

MPSAT – 2027

GENERAL SCIENCE SYLLABUS

Physics	Motion: Distance and displacement, velocity; uniform and non-uniform motion along a straight line; acceleration, distance-time and velocity-time graphs for uniform motion and non-uniform motion with constant and variable acceleration. Equations of kinematics. Force and Newton's laws: Force and Motion, Newton's Laws of Motion, Action and Reaction forces, Inertia of a body, Inertia and mass, Momentum, Force and Acceleration. Conservation of Linear momentum, Impulse. Gravitation: Universal Law of Gravitation, Force of Gravitation of the earth (gravity), Acceleration due to Gravity; Mass and Weight; Free fall. Work, energy and power: Work done by a Force, Energy, power; Kinetic and Potential energy; Law of conservation of energy. Optics: Reflection of light by curved surfaces; Images formed by spherical mirrors, centre of curvature, principal axis, principal focus, focal length, mirror formula, magnification. Refraction; Laws of refraction, refractive index. Refraction of light by spherical lens; Image formed by spherical lenses; Lens formula; Magnification. Power of a lens. Refraction of light through a prism, dispersion of light, scattering of light, applications in daily life, Defects of eye, Human eye. Effects of Current: Electric current, potential difference and electric current. Ohm's law; Resistance, Resistivity, Factors on which the resistance of a conductor depends. Series combination of resistors, parallel combination of resistors and its applications in daily life. Heating effect of electric current and its applications in daily life. Electric power, Interrelation between P, V, I and R. Magnetic effects of current: Magnetic field, field lines, field due to a current carrying conductor, field due to current carrying coil or solenoid; Force on current carrying conductor, Fleming's Left-Hand Rule, Electric Motor, Electromagnetic induction. Induced potential difference, Induced current. Fleming's Right Hand Rule.
Chemistry	Matter: Compound, Mixtures, colloids and suspensions Atoms and molecules : Laws of chemical combinations, Mole concept and calculations based on it, Atomic mass & molecular mass, chemical formula of common compounds and valency) Structure of Atom : - Electron, proton & neutron Atomic models (Rutherford's model and Bohr's model) Atomic number and mass number Isotopes: isobars and isotones Chemical Reactions : Types of chemical reactions (combination, decomposition , displacement , double displacement, neutralisation, oxidation & reduction Acids, bases and salts : Indicators for testing acids & bases. Properties of acids & bases pH and pH scale . Preparation and properties of salts like Common salt, washing Soda, Baking. Soda, Bleaching powder Plaster of Paris, Classification of salts, Hydrated salts. Metals and Non metals: Properties a metals & non-metals, Ionic compounds, Ores and alloys Carbon and its compounds : Homologous series, Nomenclature of organic compounds Saturated and Unsaturated hydrocarbons, chemical properties of Carbon compounds (combustion, oxidation , addition and substitution reactions)

Mathematics	Number system Algebra (polynomials, pair of linear equation in two variables, Quadratic equation, Arithmetic Progression). Co-ordinate geometry (section formulae, distance formulae, Area of triangle) Mensuration (Area related to circles, surface area and volume of cube, cuboids, cone and cylinder) Statistics (Mean, median and mode) Probability Trigonometry (trigonometric identities, heights and distance problem) Geometry (triangle/congruence of triangle, circle)
Biology	Cell: Structure and functions of (i) Cell membrane, Cell wall (ii) Nucleus (iii) Endoplasmic reticulum (iv) Golgi vesicle (v) Mitochondria (vi) Ribosome (vii) Plastid Life Process: (i) Transpiration (ii) Plant hormone (iii) Respiratory System (iv) Excretion (v) Body fluid and circulation (vi) Photosynthesis (vii) Control and coordination Genetics & Evolution: (i) Mendel's Principle (ii) Sex determination (iii) Evidences in favour of organic evolution