**Sem-1**

**COURSE: CCCH2A( 5+1):**

**Group A (Theory, Organic Chemistry)**

**Credit (2+1)**

**Basics of Organic Chemistry: 12 Lectures**

*Organic Compounds:* Classification, and Nomenclature, Hybridization, Shapes of molecules,

Influence of hybridization on bond properties.

*Electronic Displacements:* Inductive, electromeric, resonance and mesomeric effects, hyperconjugation and their applications; Dipole moment; Organic acids and bases; their relative strength.

Homolytic and Heterolytic fission with suitable examples; Curly arrow rules, formal charges;

Electrophiles and Nucleophiles; Nucleophlicity and basicity; Types, shape and their relative stability of Carbocations, Carbanions, Free radicals and Carbenes.

Introduction to types of organic reactions and their mechanism: Addition, Elimination and Substitution reactions.

**Stereochemistry: 18 Lectures**

Concept of constitution, configuration and conformation of Organic molecules, Geometrical isomerism, enantiomerism and diastereomerism, chirality and optical activity, elements of symmetry, asymmetry and dissymmetry, R/S, E/Z, D/L, syn/anti, cis/trans, meso/dl, threo/erythro –nomenclature system, Fischer, Sawhorse, Flying Wedg, Newman formulae, Racemization and resolution, resolution of racemic acids, bases and alcohols; optical purity/enetiomeric excess. Axial chirality of allenes, biphenyls, conformation of cyclohexane systems, Topicity of ligands and faces (elementary idea); homotopic, enantiotopic and diastereotopic ligands and faces, prochirality, pro-R/Pro-S and re/si descriptors, Conformational isomerism – eclipsed, staggered gauche and anti; concept of dihedral and torsion angle, energy diagram during variation of torsion angle.