

Year & Sem: P2S1	Course Code: C214	Course Name: Chemistry	No. of Credits: 4	L-T-P: 2-2-1
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Syllabus

Unit-I: Alkanes, Cycloalkanes and functional groups

Nomenclature of organic compounds, Isomerism in organic compounds, Types of Organic reactions, Reaction intermediates, Electronic displacements in covalent bond, Resonance, Introduction to Functional groups

Alkanes and Cycloalkanes- Nomenclature, Preparation and properties of alkanes and cycloalkanes

Unit-II: Alkenes and Alkynes

Naming alkenes, Cis- trans and E-Z configuration, preparation and properties of alkenes, Markovnikov's and anti-Markovnikov's rule

Alkynes – Naming of alkynes, preparation and properties of alkynes

Unit-III: Aromatic compounds

Introduction, Naming benzene derivatives, Aromatic stability

Reactions of benzene: Electrophilic aromatic substitution-Mechanism, Halogenation, Nitration, Sulfonation, Friedal-Craft alkylation and acylation, Directing effects-Ortho, para and meta directors.

Other reactions and synthesis- Reactions at benzylic position, Synthesis of substituted benzene ring, Nucleophilic aromatic substitution.

Unit-IV: Stereochemistry

Molecular representations, Stereoisomers, enantiomers, and meso compounds, drawing enantiomers, Chirality, Cahn-Ingold-Prelog system for naming enantiomer (RS system) Optical activity, Optical activity calculations, Stereoisomeric relationships-Enantiomers, diastereomers and meso compounds

Unit-V: Substitution and elimination reactions

Alkyl halide nomenclature, preparation and properties

SN1 and SN2: SN1 mechanism, Kinetics and Stereochemistry, Carbocation stability and rearrangement introduction, SN2 mechanism, Kinetics and Stereochemistry, SN1 and SN2 comparison E1 and E2 reactions: Mechanism, kinetics, regioselectivity, stereoselectivity and stereospecificity

Unit-VI: Alcohols, Phenols and Ethers

Introduction to Alcohols, Nomenclature, preparation and properties of alcohols and Phenols.

Introduction, naming, preparation and properties of Ethers and cyclic ethers

Practicals:

Qualitative analysis of Inorganic salts

- i. Cations: Pb^{+2} , Cu^{+2} , Al^{+3} , Fe^{+3} , Zn^{+2} , Ni^{+2} , Ca^{+2} , Ba^{+2} , Mg^{+2} , NH_4^+ .
- ii. Anions: CO_3^{-2} , S^{-2} , SO_4^{-2} , NO_3^- , Cl^- , Br^- , I^- .

References:

1. Organic chemistry, 3rd edition by Janice Gorzynski Smith
2. Organic chemistry by Jonathan Clayden and Nick Greeves
3. Organic chemistry, 6th edition by Robert N. Boyd and Robert T. Morrison
4. Organic chemistry, 7th edition by Paul Bruice