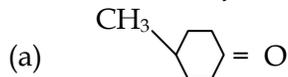


Assignment

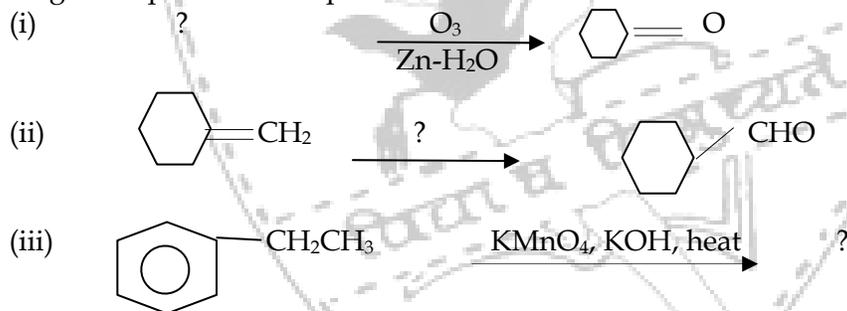
Chapter 12: Aldehydes, Ketones and Carboxylic Acids

1 Write IUPAC names for the following :



- 2
- Arrange the following compounds as directed:
 - Acetaldehyde, acetone, Methyl tert-butyl ketone (reactivity towards HCN)
 - Benzoic acid, 3,4-Dinitrobenzoic acid, 4-methoxybenzoic acid
 - $\text{CH}_3\text{CH}_2\text{CH}(\text{Br})\text{COOH}$, $\text{CH}_3\text{CH}(\text{Br})\text{CH}_2\text{COOH}$, $(\text{CH}_3)_2\text{CHCOOH}$ (acid strength)
 - a) CH_3CHO , $\text{CH}_3\text{CH}_2\text{OH}$, CH_3OCH_3 , $\text{CH}_3\text{CH}_2\text{CH}_3$ (increasing order of their boiling point)
 - b) Ethanal, propanal, propanone, butanone (increasing order of their reactivity towards nucleophilic addition).
- 3 Give brief description with suitable example:
- Cannizzaro Reaction
 - Hell-Volhard Zelinsky Reaction.
 - Clemmensen Reduction
 - Wolff-Kishner Reduction.
 - Cross aldol condensation
- 4 Account for the following:
- Carboxylic acids have higher boiling points than alcohols of comparable molecular masses.
 - Electrophilic substitution in benzoic acid takes place at meta-position.
 - Monochloroethanoic acid has a higher pK_a value than dichloroethanoic acid.
 - Ethanoic acid is a weaker acid than benzoic acid.
 - The boiling points of aldehydes and ketones are lower than of the corresponding acids.
- 5 How will you convert the following?
- Acetaldehyde into 2-Butenal
 - Acetic acid to Acetic anhydride
 - Butanol to butanoic acid
 - 4-Methylacetophenone to benzene-1,4-dicarboxylic acid
 - Butan-2-one to butan-2-ol
 - Phenol to 2,4,6-tribromophenol

- 6 Distinguish between the following
- CH_3CHO and $\text{C}_6\text{H}_5\text{CHO}$
 - $\text{C}_2\text{H}_5\text{OH}$ and $\text{CH}_3\text{CH}_2\text{COCH}_2\text{CH}_3$
 - $\text{C}_6\text{H}_5\text{COOH}$ and $\text{C}_6\text{H}_5\text{OH}$
 - $\text{C}_6\text{H}_5\text{COCH}_3$ and $\text{C}_6\text{H}_5\text{COC}_6\text{H}_5$
 - CH_3COCH_3 and $\text{C}_2\text{H}_5\text{OH}$
 - CH_3COCH_3 and $\text{C}_3\text{H}_7\text{OH}$
- 7 An organic compound contains 69.77% carbon, 11.63% hydrogen and the rest is oxygen. The molecular mass of the compound is 86. It does not reduce Tollen's reagent but forms an addition compound with sodium hydrogen sulphite and gives a positive iodoform test. On vigorous oxidation it gives ethanoic and propanoic acids. Deduce the possible structure of the organic compound.
- 8 An organic compound with molecular formula $\text{C}_9\text{H}_{10}\text{O}$ forms 2,4-DNP derivative, reduces Tollen's reagent and undergoes Cannizzaro's reaction. On vigorous oxidation it gives 1,2-benzenedicarboxylic acid. Identify the compound.
- 9 Complete the following reaction statements by giving the missing starting material, reagent or product as required:



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