, tanx = \tan y$

Unit 4: Sequence and Series

- Difference between Sequence and Series.
- Geometric Progression (G.P.), general term of a G.P.
- Sum of n terms of a G.P.
- Infinite G.P. and its sum

Unit 5: Quadratic Equations & Complex Numbers

- Need for complex numbers, especially $\sqrt{-1}$, to be motivated by inability to solve some of the
- quadratic equations.
- Representation of complex numbers in the form a + ib

- Algebraic properties (Conjugate and Modulus) of complex numbers.
- Statement of Fundamental Theorem of Algebra.
- Solution of quadratic equations (with real coefficients) in the complex number system.

Internal assessment

1. Mathematical activities published by NCERT aligned with term 1 units or activities devised by the teacher can be considered for internal assessment.
2. At-least **two internal non-pen and paper-based assessment** are to be conducted by the subject teachers.
3. Internal assessments should be reported to DBSE as score obtained in different criteria adopted by DBSE on or before the dates mentioned in assessment calendar issued by the board.

Term 2

Unit 6: Permutations & Combinations

- Fundamental principle of counting.
- Factorial of a number.
- Permutations & Combinations: definition, derivation of formulae (${}^{n}P_{r}$ and ${}^{n}C_{r}$), applications.

Unit 7: Binomial Theorem

- History (Pascal's triangle), statement of binomial theorem for positive integral indices.
- General and middle term in binomial expansion, simple applications.

Unit 8: Straight Lines

- Brief recall of two-dimensional geometry from earlier classes.
- Slope of a line and angle between two lines.
- Various forms of equations of a line:
    - General Equation of a Line.
    - Point-Slope Form
    - Slope-Intercept Form
    - Two-Point Form
    - Intercept Form
    - Normal Form
    - Parallel And Perpendicular to Axes
- Distance of a point from a line.

Unit 9: Conic Sections

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

Unit 10: Statistics

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

Unit 11: Probability

- Events; occurrence of events, ‘not’, ‘and’ and ‘or’ events.
- Exhaustive events, mutually exclusive events.

- Axiomatic (set theoretic) probability, connections with other theories of earlier classes.
- Probability of an event, probability of ‘not’, ‘and’ and ‘or’ events.
- Conditional probability, multiplication theorem on probability, independent events.
- Total probability, Bayes’ theorem.
- Random variable and its probability distribution. Mean of random variable.

Internal assessment

1. Mathematical activities published by NCERT aligned with term 1 units or activities devised by the teacher can be considered for internal assessment.
2. At-least **two internal non-pen and paper-based assessment** are to be conducted by the subject teachers.
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Term wise syllabus Physics

Term 1

UNIT 1: PHYSICS AND MEASUREMENT

Physics, technology, and society, S I Units, fundamental and derived units, least count, accuracy and precision of measuring instruments, significant figures, Errors in measurement, Dimensions of Physical quantities, dimensional analysis, and its applications.

UNIT 2: KINEMATICS

The frame of reference, motion in a straight line, Position- time graph, position and displacement vectors, general vectors and their notations, speed and velocity; Uniform and non-uniform motion, average speed and instantaneous velocity, uniformly accelerated motion, velocity-time, position-time graph, relations for uniformly accelerated motion. Relative Velocity, Motion in a plane, Projectile Motion, Uniform Circular Motion.

UNIT 3: LAWS OF MOTION

Force and inertia, Newton's First law of motion; Momentum, 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 and its applications (vehicle on a level circular road, vehicle on a banked road).

UNIT 4: WORK, ENERGY AND POWER

Work done by a constant force and a variable force; kinetic and potential energies, work-energy theorem, power.

The potential energy of spring, conservation of mechanical energy, conservative and neoconservative forces; motion in a vertical circle, Elastic and inelastic collisions in one and two dimensions.

UNIT5: ROTATIONAL MOTION

Centre of the mass of a two-particle system, Centre of the mass of a rigid body; centre of mass of a uniform rod, momentum conservation and motion of centre of mass , Basic concepts of rotational motion; a moment of a force; torque, angular momentum, conservation of angular momentum and its applications; the moment of inertia, the radius of gyration. Values of moments of inertia for simple geometrical objects, parallel and perpendicular axes theorems and their applications.

Equilibrium of rigid bodies, Rigid body rotation and equations of rotational motion.

TERM 2

UNIT 6: GRAVITATION

The universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth. Kepler's law of planetary motion. Gravitational potential energy; gravitational potential. Escape speed, Orbital velocity of a satellite. Geo stationary satellites.

UNIT 7: PROPERTIES OF SOLIDS AND LIQUIDS

Elasticity, Stress-strain relationship, Hooke's Law. Young's modulus, bulk modulus, modulus of rigidity , poisson's ratio, elastic energy.

Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes).

Viscosity,Stokes' law, terminal velocity, streamline, and turbulent flow. Critical velocity, Reynolds number. Bernoulli's principle and its applications.

Surface energy and surface tension, angle of contact, excess of pressure across a curved surface, application of surface tension - drops, bubbles, and capillary rise.

Heat, temperature, thermal expansion;specific heat capacity, calorimetry; change of state, latent heat. Heat transfer-conduction, convection, and radiation. Qualitative ideas of Black body radiation. Wein's displacement law, and green house effect. Newton's law of cooling and Stefan's law.

UNIT 8: THERMODYNAMICS *(should be taken up with unit 6 chemistry)

Thermal equilibrium, zeroth law of thermodynamics, the concept of temperature. Heat, work, and internal energy. The first law of thermodynamics. The second law of thermodynamics: reversible and irreversible processes, isothermal, adiabatic and cyclic processes, , Heat engines and refrigerators ,Carnot engine and its efficiency.

UNIT 9: KINETIC THEORY OF GASES

Equation of state of a perfect gas, work done in compressing a gas, Kinetic theory of gases - assumptions, the concept of pressure. Kinetic energy and temperature: RMS speed of gas molecules: Degrees of freedom. Law of equipartition of energy, applications to specific heat capacities of gases; Mean free path. Avogadro's number.

UNIT 10: OSCILLATIONS AND WAVES

Periodic motion - period, frequency, displacement as a function of time. Periodic functions. Simple harmonic motion (S.H.M.) and its equation; phase: oscillations of a spring -restoring

force and force constant: energy in S.H.M. - Kinetic and potential energies; Simple pendulum - derivation of expression for its time period: Free, forced and damped oscillations(qualitative ideas only), resonance.

Wave motion. Longitudinal and transverse waves, speed of a wave. Displacement relation for a progressive wave. Principle of superposition of waves, a reflection of waves. Standing waves in strings and organ pipes, fundamental mode and harmonics. Beats. Doppler Effect in sound

Criteria D:

Physics lab

EXPERIMENTAL SKILLS

Category A observation and inference

Familiarity with the basic approach and observations of the experiments and activities:

Vernier calliper-its use to measure the internal and external diameter and depth of a vessel.

Screw gauge-its use to determine thickness/ diameter of thin sheet/wire.

Metre Scale - the mass of a given object by the principle of moments.

Category B: Investigation, observation and inference

Simple Pendulum-dissipation of energy by plotting a graph between the square of amplitude and time. Young's modulus of elasticity of the material of a metallic wire. Surf ace tension of water by capillary rise and effect of detergents, Co-efficient of Viscosity of a given viscous liquid by measuring terminal velocity of a given spherical body, Plotting a cooling curve for the relationship between the temperature of a hot body and time.

Speed of sound in air at room temperature using a resonance tube, Specific heat capacity of a given (i) solid and (ii) liquid by method of mixtures.

Term wise syllabus Chemistry

Term-1

Unit 1: Some Basic Concepts of Chemistry

General Introduction: Importance and scope of Chemistry, 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

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, Ionization enthalpy, electron gain enthalpy, electronegativity, valency. 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 bonding.

Unit 5: 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.

Term-2

Unit 6: 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 U and H, Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. Second law of Thermodynamics (brief introduction) Introduction of entropy as a state function, Gibb's energy change for spontaneous and non-spontaneous processes, criteria for equilibrium.

Unit 7: 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 8: Organic Chemistry-Some Basic Principles and Techniques

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

Unit 9: Hydrocarbons

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

Alkenes - Nomenclature, 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 monosubstituted benzene. Carcinogenicity and toxicity.

PRACTICAL SYLLABUS

(For Assessment of Criteria-D)

Term-1

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.

E. Quantitative Estimation

i. Using a mechanical balance/electronic balance.

ii. Preparation of standard solution of Oxalic acid.

iii. Determination of strength of a given solution of Sodium hydroxide by titrating it against standard solution of Oxalic acid.

iv. Preparation of standard solution of Sodium carbonate.

v. Determination of strength of a given solution of hydrochloric acid by titrating it against standard Sodium Carbonate solution.

Term-2

C. Experiments based on pH

a) Any one of the following experiments:

• Determination of pH of some solutions obtained from fruit juices, solution of known and varied concentrations of acids, bases and salts using pH paper or universal indicator.

• Comparing the pH of solutions of strong and weak acids of same concentration. Study the pH change in the titration of a strong base using universal indicator.

b) Study the pH change by common-ion in case of weak acids and weak bases.

D. Chemical Equilibrium One of the following experiments:

a) Study the shift in equilibrium between ferric ions and thiocyanate ions by increasing/decreasing the concentration of either of the ions.

b) Study the shift in equilibrium between $[Co(H_2O)_6]^{2+}$ and chloride ions by changing the concentration of either of the ions.

F. Qualitative Analysis

a) Determination of one anion and one cation in a given salt

Anions - CO_3^{2-} , S^{2-} , NO_2^- , SO_3^{2-}, SO_4^{2-}, NO_3^- , Cl^- , Br^-, I^-, PO_4^{3-}, CH_3COO^-

Cations- NH_4^+, Pb^{2+}

(Note: Insoluble salts excluded)

Evaluation Scheme for Practical Examination (Term-1 & 2)

Experiment	**Level**
Major Experiment: Volumetric Analysis/Salt Analysis	08
Content Based Experiment	06
Project Work / Practical record	04
Viva based on project work / experiments	04

Term wise syllabus English

Term I

Reading

Reading Comprehensions

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

One unseen case-based factual passage with verbal/visual inputs like statistical data, charts etc.to assess comprehension, interpretation, analysis, inference and evaluation.

One poem to assess comprehension, interpretation, analysis (literary and figurative), inference and vocabulary.

Multiple Choice Questions / Objective Type Questions will be asked.

Criteria to be Assessed: A

Competencies: Conceptual understanding, decoding, analysing, inferring, interpreting, appreciating, literary, conventions and vocabulary, summarising and using appropriate format/s.

Literature

This section would assess the learners' understanding of the text, language used, setting, style, structure, character, plot, various perspectives, themes explored through the text and the element of intertextuality within the texts.

- Hornbill: Prose
- The Portrait of a Lady

Major themes: Evolving human relationships, connection, respect, selflessness and strength of character.

- We are Not Afraid to Die

Major themes: Importance of family, togetherness in times of hardships, love, bravery, maturity and courage.

Criteria to be Assessed: A, B, C and D

Competencies: Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

Hornbill: Poetry

- A Photograph

Major themes: Love and loss, human bond, nostalgia, impermanence of human beings.

- The Laburnum Top

Major themes: The symbiotic relationship between the tree and the bird, symbolism and figurative use of language.

- The Voice of the Rain

Major themes: Importance of cyclic nature of rain, science and poetry as an extension of nature.

Criteria to be Assessed: A, B, C and D

Competencies: Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

Snapshots (Supplementary Reader):

- The Summer of the Beautiful White Horse

Major themes: Adolescent adventures, honesty, humour, importance of character and family reputation, conflict between feelings and reason,

- The Address

Major themes: War, loss and human predicament, forced migration, evolution of relationship in times of crisis.

Criteria to be Assessed: A, B, C and D

Competencies: Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

Writing skills

- Advertisement
- Speech Writing

Criteria to be Assessed: B, C and D

Competencies: Conceptual Understanding, application of rules, analysis, Reasoning, appropriacy of style and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity.

Grammar

- Gap filling – tenses, prepositions
- Reported Speech
- Idioms and Phrasal Verbs

Multiple Choice Questions / Objective Type Questions will be asked.

Competencies: Conceptual Understanding, application of rules, analysis, Reasoning, appropriacy of style and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity.

Term II

Reading

Reading Comprehensions

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

One unseen case-based factual passage with verbal/visual inputs like statistical data, charts etc.to assess comprehension, interpretation, analysis, inference and evaluation.

One poem to assess comprehension, interpretation, analysis (literary and figurative), inference and vocabulary.

Multiple Choice Questions / Objective Type Questions will be asked.

Criteria to be Assessed: A

Competencies: Conceptual understanding, decoding, analysing, inferring, interpreting, appreciating, literary, conventions and vocabulary, summarising and using appropriate format/s.

Literature

This section would assess the learners' understanding of the text, language used, setting, style, structure, character, plot, various perspectives, themes explored through the text and the element of intertextuality within the texts.

- Hornbill: Prose
- Discovering Tut

Major themes: Use of scientific technology for exploration, history and civilisation, non fictional writing.

- The Adventure

Major themes: Blend of history and science, time travel, catastrophe theory

Criteria to be Assessed: A, B, C and D

Competencies: Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

Hornbill: Poetry

- Childhood

  Major themes: Loss of childhood, individuality, rationalism, nostalgia.

- Father to Son

  Major themes: Father-Son relationship, universality of experiences, generation gap

Criteria to be Assessed: A, B, C and D

Competencies: Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

Snapshots (Supplementary Reader):

- Mother's Day (Play)

Major themes: Gender inequality, unpaid and unacknowledged labour by mothers and women at home, use of dry humour and satire to bring change.

- Birth (Prose)

  Major themes: Hope in times of despair.

Criteria to be Assessed: A, B, C and D

Competencies: Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

Writing skills

- Poster
- Debate writing

Criteria to be Assessed: B, C and D

Competencies: Conceptual Understanding, application of rules, analysis, Reasoning, appropriacy of style and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity.

Grammar

- Modals
- Transformation of Sentences (Voice)

Multiple Choice Questions / Objective Type Questions will be asked.

Competencies: Conceptual Understanding, application of rules, analysis, Reasoning, appropriacy of style and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity.

Term wise syllabus Physical Education

Term 1

Unit 1: Dimensions of Physical Education

Physical Education programs and professions

- Careers in Physical Education
- Institutes and programs for Physical Education

Physical Education for CWSN

- Adaptive Physical Education and its importance
- Strategies for making physical education assessable for CWSN students

Organization promoting adaptive sports

- Para Olympics
- Special Olympics
- Deaflympics
- Special Bharat Olympics

Unit 2: Exercise Physiology

Assessment of Physiological variables

- Resting Heart Rate (through Radial Pulse Method)
- Resting Breathe Rate
- Breathe hold capacity
- Vital Capacity

Effects of Exercise on different systems of a sports person

- Immediate effects of exercise on Musculoskeletal, Circulatory, and Respiratory System
- Long-term effects of exercise on Musculoskeletal, Circulatory, and Respiratory System

Physical Burnout or Overtraining Syndrome (OTS):

- Physical, Physiological and Behavioral

Section 2: NON-STEM Schools

Term wise syllabus for Biology

Term 1

Chapter-1: The Living World

Conceptual knowledge of taxonomy and systematics, species, 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, Viroids.

Chapter-3: Plant Kingdom

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

Chapter-4: Animal Kingdom

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

**Damage and display of live animals is strictly prohibited.

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.

Chapter-8: Cell-The Unit of Life

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

Chapter-9: Biomolecules

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

Chapter-10: Cell Cycle and Cell Division

Cell cycle, mitosis, meiosis and their significance

Term 2

Chapter-13: Photosynthesis in Higher Plants

Photosynthesis as a means of autotrophic nutrition; site of photosynthesis, pigments involved in photosynthesis (elementary idea); photochemical and biosynthetic phases of photosynthesis; cyclic and non-cyclic photophosphorylation; chemiosmotic hypothesis; photorespiration; C3 and C4 pathways; factors affecting photosynthesis

Chapter-14: Respiration in Plants

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

Chapter-15: Plant- Growth and Development

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

Chapter-17: Breathing and Exchange of Gases

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

Chapter-18: Body Fluids and Circulation

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

Chapter-19: Excretory Products and Their Elimination

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

Chapter-20: Locomotion and Movement

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

Chapter-21: Neural Control and Coordination

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

Chapter-22: Chemical Coordination and Integration

Endocrine glands and hormones; human endocrine system - hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, gonads; mechanism of hormone action (elementary idea); role of hormones as messengers and regulators, hypo - and hyperactivity and related disorders; dwarfism, acromegaly, cretinism, goiter, exophthalmic goitre, diabetes, Addison's disease.Note: Diseases related to all the human physiological systems to be taught in brief..

Biology lab

Criteria D:

Category A: Dry Lab: Observation and inference

1. Study of the parts of microscope
   - a dissecting microscope
   - a compound microscope.
2. Study of the 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. Study of virtual specimens/slides/models and identification with reasons –

Amoeba, Hydra, liverfluke, Ascaris, leech, earthworm, prawn, silkworm, honeybee, snail, starfish, shark, rohu, frog, lizard, pigeon and rabbit.

4. Study of tissues and diversity in shapes and sizes of plant and animal cells palisade cells, guard cells, parenchyma, collenchyma, sclerenchyma, xylem, phloem, squamous epithelium, muscle fibres and mammalian blood smear through temporary/permanent slides.
5. Study of the different stages of cell division in mitosis from permanent slides.
6. Study of different modifications in (morphology of flowering plants will be delt in practical syllabus)
   - roots
   - stems
   - leaves
   - types of inflorescences
   - cymose: scorpioid, helicoid, cyme
   - racemose: spike, umbel, corymb, raceme
7. Study of imbibition in seeds/raisins.
8. Observation and comments on the experimental set up for showing apical dominance
9. Study of human skeleton and different types of joints with the help of virtual images/models only. Chapter to be dealt in practical only

Category B: Investigation, observation and inference (wet lab and slide preparation)

10. Study and description of two locally available common flowering plants, one from each of the families Solanaceae and Liliaceae or any locally available plant (one from dicot and one from monocot) (morphology of flowering plants will be delt in practical syllabus)
11. Study of different tissues in T.S of (for primary growth only) (Anatomy of flowering plants to be dealt with practical syllabus)
    - Dicot root
    - Dicot stem
    - Monocot root
    - Monocot stem
    - Dicot leaf
    - Monocot leaf
12. Study of osmosis by potato osmometer.
13. Study of plasmolysis in epidermal peels (e.g. Rhoeo leaves).
14. Study of distribution of stomata in the upper and lower surface of leaves.
15. Comparative study of the rates of transpiration in the upper and lower surface of leaves.
16. Test for the presence of sugar, starch, proteins and fats in suitable products.
17. Separation of plant pigments through paper chromatography.
18. Test of urine for the presence of
    - Urea
    - Sugar
    - Albumin

Internal assessment

- Exercise on key for identification as a taxonomical tool
- Preparation of herbaria with atleast 10 plants: strict protocols to be followed for preparing herbarium
- Difference in structure of stomata in 10 different locally available plants.
- Study the spores of different types of fungi/mushrooms/spore printing of mushrooms
- Study of photosynthesis in plants in different light conditions

- At-least **two internal non-pen and paper-based assessment** are to be conducted by the subject teachers.
- Internal assessments should be reported to DBSE as score obtained in different criteria adopted by DBSE on or before the dates mentioned in assessment calendar issued by the board.

Evaluation of lab work

The lab work is to be taken as per term wise syllabus. The given breakup is for each term			
S. No.	**Breakup of lab experimentation**	**Level points**	**Level description**
7.	One wet lab	8	Student can conduct experiments competently, interpret data drawn from a complex data set and is able to demonstrate insight. She/he can draw reasonable conclusions to resolve authentic problems
8.	One slide preparation	8	
9.	Dry lab: Observation and inference	6	Student can observe and interpret data drawn from a complex data set and is able to demonstrate insight. She/he can draw reasonable conclusions
10.	Internal assessment	6	investigations demonstrate an ability to undertake basic investigative approach
11.	Practical record + viva voce	4	investigations demonstrate insight and independence to design and complete innovative practical work and is able to answer logically
12.	Project record + viva voce	4	

Term wise syllabus for Mathematics

Term 1

Unit 1: Sets and Functions

Chapter 1: Sets

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

Chapter 2: Relations, and Functions

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

Chapter 3: Trigonometric Functions

Positive and negative angles. Measuring angles in radians and in degrees and conversion from one measure to another. Definition of trigonometric functions with the help of unit circle. Truth of the identity sin2x + cos2x = 1, for all x. Signs of trigonometric functions. Domain and range of trigonometric functions and their graphs. Expressing sin (x±y) and cos (x±y) in terms of sinx, siny, cosx & cosy and their simple applications. Deducing identities like the following:

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

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

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

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

Identities related to sin2x, cos2x, tan2 x, sin3x, cos3x and tan3x.

Unit 2: Algebra

Chapter 1: Complex Numbers and Quadratic Equations

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

Chapter 2: Linear Inequalities

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

Chapter 3: Permutations and Combinations

Fundamental principle of counting. Factorial *n.* (n!) Permutations and combinations, derivation ofFormulae for ${}^{n}P_{r}$ and ${}^{n}C_{r}$ and their connections, simple applications.

Chapter 4: Binomial Theorem

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

Chapter 5: Sequence and Series

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

Internal assessment

1. Mathematical activities published by NCERT aligned with term 1 units or activities devised by the teacher can be considered for internal assessment.
2. At-least **two internal non-pen and paper-based assessment** are to be conducted by the subject teachers.
3. Internal assessments should be reported to DBSE as score obtained in different criteria adopted by DBSE on or before the dates mentioned in assessment calendar issued by the board.

Term 2

Unit 3: Coordinate Geometry

Chapter 1: Straight Lines

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

Chapter 2: Conic Sections

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

Chapter 3: Three-dimensional Geometry

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

Unit-IV: Calculus

Chapter 1: Limits and Derivatives

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

Unit-V Statistics and Probability

Chapter 1: Statistics

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

Chapter 2: Probability

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

Internal assessment

1. Mathematical activities published by NCERT aligned with term 1 units or activities devised by the teacher can be considered for internal assessment.
2. At-least **two internal non-pen and paper-based assessment** are to be conducted by the subject teachers.
3. Internal assessments should be reported to DBSE as score obtained in different criteria adopted by DBSE on or before the dates mentioned in assessment calendar issued by the board.

Term wise syllabus Physics

Term 1

UNIT 1: Physical World and Measurement

Chapter–2: Units and Measurements

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

UNIT 2: KINEMATICS

Chapter–3: Motion in a Straight Line

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

Chapter–4: Motion in a Plane

Scalar and vector quantities; position and displacement vectors, general vectors and their notations; equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors, Unit vector; resolution of a vector in a plane, rectangular components, Scalar and Vector product of vectors.

Motion in a plane, cases of uniform velocity and uniform acceleration- projectile motion, uniform circular motion.

UNIT 3: LAWS OF MOTION

Chapter–5: Laws of Motion

Intuitive concept of force, Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion. Law of conservation of linear momentum and its applications.

Equilibrium of concurrent forces, Static and kinetic friction, laws of friction, rolling friction, lubrication.

Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on a level circular road, vehicle on a banked road)..

UNIT 4: WORK, ENERGY AND POWER

Chapter–6: Work, Energy and Power

Work done by a constant force and a variable force; kinetic energy, work- energy theorem, power.

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

UNIT 5: Motion of System of Particles and Rigid Body

Chapter–7: System of Particles and Rotational Motion

Centre of mass of a two-particle system, momentum conservation and Centre of mass motion. Centre of mass of a rigid body; centre of mass of a uniform rod.

Moment of a force, torque, angular momentum, law of conservation of angular momentum and its applications.

Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions.

Moment of inertia, radius of gyration, values of moments of inertia for simple geometrical objects (no derivation).

Unit VI: Gravitation

Chapter–8: Gravitation

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

Gravitational potential energy and gravitational potential, escape speed,

orbital velocity of a satellite.

TERM 2

Unit VII: Properties of Bulk Matter

Chapter–9: Mechanical Properties of Solids

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

Chapter–10: Mechanical Properties of Fluids

Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes), effect of gravity on fluid pressure.

Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, critical velocity, Bernoulli's theorem and its simple applications.

Surface energy and surface tension, angle of contact, excess of pressure across a curved surface, application of surface tension ideas to drops, bubbles and capillary rise.

Chapter–11: Thermal Properties of Matter

Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; 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–12: Thermodynamics

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

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

Chapter–13: Kinetic Theory

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

Kinetic theory of gases - assumptions, concept of pressure. Kinetic interpretation of temperature; rms speed of gas molecules; degrees of freedom, law of equi-partition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path, Avogadro's number.

Unit X: Oscillations and Waves

Chapter–14: Oscillations

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

Simple harmonic motion (S.H.M) and its equations of motion; phase; oscillations of a loaded spring- restoring force and force constant; energy in S.H.M.

Kinetic and potential energies; simple pendulum derivation of expression for its time period.

Chapter–15: Waves

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

Criteria D:

Physics lab

EXPERIMENTAL SKILLS

Category A observation and inference

Familiarity with the basic approach and observations of the experiments and activities:

Vernier calliper-its use to measure the internal and external diameter and depth of a vessel.

Screw gauge-its use to determine thickness/ diameter of thin sheet/wire.

Metre Scale - the mass of a given object by the principle of moments.

Category B: Investigation, observation and inference

Simple Pendulum-dissipation of energy by plotting a graph between the square of amplitude and time. Young's modulus of elasticity of the material of a metallic wire. Surf ace tension of water by capillary rise and effect of detergents, Co-efficient of Viscosity of a given viscous liquid by measuring terminal velocity of a given spherical body, Plotting a cooling curve for the relationship between the temperature of a hot body and time.

Speed of sound in air at room temperature using a resonance tube, Specific heat capacity of a given (i) solid and (ii) liquid by method of mixtures.

Term wise syllabus Chemistry

Term-1

Unit 1: Some Basic Concepts of Chemistry

General Introduction: Importance and scope of Chemistry, 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

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, Ionization enthalpy, electron gain enthalpy, electronegativity, valency. 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 bonding.

Unit 5: 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.

Term-2

Unit 6: 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 U and H, Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. Second law of Thermodynamics (brief introduction) Introduction of entropy as a state function, Gibb's energy change for spontaneous and non-spontaneous processes, criteria for equilibrium.

Unit 7: 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 8: Organic Chemistry-Some Basic Principles and Techniques

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

Unit 9: Hydrocarbons

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

Alkenes - Nomenclature, 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 monosubstituted benzene. Carcinogenicity and toxicity.

PRACTICAL SYLLABUS

(For Assessment of Criteria-D)

Term-1

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.

E. Quantitative Estimation

i. Using a mechanical balance/electronic balance.

ii. Preparation of standard solution of Oxalic acid.

iii. Determination of strength of a given solution of Sodium hydroxide by titrating it against standard solution of Oxalic acid.

iv. Preparation of standard solution of Sodium carbonate.

v. Determination of strength of a given solution of hydrochloric acid by titrating it against standard Sodium Carbonate solution.

Term-2

C. Experiments based on pH

a) Any one of the following experiments:

• Determination of pH of some solutions obtained from fruit juices, solution of known and varied concentrations of acids, bases and salts using pH paper or universal indicator.

• Comparing the pH of solutions of strong and weak acids of same concentration. Study the pH change in the titration of a strong base using universal indicator.

b) Study the pH change by common-ion in case of weak acids and weak bases.

D. Chemical Equilibrium One of the following experiments:

a) Study the shift in equilibrium between ferric ions and thiocyanate ions by increasing/decreasing the concentration of either of the ions.

b) Study the shift in equilibrium between $[Co(H_2O)_6]^{2+}$ and chloride ions by changing the concentration of either of the ions.

F. Qualitative Analysis

a) Determination of one anion and one cation in a given salt

Anions - CO_3^{2-} , S^{2-} , NO_2^- , SO_3^{2-}, SO_4^{2-}, NO_3^- , Cl^- , Br^-, I^-, PO_4^{3-}, CH_3COO^-

Cations- NH_4^+, Pb^{2+}

(Note: Insoluble salts excluded)

Evaluation Scheme for Practical Examination (Term-1 & 2)

Experiment	**Level**
Major Experiment: Volumetric Analysis/Salt Analysis	08
Content Based Experiment	06
Project Work / Practical record	04
Viva based on project work / experiments	04

Term wise syllabus English

Term I

Reading

Reading Comprehensions

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

One unseen case-based factual passage with verbal/visual inputs like statistical data, charts etc.to assess comprehension, interpretation, analysis, inference and evaluation.

One poem to assess comprehension, interpretation, analysis (literary and figurative), inference and vocabulary.

Multiple Choice Questions / Objective Type Questions will be asked.

Criteria to be Assessed: A

Competencies: Conceptual understanding, decoding, analysing, inferring, interpreting, appreciating, literary, conventions and vocabulary, summarising and using appropriate format/s.

Literature

This section would assess the learners' understanding of the text, language used, setting, style, structure, character, plot, various perspectives, themes explored through the text and the element of intertextuality within the texts.

- Hornbill: Prose
- The Portrait of a Lady

  Major themes: Evolving human relationships, connection, respect, selflessness and strength of character.

- We are Not Afraid to Die

  Major themes: Importance of family, togetherness in times of hardships, love, bravery, maturity and courage.

Criteria to be Assessed: A, B, C and D

Competencies: Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

Hornbill: Poetry

- A Photograph

  Major themes: Love and loss, human bond, nostalgia, impermanence of human beings.

- The Laburnum Top

  Major themes: The symbiotic relationship between the tree and the bird, symbolism and figurative use of language.

- The Voice of the Rain

  Major themes: Importance of cyclic nature of rain, science and poetry as an extension of nature.

Criteria to be Assessed: A, B, C and D

Competencies: Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

Snapshots (Supplementary Reader):

- The Summer of the Beautiful White Horse

  Major themes: Adolescent adventures, honesty, humour, importance of character and family reputation, conflict between feelings and reason,

- The Address

  Major themes: War, loss and human predicament, forced migration, evolution of relationship in times of crisis.

Criteria to be Assessed: A, B, C and D

Competencies: Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

Writing skills

- Advertisement
- Speech Writing

Criteria to be Assessed: B, C and D

Competencies: Conceptual Understanding, application of rules, analysis, Reasoning, appropriacy of style and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity.

Grammar

- Gap filling – tenses, prepositions
- Reported Speech
- Idioms and Phrasal Verbs

Multiple Choice Questions / Objective Type Questions will be asked.

Competencies: Conceptual Understanding, application of rules, analysis, Reasoning, appropriacy of style and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity.

Term II

Reading

Reading Comprehensions

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

One unseen case-based factual passage with verbal/visual inputs like statistical data, charts etc.to assess comprehension, interpretation, analysis, inference and evaluation.

One poem to assess comprehension, interpretation, analysis (literary and figurative), inference and vocabulary.

Multiple Choice Questions / Objective Type Questions will be asked.

Criteria to be Assessed: A

Competencies: Conceptual understanding, decoding, analysing, inferring, interpreting, appreciating, literary, conventions and vocabulary, summarising and using appropriate format/s.

Literature

This section would assess the learners' understanding of the text, language used, setting, style, structure, character, plot, various perspectives, themes explored through the text and the element of intertextuality within the texts.

- Hornbill: Prose
- Discovering Tut

Major themes: Use of scientific technology for exploration, history and civilisation, non fictional writing.

- The Adventure

  Major themes: Blend of history and science, time travel, catastrophe theory

Criteria to be Assessed: A, B, C and D

Competencies: Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

Hornbill: Poetry

- Childhood

  Major themes: Loss of childhood, individuality, rationalism, nostalgia.

- Father to Son

  Major themes: Father-Son relationship, universality of experiences, generation gap

Criteria to be Assessed: A, B, C and D

Competencies: Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

Snapshots (Supplementary Reader):

- Mother's Day (Play)

  Major themes: Gender inequality, unpaid and unacknowledged labour by mothers and women at home, use of dry humour and satire to bring change.

- Birth (Prose)

  Major themes: Hope in times of despair.

Criteria to be Assessed: A, B, C and D

Competencies: Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency, critical thinking.

Writing skills

- Poster
- Debate writing

Criteria to be Assessed: B, C and D

Competencies: Conceptual Understanding, application of rules, analysis, Reasoning, appropriacy of style and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity.

Grammar

- Modals
- Transformation of Sentences (Voice)

Multiple Choice Questions / Objective Type Questions will be asked.

Competencies: Conceptual Understanding, application of rules, analysis, Reasoning, appropriacy of style and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity.

Term wise syllabus Physical Education

Term 1

Unit 1: Dimensions of Physical Education

Physical Education programs and professions

- Careers in Physical Education
- Institutes and programs for Physical Education

Physical Education for CWSN

- Adaptive Physical Education and its importance
- Strategies for making physical education assessable for CWSN students

Organization promoting adaptive sports

- Para Olympics
- Special Olympics
- Deaflympics
- Special Bharat Olympics

Unit 2: Exercise Physiology

Assessment of Physiological variables

- Resting Heart Rate (through Radial Pulse Method)
- Resting Breathe Rate
- Breathe hold capacity
- Vital Capacity

Effects of Exercise on different systems of a sports person

- Immediate effects of exercise on Musculoskeletal, Circulatory, and Respiratory System
- Long-term effects of exercise on Musculoskeletal, Circulatory, and Respiratory System

Physical Burnout or Overtraining Syndrome (OTS):

- Physical, Physiological and Behavioral

Term wise syllabus Computer Science

Term 1

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 & interpreter), application software
- Operating system (OS): functions of operating system, OS user interface
- Boolean logic: NOT, AND, OR, NAND, NOR, XOR, truth table, De Morgan's laws and 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 – 1

- Introduction to problem solving: Steps for problem solving (analysing the problem, developing an algorithm, coding, testing and debugging). representation of algorithms using flow chart and pseudo code, 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 l-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 operator, augmented assignment operators, identity operators(is, is not), membership operators(in, not in)
- Expressions, statement, type conversion & input/output: precedence of operators, expression, evaluation of expression, python statement, type conversion (explicit & implicit conversion), accepting data as input from the console and displaying output
- Errors: syntax errors, logical errors, runtime errors
- Flow of control: introduction, use of indentation, sequential flow, conditional and iterative flow control
- Conditional statements: if, if-else, if-elif-else, flowcharts, simple programs: e.g.: absolute value, sort 3 numbers and divisibility of a number
- Iterative statements: for loop, range function, 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, indexing, string operations (concatenation, repetition, membership & slicing), traversing a string using loops, built-in functions: 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 & slicing), traversing a list using loops, built-in functions: 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 & slicing), built-in functions: 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 itemsin a dictionary using keys, mutability of dictionary (adding a new item, modifying an existing item), traversing a dictionary, built-in functions: len(), dict(), keys(), values(), items(), get(), update(), del, clear(), fromkeys(), copy(), pop(), popitem(), setdefault(), max(), min(), count(), sorted(), copy(); 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 ' 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 Right (copyright, patent, trademark), violation of IPR (plagiarism, copyright infringement, trademark infringement), open source softwares and licensing (Creative Commons, GPL and Apache)
- Cyber-crime: definition, hacking, eavesdropping, phishing and fraud emails, ransomware, preventing cyber crime
- Cyber safety: safely browsing the web, identity protection, confidentiality, cyber trolls and bullying. ● Safely accessing web sites: malware, viruses, trojans, adware
- E-waste management: proper disposal of used electronic gadgets
- Indian Information Technology Act (IT Act)
- Technology & Society: Gender and disability issues while teaching and using computer