

SCREENING TEST SYLLABUS -CBSE

PHYSICS

Light: Laws of Reflection, Image formation in Plane mirror, Spherical mirrors, Image formation in Spherical Mirrors, Magnification, and Mirror Formula. Uses of Spherical Mirrors. Laws of Reflection, Image formation in Plane mirror, Spherical mirrors, Image formation in Spherical Mirrors, Magnification, and Mirror Formula. Uses of Spherical Mirrors. **Electricity:** Electric Charges, Electric Current, Electrical Components and Electrical Circuits, Ohms law, Combination of Resistance, Heating Effect of Electric Current, Joules Law, Electric Power, Related Numerical problems, Magnetic Effect of Electric Current **Motion & Laws of motion** Distance and displacement, Speed & velocity, Average speed and Average velocity, Acceleration, Motion Graphs, Uniform acceleration, Uniform Circular motion, Kinematic equations of motion, Graphical derivation, Numerical problems. Newton's three laws of motion, Inertia, Momentum, Conservation of Momentum, Impulse **Work and Energy:** Work, Positive negative and zero work, Energy, Mechanical Energy, Kinetic energy & Potential energy, Law of Conservation of energy, Power, Commercial unit of energy, Calculation of Electrical Energy Consumed. **Gravitation:** Universal law of Gravitation, Weight vs Mass, freefall, acceleration due to gravity. **Sound:** Production and propagation of sound, Characteristics of Sound, Speed of Sound in Different medium, Reflection of Sound, Application of Reflection of Sound, Range of Hearing, Application of Ultrasonic and Infrasonic Sound.

CHEMISTRY

Chemical Reactions and Equations: Writing chemical equation Balanced chemical equations Types of chemical reactions – Combination reaction, Decomposition reaction, Displacement reaction, Double displacement reaction, Oxidation and reduction, Corrosion, Rancidity **Acids, Bases and Salts:** Acids and bases in the laboratory, Reaction of acids and bases with metals, Reaction of acids with metal carbonates and metal hydrogen carbonates, Reaction between acids and bases, Reaction of metallic oxides with acids Reaction of nonmetallic oxides with bases, pH and its importance, Salts, Preparation and properties of sodium hydroxide, bleaching powder, washing soda, baking soda, plaster of paris **Structure of the Atom:** Thomson's model of an atom, Rutherford's model of an atom, Bohr's model of atom, Distribution of electrons in orbits, Valency, Atomic number and Mass number, Isotopes, Isobars **Structure of the Atom:** Laws of Chemical Combinations – Law of conservation of mass, Law of constant proportions, Dalton's Atomic theory, Atomic mass, Elements & Symbols, Molecules, Writing chemical formulae, Molecular mass and mole concept **Matter In Our Surroundings:** Physical nature of matter, Characteristics of particles of matter, States of matter – solid, liquid, gas, Effect of change of temperature, Effect of change of pressure, Evaporation and factors affecting evaporation **Is Matter Around Us Pure** Elements, Compounds and mixtures, Heterogeneous and homogenous mixtures, Colloids and suspensions, Physical and chemical changes (excluding separating the components of a mixture), Pure and Impure substances

MATHEMATICS

Number Systems: Real Numbers: Representation of natural numbers, integers, and rational numbers on the number line; Rational numbers as terminating or non-terminating recurring decimals; Introduction to irrational numbers; Decimal expansions of real numbers and representation via successive magnification, Advanced, Properties & Operations: Fundamental Theorem of Arithmetic with structural applications; Rationalization of real denominators containing square root terms; Laws of exponents with rational bases and prime factorization properties of denominators. **Polynomials, Quadratic Equations** Polynomial Expressions & Zeros: Definition of a polynomial in one variable, identifying terms, coefficients, and degrees; Zero, constant, linear, quadratic, and cubic polynomials;

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Monomials, binomials, and trinomials; Zeros of a polynomial and their geometrical meaning; Relationship between zeros and coefficients of quadratic polynomials; Remainder Theorem and Factor Theorem with complete factorization of polynomials up to degree 3; Core algebraic identities involving squares and cubes of binomials and trinomial combinations., Linear Equations in Two Variables: Introduction to simultaneous linear conditions, general form representation, and graph structures; Proof of infinite pairs of solutions; Graphical method of finding solutions for a pair of linear equations; Consistency and inconsistency criteria of paired linear systems; Algebraic solution methods including Substitution and Elimination; Operational application to daily life situational problems. Quadratic Equations: Standard form of a quadratic equation; Methods of solving quadratic equations via factorization techniques and the quadratic formula; Nature of roots governed by the discriminant; Solving daily-life situational word problems. **Arithmetic Progressions:** Sequence & Series Analysis: Derivation, identification, and core properties of an Arithmetic Progression; Calculating the general or n-th term of an AP; Finding the sum of the first n terms of an AP; Practical applications to daily routine, financial models, and pattern-based problem solving. **Arithmetic Coordinate Geometry:** Cartesian Plane Analysis: Introduction to the Cartesian coordinate system; Notations, terms, and core definitions; Coordinates of a point in a plane, quadrant identification, and plotting points for given coordinate pairs; Equations of straight lines parallel to the coordinate axes. **Geometry & Geometric Constructions:** Lines, Angles & Triangles: Pairs of angles, parallel lines, and transversal line relationships; Angle sum property of a triangle; Concept of congruence and criteria including SSS, SAS, ASA, and RHS; Properties of isosceles triangles; Triangle inequalities. Quadrilaterals, Areas & Circles: Properties of parallelograms, rectangles, rhombuses, and squares; The Mid-Point Theorem and its converse; Area relationships of parallelograms and triangles sharing identical parallel boundaries; Chord, arc, and angle properties of circles; Cyclic quadrilaterals and their supplementary angle properties. Constructions: Bisectors of angles and line segments; Construction of standard angles using basic tools; Construction of triangles given the base, a base angle, and the sum or difference of the remaining sides. **Mensuration:** 2-D Area : Calculation of the area of a triangle using Heron's formula; Application of Heron's formula in finding areas of quadrilaterals by division into triangular sub-regions. Surface Areas and Volumes: Calculation of surface area, lateral area, and total capacity volume for standard three-dimensional solids including cubes, cuboids, right circular cylinders, right circular cones, spheres, and hemispheres. **Statistics & Probability:** Statistical Analysis: Collection of data; Presentation of data using raw, arrayed, and grouped frequency tables; Graphical representation of data through bar graphs, histograms with uniform and varying widths, and frequency polygons; Measures of central tendency including calculation of mean, median, and mode for ungrouped raw data arrays. Probability Theory: Empirical and experimental approach to probability; Frequency of outcomes from random experiments; Calculation of experimental probability for simple event scenarios.

BIOLOGY

Cell – The Basic Unit Of Life Cell as a basic unit of life; prokaryotic and eukaryotic cells, multicellular organisms; cell membrane and cell wall, cell organelles and cell inclusions; chloroplast, mitochondria, vacuoles, endoplasmic reticulum, Golgi apparatus; nucleus, chromosomes - basic structure, number. **Tissues, Organs, Organ Systems & Organisms:** Structure and functions of animal and plant tissues (Epithelial, Connective, Muscular and Nervous tissues in animals; Meristematic and Permanent tissues in plants). **Life Processes:** Basic concept of nutrition, respiration, transport and excretion in plants and animals. **Control & Coordination In Animals And Plants** Tropic movements in plants; Introduction of plant hormones; Control and co-ordination in animals: Nervous system; Voluntary, involuntary and reflex action; Chemical co-ordination: animal hormones. **Reproduction:** Reproduction in lower organisms (Asexual mode); Reproduction in animals and plants (asexual and sexual); reproductive health - needs and methods of family planning. Safe sex vs HIV/AIDS. Childbearing and women's health. **Food Production:** Plant and animal breeding and selection for quality improvement and management; Use of fertilizers and manures; Protection from pests and diseases; Organic farming.