

FIRST SEMESTER

Course No. GenEd-1 (FM = 50; C = 4)

Paper: Chem 0131

A: Organic Chemistry-I (M = 35)

Unit I (M = 20)

General introduction

Functional group based classification and nomenclature. Molecular formula and IHD/DBE.

Bonding

Concept of hybridisation, resonance (including hyperconjugation), orbital pictures of bonding (sp^3 , sp^2 , sp : C-C). Inductive effect, bond polarization and bond polarizability, steric effect, steric inhibition of resonance.

Stereochemistry

Chirality, optical activity, symmetry elements (plane, centre) Stereoisomerism due to one and two stereocentres and descriptors; stereoisomerism in C=C system and descriptors. Conformational analysis of ethane and butane

Physical properties

Mp/bp; solubility; dipole moment; acid and base strength.

Unit 2 (M = 15)

Organic reactions

Classification of reactions- substitution, addition, elimination, rearrangement.

Alkanes, alkenes and alkynes: Synthesis and chemical reactivity of alkanes, mechanism of radical halogenation of alkanes, general methods of synthesis of alkenes, electrophilic addition reaction, mechanism of bromination and hydrohalogenation, Markownikoff's addition, peroxide effect, hydroboration, ozonide formation, polymerization reaction of alkenes (definition and examples only), general methods of synthesis, acidity, hydration and substitution reactions of alkynes.

Aromatic Hydrocarbons: mechanism of electrophilic substitution, synthesis of benzene derivatives using nitration, halogenation, Friedel-Craft's reactions. Nucleophilic aromatic substitution.

B: Internal assessment / Class performance (M = 15)

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