VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.Sc. (Biotechnology) (Five Years Integrated)

Semester - I

IBT: 101
Course Title: Chemistry

Unit-I (7 hrs.)
Chemical Bonding: Ionic bond, energy change, lattice energy, Born Haber cycle, covalent bond energy changes and its characteristics, potential energy curve for H_2 molecule, Werner's theory, atomic weight and numbers, isomerism, Van der Walls forces Electron repulsion theory (VSEPR), structure of H_2O, NH_3, SiF_4, structure of nuclear diatomic like H_2, N_2, O_2 and F_2

Unit-II (7 hrs.)

Thermo-chemistry: Hess's Law, heat of reaction, effects of temp on heat reaction at constant pressure, Heat of dilution, hydration and combustion

Unit-III (7 hrs.)

Reaction kinetics: Significance of rate laws and equations. Determination of order of reactions and experimental methods. Equilibrium constant and reaction rates-Lindemann, reversible and parallel reactions. Steady and non-steady state of approach.

Unit-IV (7 hrs.)

Catalysis: Criteria for catalysis, Homogenous, acid-base and enzymatic catalysis and concept of promoters, inhibitors and poisoning. Theories of catalysis.

Unit-V (7 hrs.)

Polymers: Basic concepts and terminology. Industrial application of polymers types such as Thermoplasic, Thermosets, linear, branched and cross linked polymers. Solubility of polymers and determination of intrinsic viscosity.

Unit-VI (7 hrs.)

Colloids: Colloidal state, classification of colloidal solution. Purification of colloidal solution. General and optical properties of colloidal solutions. Properties of colloids-Brownian movement size a colloidal particle, emulsion, gels, application of colloids.

Reference book :

1. Inorganic chemistry by J.D.Lee
2. Physical chemistry by Lewis