Paper 102102 Organic Chemistry 2 Credits, 50 Marks(30 Hrs)

3 Hrs / Week

I. Structure and Bonding : 05 Hrs

Localized and delocalized chemical bond; charge transfer complexes, resonance, hyper conjugation, inductive effect, hydrogen bonding, conjugative effect, steric effect.

II. Mechanism of Organic Reactions: 06 Hrs

Homolytic and heterolytic bond breaking.Types of reagents eletrophiles and nucleophiles.Types of organic reactions.Energy considerations.Reactive intermediates - carbocations, carbanions, free radicals (with two examples each) Methods of determination of reaction mechanism (product analysis, intermediates, isotope effects, kinetic and stereo - chemical studies with two examples each).

III. Stereochemistry of Organic Compounds : 06 Hrs

Concept of Isomerism - Types of isomerism

Optical Isomerism - elements of symmetry, molecular chirality, enantiomers, stereogenic centre, optical activity, properties of enantiomers, chiral and achiral molecules with two stereogenic centres, diastereomers, threo and erythrodiastereomers, meso compounds.

Relative and absolute configuration, sequence rules, D, L and R, S systems of nomenclature.

Geometric Isomerism - Determination of configuration of geometric isomers. E and Z system of nomenclature.

IV.Alkanes : 07Hrs

Methods of formation (Koble reaction, Corey - House reaction and decarboxylation of carboxylic acids) Physical properties and Chemical reactions of alkanes

Alkenes : Nomenclature of alkenes, methods of formation, mechanisms of dehydration of alcohols and dehydrohalogenation of alkyl halides. The Saytzeff rule, Hofmann elimination, physical properties and relative stabilities of alkenes. Chemical reactions of alkenes - mechanisms involved in hydrogenation, electrophilic and free radical additions, Markownikoff's rule, hydroboration and oxidation with KMnO4. Polymerization of alkenes with one example each.

V.Arenes and Aromaticity: 03 Hrs

Nomeclature of benzene derivatives.The aryl group. Aromatic nucleus and side chain structure of benzene : molecular formula and Kekule structure. Resonance Structure, MO Picture.

Aromaticity : The Huckel rule, aromatic ions Aromatic electrophilic substitution: General Pattern of the mechanism (Nitration, halogenations and Sulphonation) and Friedel Crafts reaction.

VI.Alkyl and Aryl halides: 03 Hrs

Polyhalogen Compounds: Chloroform, Carbon tetrachloride. Methods -formation of aryl halides, nuclear and side chain reaction.