



SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES



Question Bank - Unit I

PHARMACEUTICAL ORGANIC CHEMISTRY-I (BP202T,)

Long Answer Questions (10 Marks)

1. **Hybridization and Bonding:** Explain the concept of hybridization in organic chemistry. Describe the formation of sp , sp^2 , and sp^3 hybrid orbitals with suitable examples, and discuss their impact on molecular geometry and bonding in organic compounds. (10 Marks)
2. **Structural Isomerism:** Define structural isomerism and discuss its types (chain, position, functional group, and metamerism) with one example for each type. Explain how these isomers differ in their physical and chemical properties. (10 Marks)
3. **Alkanes and Cycloalkanes:** Describe the nomenclature, preparation methods (Wurtz reaction and decarboxylation), and chemical reactions (halogenation and combustion) of alkanes. Compare the stability and reactivity of cycloalkanes with open-chain alkanes. (10 Marks)
4. **Alkenes and Alkynes:** Discuss the preparation of alkenes via dehydration of alcohols and dehydrohalogenation of alkyl halides. Explain the mechanism of electrophilic addition reactions in alkenes, including Markovnikov's rule, with examples. (10 Marks)
5. **Stereochemistry:** Explain the concept of stereoisomerism, focusing on geometrical isomerism in alkenes. Discuss the conditions required for geometrical isomerism and illustrate with examples of cis-trans isomers, including their physical properties. (10 Marks)

Short Answer Questions (5 Marks)

1. Explain the significance of resonance in stabilizing organic molecules, with an example of resonance in benzene. (5 Marks)
2. Describe the preparation of alkanes using Kolbe's electrolysis method, including the reaction mechanism. (5 Marks)
3. Discuss the concept of hyperconjugation and its role in stabilizing alkenes, with an example. (5 Marks)
4. Explain the mechanism of free radical halogenation of alkanes, highlighting the initiation, propagation, and termination steps. (5 Marks)
5. Describe the Saytzeff rule in the context of elimination reactions of alkyl halides, with an example. (5 Marks)
6. Discuss the preparation of alkynes via dehydrohalogenation of vicinal dihalides, including reaction conditions and reagents. (5 Marks)
7. Explain the concept of inductive effect and its influence on the acidity of carboxylic acids, with an example. (5 Marks)

8. Describe the preparation of alkenes from alkynes through partial reduction, specifying the reagents used. (5 Marks)
9. Discuss the nomenclature of cycloalkanes with substituents, providing two examples. (5 Marks)
10. Explain the difference between conformation and configuration, using ethane and butane as examples. (5 Marks)

Very Short Answer Questions (2 Marks)

1. Define tautomerism with one example. (2 Marks)
2. What is the role of hybridization in determining the bond angle in methane? (2 Marks)
3. Write the general formula for alkanes and cycloalkanes. (2 Marks)
4. What is Markovnikov's rule? Provide one example. (2 Marks)
5. Define geometrical isomerism in alkenes with one example. (2 Marks)
6. Write the reaction for the preparation of ethene from ethanol. (2 Marks)
7. What is the significance of the term "saturated" in alkanes? (2 Marks)
8. Name two reagents used for the ozonolysis of alkenes. (2 Marks)
9. Define metamerism with one example. (2 Marks)
10. What is the product of the complete combustion of ethane? (2 Marks)
11. Write the structure of cis-2-butene. (2 Marks)
12. What is the role of peroxides in the anti-Markovnikov addition of HBr to alkenes? (2 Marks)