

SYLLABUS

Total marks: 100

Duration: 120 minutes

| S.No | Subject |
|------|---|
| 1 | English <ul style="list-style-type: none"> • Sentence Completion • Grammar • Vocabulary |
| 2 | Mathematics <p>Number and operations</p> <ul style="list-style-type: none"> • Operations, ratio and proportion, averages, percentage, elementary number theory, fractions and decimals, sequences (Arithmetic Mean only) <p>Algebra and functions</p> <ul style="list-style-type: none"> • Expressions (up to cubic level), equations (up to quadratic level), properties of functions (linear, polynomial, rational) <p>Geometry and mensuration</p> <ul style="list-style-type: none"> • Plane Geometry (Lines and angles, triangles, square, rectangle, parallelogram, trapezium, rhombus, quadrilaterals and other polygons restricted to 4 sided figures, circles) • Co-ordinate Geometry (Lines and circles) • Three-dimensional Solids (Surface area and volume of cubes, cylinders, cones, spheres and combination of shapes) <p>Trigonometry</p> <ul style="list-style-type: none"> • Application questions calculation of height and distances • Right triangles, identities including expressing trig functions in terms of their complements and identities for negative angles |
| 3 | Physics <p>Mechanics</p> <ul style="list-style-type: none"> • Kinematics, such as velocity, acceleration, motion in one dimension. • Dynamics, such as force, Newton's laws, statics, and friction • Energy and Momentum, such as potential and kinetic energy, work, power, impulse, and conservation laws • Circular Motion, such as uniform circular motion and centripetal force • Simple Harmonic Motion, such as pendulum • Gravity, such as the law of gravitation, orbits, and Kepler's laws |

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| | <p>Electricity and magnetism</p> <ul style="list-style-type: none"> • Electric Fields, Forces, and Potentials, such as Coulomb's law, induced charge, field and potential of groups of point charges, and charged particles in electric fields • Capacitance, such as parallel-plate capacitors and time-varying behavior in charging/ discharging • Circuit Elements and DC Circuits, such as resistors, light bulbs, series and parallel networks, Ohm's law, and Joule's law • Magnetism, such as permanent magnets, fields caused by currents, particles in magnetic fields, Faraday's law, and Lenz's law <p>Waves and optics</p> <ul style="list-style-type: none"> • General Wave Properties, such as wave speed, frequency, wavelength, superposition, standing wave diffraction, and Doppler effect • Reflection and Refraction, such as Snell's law and changes in wavelength and speed • Ray Optics, such as image formation using pinholes, mirrors, and lenses <p>Heat and thermodynamics</p> <ul style="list-style-type: none"> • Thermal Properties, such as temperature, heat transfer, specific and latent heats, and thermal expansion • Laws of Thermodynamics, such as first and second laws, internal energy, entropy, and heat engine efficiency |
| 4 | <p>Chemistry</p> <p>States of matter</p> <ul style="list-style-type: none"> • Gases, including the kinetic molecular theory, Charles law, Boyle's law, the gas laws/relationships, molar volumes, density. • Liquids and Solids <p>Reaction types</p> <ul style="list-style-type: none"> • The chemistry of acids and bases • Conjugate acid- base pairs |
| 5 | <p>General Knowledge</p> <ul style="list-style-type: none"> • Geography (Capitals, Oceans, Ports, Waterways, produce of countries etc.) |
| 6 | <p>Aptitude</p> |
| | <ul style="list-style-type: none"> • Qualitative reasoning • Quantitative reasoning • Abstract reasoning) • Spatial reasoning • Logical reasoning |