

CHEMISTRY

SECTION - A

Atomic structure : Atomic number, electronic configuration s,p,d,f., symbol, aufbau principle, Hund's rule, Pauli's exclusion principle.

Isotopes, isobars, and isotones uses of isotopes, Radio activity, different types of emanations & parent daughter relationship, Group displacement law, helplife, fission and fusion reactions, nuclear reactions, binding energy.

Periodicity of Properties : Atomic radii, ionic radii, electro negativity, electron affinity- their variation with the position of the elements in the periodic table.

Valency : Electronic theory of valency, elementary ideas of sigma and pi bonds shapes of simple molecules. Bond order, bond length and bond angles.

Chemistry of common elements and their commercially important compounds, principles of extraction of metals important alloys, (Metals included-Sodium, Copper, Aluminium, Iron).

Coordination compounds : Werner's theory of coordination compound, coordination number, role of coordination compounds in analysis, Solubility product common ion effect, PH & buffer solution.

SECTION - B

Classification of organic compounds : Homologous series and isomerism, Alkanes, Alkenes and Alkynes, Derivatives of hydro carbonhalides, alcohol, aldehydes, ketones, carboxylic acids, esters & ethers, general absolute method of orientation.

Carbohydrate L Classification, monosaccharides, glucose and fructose, configuration, Epimerization and Mutarotation.

Elementary ideas of oils fats and waxes.

SECTION - C

Kinetic theory of gases and gas laws: Vander waals equation, specific heats of gases C_p / C_v

Thermodynamics: First law of thermodynamics Isothermal and adiabatic expansion. Heat capacities, Thermochemistry, Heat of reaction.

Dilute Solutions: Colligative Properties-Osmotic Pressure, Lowering of Vapour pressure, Depression of freezing point and Elevation of boiling point, Determination of molecular weight in solution.

Chemical Equilibrium: Law of action, Homogenous equilibria, Le Chatelier's principle and its application to chemical equilibria (synthesis of NH_3 by Haber's process SO_3 in contact process of manufacture of Sulphuric acid)

Chemical Kinetics : Molecularity and order of reactions, first and second order reactions.

Electro Chemistry : Faraday's law of electrolysis Equivalent conductivity and specific conductivity- their variation with dilution.

Ostwald's dilution law.

Phase Rule : Explanation of terms involved Distribution law.

Colloids & Catalysis : Definition of colloids classification, dialysis, gold number and Tyndal effect, catalysis- Criteria of catalysis, types of catalysis.