

**Syllabus for the Walk in Entrance Test –
Post Graduate Admission – M.Sc.(Chemistry)**

Atomic structure

Bohr's theory of hydrogen-like atoms and ions; spectrum of Hydrogen atom. Quantum numbers. Introduction to the concept of atomic orbitals; shapes, radial and angular probability diagrams of s, p and d orbitals (qualitative ideas). Quantum numbers, Many electron atoms and ions: Pauli's exclusion principle, Hund's rule, Auf-bau Principle and its limitation.

Chemical periodicity

Periodic classification of elements, periodicity in properties, classification into metals, non-metal and insulators.

Chemical bonding and Shapes of compounds

Structure and bonding, VSEPR theory, molecular orbital theory, shapes of molecules, hybridization, dipole moment, ionic solids and lattice energy, basic idea about organometallic compounds.

Acid Base Chemistry

Acid Base concepts: Arrhenius concept, Bronsted-Lowry's concept, Lewis concept, Hard-soft Acid base theory (HSAB theory), indicators.

Basic concepts in Organic Chemistry and stereochemistry

Electronic (inductive/electromeric/mesomeric/hyperconjugation/resonance) effects. Optical isomerism in compounds containing one and two asymmetric centres, designation of absolute configuration, conformation of cyclohexanes,. Aromaticity and Huckel's rule. Mechanism of organic reactions: SN^1 , SN^2 , E_1 , E_2 , E_1CB ,

Chemical Kinetics, equilibrium, nuclear chemistry

Order, molecularity, rates and mechanism of chemical reactions: equilibrium and rate of reactions, enthalpy and entropy, intermediates and transition states, role of solvent and catalyst, Salt effects. Basic idea about nuclear chemistry: alpha, beta, gamma radiations, laws governing nuclear radiation, G.M.counter.