Quetion Bank
Pharmaceutical Organic Chemistry (BP202T), B. Pharm. 2nd sem

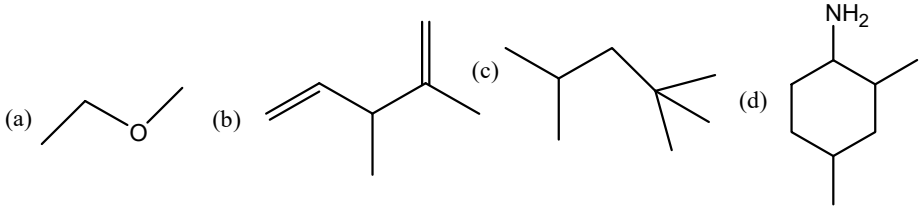
Unit-I: Classification, Nomenclature and Isomerism

Short answer question

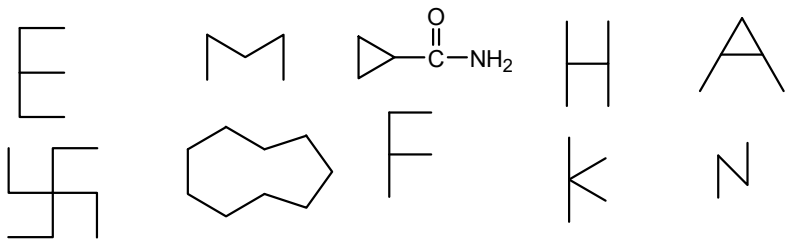
1. What is functional isomerism?
2. What is chain isomerism?
3. What are cyclic compound? Gives some examples.
4. What is common system of nomenclature of organic compound?
5. Explain classification of organic compound.
6. Write down structure and IUPAC name of-
   (a) Formic Acid (b) Dimethyl ether (c) Acetaldehyde (d) Acetone (e) 1-cloro-4-methyl cycloheptane.

Long answer questions

1. What do mean by IUPAC nomenclature? Give the IUPAC names of different classes of compounds.
2. Explain isomerism in organic chemistry.
3. Explain tautomerisem and Functional isomerism with suitable example.
4. Write down the structural formula of-
   (a) 3-cloro-2-methylhexanal
   (b) Pentan-2-one
   (c) 1,3-butadiene
   (d) 3-ethyl butanol
   (e) 2-bromo-cyclopentanoic acid
7. Give the structural formula of the following compound-
   a) 2-Methylbutanedioic acid
   b) 3, 3-dimethyl-4-ethylhexane
   c) 2-amino-3-chloro-2-pentanol
   d) 5-amino-2-ethyl-2-cyclohexanone.
8. Give the IUPAC names of the following compounds:



9. Give the IUPAC names of the following compounds:

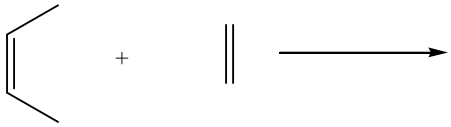


10. Draw the structure of the following compound-
    a) 1-Chlorocyclopentanol
    b) Butanoyl chloride
    c) Cyclopentane carboxylic acid
    d) 2, 3-dimethyl-3-butene-2-ol

Unit-II: Alkanes, Alkenes and Conjugated dienes

Short answer question

1. Discuss relative stability of various type of alkene.
2. Give mechanism of E2 and E1 reaction.
3. Why alkene show electrophilic addition reaction.
4. Write Ozonolysis reaction for alkene.
5. Discuss the mechanism of Markonikov's addition to alkene with suitable examples.
6. How does Ozonolysis help in locating the position of double bond in an alkene?
7. *Trans*-butene is more stable than *cis*-butene why?
8. What happened when but-2-ene undergo Ozonolysis.
9. Write Uses of alkane.
10. What happened when 2-methyl-2-butene is heated with HCl?
11. Write dehydration product of 2-butanol.
12. 1, 3-butadiene is more stable than 1,4-penta diene. Explain.
13. Write down the product of following reaction-



Long answer question

1. Explain the addition of HBr to propylene in accordance with Markonikov's and anti-Markonikov's rule with mechanism.
2. Write methods of preparation of alkane.
3. Discuss halogenation of alkane with mechanism
   OR
   Write free radical substitution reaction of Alkane.
4. Explain the mechanism by which alkyl halides undergo elimination reaction with suitable example.
5. Write a short note on-
   (a) Saytzeff's Rule (b) Ozonolysis
6. Differentiate between E_1 and E_2 reaction. Write factor affecting on E1 and E2 reaction.
7. Write rearrangement of carbocation.

8. What are diene? Classified with suitable examples. Explain stability of conjugated diene over isolated dienes.
9. Write a short note on-
   (a) Diel's Alder reaction (b) Allylic rearrangement.
10. Discuss the methods of preparation of conjugated dienes.
11. What do you understand by 1, 2 and 1, 4-addition reaction? Explain the mechanism with suitable example.
12. Discuss the free radical addition reaction of conjugated diene with suitable example.

UNIT-III: ALKYL HALIDES AND ALCOHOLS

Short answer question

1. Write the comparison of SN1 and SN2.
2. Discuss the mechanism of SN1 and SN2 reaction.
3. Hydrolysis of ethyl chloride is SN2 reaction but hydrolysis of ter-butyl chloride is SN1 reaction. Explain its mechanism.
4. Discussed factors influencing SN2 or SN1 reaction.
5. When an optically active alkyl halide is treated with a base, racemic mixture of an alcohol is obtained. Discuss the mechanism and stereochemistry of the reaction.
6. **What is Lucas reagent? How will you distinguish 1^0, 2^0 and 3^0 Alcohols by Lucas test?**
7. Explain the solubility of alcohols in water.
8. Why alcohols have higher boiling point than alkyl halide.
9. Write oxidative product of Prim., sec. and ter. Alcohol.
10. In alcohols why solubility decreases with increase in molecular weight.

Long answer question

1. Discussed the kinetics and stereochemistry of SN1 and SN2 reaction.
2. Write the methods of preparation of alkyl halide.
3. Discuss the elimination reaction of alkyl halide with suitable example.
4. What are SN1 and SN2 reaction? Explain giving mechanism of each reaction.
5. Write the factors affecting on SN1 and SN2 reaction.
6. Write the methods for distinct between primary, sec. and ter- alcohols.
   OR
   Write qualitative test for alcohols
7. Write the structure and uses of **Ethyl alcohol** and **Iodoform** OR **Tetrachloro methane**.
8. Write any three methods of preparation of alcohols and properties.
9. Write the structure and uses of Tetrachloro ethylene and Cetosteryl alcohol.
10. Discuss the behaviour of alcohols towards-
    (a) Oxidation (b) Ester formation (c) Dehydration
11. Draw the structure and write uses of **ANY TWO-**
    (a) Chloroform
    (b) Dichloromethane

(c) Benzyl alcohol

12. Write the structure and uses of **any three**-
    (a) Chlorobutanol
    (b) Glycerol
    (c) Propylene glycol
    (d) ethyl chloride

UNIT-IV: ALDEHYDE AND KETONES

Short answer question

1. What types of aldehyde undergo Cannizaro reaction?
2. Write the reaction of Benzoin condensation and Aldol condensation reaction.
3. Why are aldehyde are more reactive than ketones when undergo nucleophilic addition reaction?
4. What is electomeric effect? Explain with suitable example.
5. How will you distinguish a ketone and aldehyde by chemical methods

   OR

   Write qualitative test for aldehyde and ketone.
6. Write the reaction of aldehyde and ketone with HCN.
7. How will you convert-
   i. Benzaldehyde into Cinnamic acid
   ii. Benzaldehyde into Cinnamaldehyde

Long answer question

1. Explain the mechanism of Cannizaro and Perkin Reaction.
2. What are carbonyl compound? Discuss the reactivity of carbonyl group towards Nucleophilic attack.

   OR

   Write nucleophilic addition reaction of aldehyde and ketones.
3. Discuss the behaviour of aldehyde and ketones toward Tollens reagent and Fehling solution.
4. Give structure and uses of – (any four)
   i. Hexamine
   ii. Vanillin
   iii. Cinnamaldehyde
   iv. Paraldehyde
   v. Chloral hydrate
5. Write following name reaction with mechanism (any two)
   (a) Benzoin condensation reaction
   (b) Aldol condensation reaction
   (c) Crossed Cannizaro reaction
   (d) Crossed aldol condensation
6. Discuss the methods of preparation of carbonyl compound.

UNIT-V: CARBOXYLIC ACID AND ALIPHATIC AMINES

Short answer question

1. Explain why carboxylic acid exhibit acidic character.
2. Discuss effect of substituents on the acidity of monocarboxylic acid.
3. Arranged the following in increasing order of their acidity-
   (a) 2-chloropropionic acid, 2-fluoro propionic acid and ethanoic acid.
4. Write qualitative test for carboxylic acid.
5. What is Hinsberg reagent?
6. Write qualitative test for aliphatic amine.
7. Explain why acetic acid is a weaker acid than formic acid, while chloro acetic acid is stronger acid.
8. Discuss effect of substituents on the basicity of aliphatic amines.
9. Draw the structure of any four-
   (a) Lactic acid (d) Methyl salicylate
   (b) Tartaric acid (e) Citric acid
   (c) Succinic acid

Long answer question

1. What are carboxylic acid? Draw the resonating structure of carboxylate ion. How are they converted into esters and acid anhydrides?
2. Describe general methods of preparation of aliphatic and aromatic acid.
3. Draw the structure and uses of **any four**-
   (a) Methyl salicylate (d)Benzoic acid
   (b) Dimethyl Phthalate (e) Salicylic acid
   (c) Benzyl benzoate (f) Aspirin
4. Draw the structure and uses of Citric acid, Oxalic acid and Succinic acid.
5. Write the structure and uses of Ethanolamine, Ethylene diamine and Amphetamine (any two)