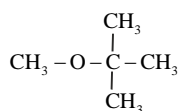


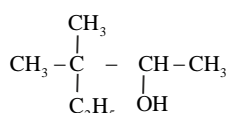
Chapter-11

Alcohols, Phenols, And Ethers

01. Write the IUPAC name of the following compound:



02. Write IUPAC name of the following:



03. Mention two important uses of methanol.
04. Give the structural formula and name of the product of the following reaction: Phenol is treated with an excess of aqueous bromine.
05. Phenol has a smaller dipole moment than methanol. Explain.
06. How will you convert aniline to phenol?
07. How will you distinguish between 1-propanol and 2-propanol by a suitable chemical test?
08. How is 2-methyl propan-2-ol, propan-2-ol?
09. How will you convert phenol to anisole?
10. Of the two alcohols; (a) $\text{CH}_2 = \text{CH} - \text{CH}_2\text{OH}$ and (b) $\text{CH}_2 = \text{CH} - \text{CH}_2 - \text{CH}_2\text{OH}$, which one will react more easily with conc. HCl in the presence of ZnCl_2 ?

Short Answer Type Questions

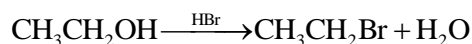
11. How are the following conversions carried out (write reactions with conditions)

- (i) Propan-2-ol to Propan-1-ol.
- (ii) Ethene to Ethane-1, 2-diol.
- (iii) Phenol to Salicylaldehyde.

12. How will you convert?

- (i) Propane to propan-1-ol.
- (ii) Ethanol to Propan-2-ol.

13. Write the mechanism of the following reaction:



14. Write the equation involved in the following reactions.

(i) Reimer - Tiemann reaction.

(ii) Williamson synthesis.

15. Write the structures of the products when butan-2-ol reacts with the following.

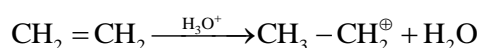
(i) CrO_3

(ii) SOCl_2

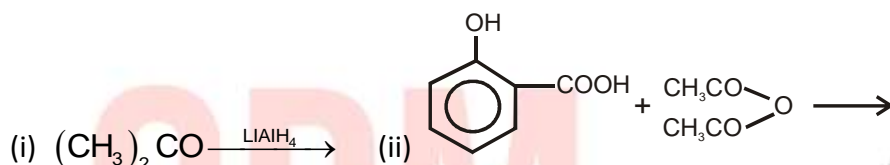
16. How can ethers be prepared?

(i) Arrange the following compounds in the increasing order of their acid strength p-cresol, p-nitrophenol, phenol.

(ii) Write the mechanism by curved arrow notation of the following reaction.



17. Complete the following reactions:



18. Describe the mechanism by which the hydroxyl group attached to an aromatic ring is more acidic than the hydroxyl group attached to an alkyl group. How does the presence of a nitro group in phenol affect its acidic character?

19. Explain how an -OH group attached to a carbon in the benzene ring activates benzene towards electrophilic substitution.

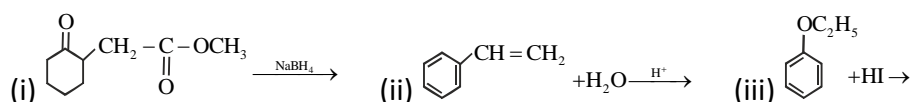
20. How would you account for the following:

(i) Phenols are much more acidic than alcohols.

(ii) The boiling points of ethers are much lower than those of the alcohols of comparable molar masses.

Long Answer Type Questions

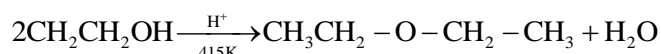
21. Write the structures of the main products in the following reactions.



22. Alcohols react both as nucleophiles as well as electrophiles. Write one reaction of each type and describe its mechanism.

23. Name the reagents which are used in the following conversions:

(i) Explain the mechanism of the following reaction :



(iii) Name the reagent used in the oxidation of ethanol to ethanoic acid.

24. Write the mechanisms of the following reactions:

(i) Hydration of ethene to ethanol (ii) Dehydration of ethanol, giving ethene.

25. How would you convert the following:

(i) Phenol to Anisole.

(ii) Propan-2-ol to 2-methyl propan-2-ol.

(iii) Aniline to phenol.

26. Explain the following behaviors:

(a) (i) Alcohols are more soluble in water than the hydrocarbons of comparable molecular masses.

(ii) Ortho-nitrophenol is more acidic than ortho-methoxyphenol.

(b) (i) o-nitrophenol is more acidic than o-methoxyphenol.

(ii) Octan-1-ol has a higher boiling point than dimethyl ether.

(iii) $(\text{CH}_3)_3\text{CO}-\text{CH}_3$ on reaction with HI gives $(\text{CH}_3)_3\text{C}-\text{I}$ and CH_3OH as the main product and not $(\text{CH}_3)_3\text{C}-\text{OH}$ and CH_3I .

27. Name the reagents used in the following reactions.

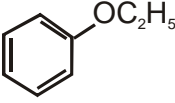
(i) Bromination of phenol to 2,4,6-tribromo phenol.

(ii) Butan-2-one to butan-2-ol.

(iii) Friedel-Crafts alkylation of anisole.

28. State the products of the following reactions:

(i) $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}_3 + \text{HBr} \rightarrow$

(ii)  + HBr \rightarrow

(iii) $(\text{CH}_3)_3\text{C}-\text{OC}_2\text{H}_5 \xrightarrow{\text{HI}}$

29. (a) Write the chemical equations and reaction conditions for the conversion of (i) Benzyl chloride to Benzyl alcohol. (ii) Phenol to phenyl ethanoate (iii) Ethanal to propan-2-ol.

(b) Give an example for each of the following reactions:

(i) Kolbe's reaction (ii) Reimer-Tiemann reaction.

30. (a) Write the reaction and state the conditions for each of the following conversions:

(i) Ethene to ethanol (ii) Chlorobenzene to phenol (iii) Ethanol to propan-2-ol.

(b) Write the reactions and their conditions only for the commercial preparation of phenol from cumene.