M.L. Syal's Helix Institute

S.C.O. 343-344-345, Top Floor, Sector 34-A, Chandigarh. Ph : 2663424, 2623155

SCHOLARSHIP cum ADMISSION Test
(March Test for XI–Non-Medical)

Duration of Test : 1 hr. 50 minutes **Total Marks of Test : 300**

Pattern of Test

i. The question paper will be in pen-paper format using OMR sheet at Helix Chandigarh.
ii. There will be **75** multiple choice objective type questions with single answer.
iii. Each question carries **4** marks for correct answer.
iv. **(–1) mark will be deducted for incorrect answer.**
v. No mark will be awarded/deducted for unattempted questions.

Physics Syllabus (25 questions) Marks : 100

- **Light – Reflection and Refraction :** Reflection of light by curved surfaces; Images formed by spherical mirrors, centre of curvature, principal axis, principal focus, focal length, mirror formula (Derivation not required), magnification. Refraction; Laws of refraction, refractive index. Refraction of light by spherical lens; Image formed by spherical lenses; Lens formula (Derivationnot required); Magnification. Power of a lens.
- **Human eye and colourful world :** Functioning of a lens in human eye, defects of vision and their corrections, applications ofspherical mirrors and lenses. Refraction of light through a prism, dispersion of light, scattering of light, applications in daily life (excluding colour of the sun at sunrise and sunset).
- **Electricity :** 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, Direct current. Alternating current: frequency of AC. Advantage of AC over DC. Domestic electric circuits.

Chemistry Syllabus (25 questions) Marks : 100

- **Chemical reactions and equations :** Chemical reactions, Chemical equation, Balanced chemical equation, types of chemical reactions: combination, decomposition, displacement, double displacement, precipitation, endothermic exothermic reactions, oxidation and reduction.
- **Acids, Bases and Salts :** Acids and Bases – definitions in terms of furnishing of H+ and OH– ions, identification using indicators, chemical properties, examples and uses, neutralization, concept of pH scale (Definition relating to logarithm not required), importance of pH in everyday life; preparation and uses of Sodium Hydroxide,Bleaching powder, Baking soda, Washing soda and Plaster of Paris.
- **Metals and non – metals :** Properties of metals and non-metals; Reactivity series; Formation and properties of ionic compounds; Basic metallurgical processes; Corrosion and its prevention.
- **Carbon & Its Compounds :** Covalent bonds – formation and properties of covalent compounds, Versatile nature of carbon, Hydrocarbons – saturated and unsaturated Homologous series. Nomenclature of alkanes, alkenes, alkyne and carbon compounds containing functional groups (halogens, alcohol, ketones, aldehydes). Chemical properties of carbon compounds (combustion, oxidation, addition and substitution reaction). Ethanol and Ethanoic acid (only properties and uses), soaps anddetergents.

Mathematics (25 questions) Marks : 100

- Number systems
- Pair of linear equation in two variables
- Arithmetic Progressions
- Circles
- Introduction to Trigonometry
- Application of Trigonometry (Heights & Distances)
- Surface Areas and Volumes
- Polynomial
- Quadratic Equations
- Triangles
- Coordinate Geometry
- Trigonometric Identities
- Areas Related to Circles
- Statistics & Probability