SUBJECT : CHEMISTRY
SECTION -A

Atomic Number, Electronic configuration of elements, Aufbau principle, Humd's Multiplicity Rule, Pauli's Exclusion Principle, long from of the periodic Classification of lements, salient characteristics of 's', 'p', 'd' and 'f' block elements.

Atomic and ionic raddi, ionization, potential, electron affinity and electronegativity their variation with the position of element in the periodic table.

Natural and artificial, radioactivity; theory of nuclear disintegration ; disintegration and displacement laws ; radioactive series nuclear binding energy, nuclear reaction, fission and fusion, radioactive isotopes and their uses.

Electronic Theory of Valency Elementary ideas about sigma and pi-bound, hybridization and directional nature of covalent bonds. Shapes of simple molecules, bound order and bond length.

Oxidation state and oxidation number, Common redox reaction ionic equations.

Bronsted and Lewis theories of acids and bases.

Chemistry of common elements and their compounds, treated from the point of view of periodic classification.

Principles of extraction of metals, as illustrated by sodium, copper, aluminium, iron and nickel.

Werner's theories of coordination compounds and types of isomerism in 6 and 4 coordinate complexes. Rule of coordination compounds in nature, common metallurgical and analytical operations.

Structures of diborane, aluminium chloride ferrocence, alkyl meganism, halides, dischlodiamine platinum and xenon chloride.

Common ion effect, solubility products and their applications in qualitative inorganic analysis.

SECTION -B

Electron displacements-inductive, mesomeric and hyperon- jugative effects- effect of structure on dissociation constants of acids bases-bond formation and bond fission of covalent bonds-reaction intermediates -carbocations, carbonions, free radicals and carbons -nucleophiles and electrophiles.

Alkanes, Alkanes and alkynes-petroleum as a source of organic compounds-simple derivative of alphatic compound halides, alcohol, aldehydes, ketones, acids, esters, acid chlorides, amides anhydrides, ethers, amines and nitro compounds monohydroxy ketonic and amino acids-Grignard regents-active methylene group-malonic and acetoacetic esters and their synthetic uses unsaturated acids.

Stereochemistry element of symmetry, chirality, optical isomerism and lactic and tartaric acids, D.L. notation, R.S. notation of compounds containing chloral centres, concept of conformation Tischer, sawhorse and Newman projections of butane-2.3 diolgeometrical isomerism of maleic and fumaric acids, E and Z notation of geometrical isomers.

Carbohydrates: Classification and general reactions structures of glucose, fructose and sucrose, general idea on the chemistry of starch and cellulose.

Benzene and common monofunctional benzenoid compounds, concept of aromaticity as applied to benzenenaplithalence and pyrole-orientation influence in aromatic substitution-chemistry and uses of diazonium salts.

Elementary idea of the chemistry of oils fat, proteins and vitamins their role in nutrition and industry.

Basic principles underlying spectral techniques (UV- visible. IR Raman and NMR).

SECTION- C

Kinetic theory of gases and gas laws, Maxwell's law of distribution of velocities. Vander Waals equation law of corresponding states, Specific heat of gases, ration CP/Cv, Thermodynamics, The First law of Thermodynamics, Isothermal and adiabatic expansions, Enthalpy ; heat capacities and therma-chemistry, Heats of reaction, Calculation and bond energies Kirchoffs' equation, Criteria for spontaneous changes, Second law of thermodynamics, Entropy free energy, Criteria for chemical equilibrium .

Solutions: Osmatic pressure, Lowering of vapour pressure, depression of freezing points and elevation of boiling point, Determination of molecular weight in solution, Association and dissociation of solutes.

Chemical equilibria: Law of mass ,action and its application to homogenious and heterogeneous equilibria , Le Chatelier, principle and its application to chemical equilibria.

Chemical Kinetics: Molecularity and order of a reaction , First order and second order reactions. Temperature coefficient ; and energy of activation Collission theory of reaction rates qualitative treatment of theory of activated complex.

Electro Chemistry: Faraday's laws of electrolysis, conductivity of an electrolyte, Equivalent conductivity and its variation with dilution, Solubility of sparingly soluble salts, Electrolytic dissociation, Ostwald's dilution law, anomaly of strong electrolytes, Solubility product, Strength of acids and bases hydrolysis of salts, Hydrogen ion concentration, Buffer action, Theory of indicators.

Reversible Cells: Standard hydrogen and calomal electrodes, Redox potentials, Concentration cells, ionic product of water, potentiometric titrations.

Phase Role: Explanation of terms involved, Application to one and two component system distribution law.

Colloids: General nature of colloidal solutions and their classification, Coagulation, Protective action and Gold number.

Absorption:

Catalysis: Homogeneous and heterogeneous catalysis Promoters and poisons.