

INDIAN SCHOOL MUSCAT
CHEMISTRY DEPARTMENT
QUESTION BANK

Alcohols, Phenols and Ethers

1. Give equations for the following:

- (i) Catalytic hydration of alkenes
- (ii) Hydroboration-Oxidation
- (iii) Friedel-Craft's reaction
- (iv) Kolbe's reaction
- (v) Reimer – Tiemann Reaction.
- (vi) Williamson's synthesis
- (vii) Acetylation

2. Account for the following:

- (i) Bond angle in alcohol is less than tetrahedral angle.
- (ii) Bond angle is greater than the tetrahedral angle.
- (iii) The boiling points of alcohols and phenols are higher than corresponding alkanes of same molecular mass.
- (iv) Among the isomeric alcohols the boiling point follows the order $3^{\circ} < 2^{\circ} < 1^{\circ}$.
- (v) Lower alcohols are soluble in water
- (vi) Ethanol is less acidic than methanol.
- (vii) The acidic character of the alcohols follows the order $1^{\circ} > 2^{\circ} > 3^{\circ}$
- (viii) The reaction of alcohol with acid is carried out in presence of small amount of concentrated H_2SO_4 .
- (ix) Reaction of alcohol with acid chloride is carried out in presence of a base pyridine.

- (x) Ortho and para nitrophenols can be separated by steam distillation.
- (xi) Phenol is ortho-para directive to electrophilic substitution.
- (xii) The reaction of an alkoxide with a tertiary alkyl halide gives an alkene.
- (xiii) Alkyl aryl ethers give phenol with HI instead of iodobenzene.
- (xiv) Aralkyl ethers (or aryl alkyl ethers) are ortho para directing.

3. Effect the following conversions

- (i) Chloro benzene to phenol
- (ii) Benzene to phenol
- (iii) Propene to 1-Propanol
- (iv) Phenol to toluene
- (v) Phenol to anisole
- (vi) Phenol to aspirin
- (vii) Propene to 2-propanol
- (viii) Acetone to 30 butyl alcohol
- (ix) Aniline to phenol
- (x) Cumene to phenol
- (xi) Ethanol to isopropyl alcohol
- (xii) Phenol to picric acid

4. Explain Lucas test by taking suitable examples

5. Write equation for the following

- (i) Mononitration of 3-methyl phenol
- (ii) Trinitration of phenol
- (iii) Methyl magnesium bromide is treated with butanone followed by hydrolysis
- (iv) Methyl magnesium bromide is treated with propanal followed by hydrolysis
- (v) Ethoxy benzene is treated with HI

- (vi) Mononitration of anisole
6. Explain the following mechanisms
- (i) Hydration of ethane
 - (ii) Dehydration of ethanol to form ethene
 - (iii) Dehydration of ethanol to form ethoxy ethane
7. Explain the manufacture of
- (i) Methanol
 - (ii) Ethanol
8. Using suitable Grignard reagent prepare the following
- (i) tert-pentyl alcohol
 - (ii) isobutyl alcohol
 - (iii) sec-pentyl alcohol
 - (iv) neopentyl alcohol