CBSE 12th Chemistry
Chapter- 11 (Alcohols, Phenols and Ethers)
Unsolved Important Questions

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SECTION A

(Each question in this section carry 1 mark)

Q.1. Write the structure of the molecule of compound whose IUPAC name is 1-phenylpropan-2-ol.

Q.2. Give the IUPAC name of the following compound.

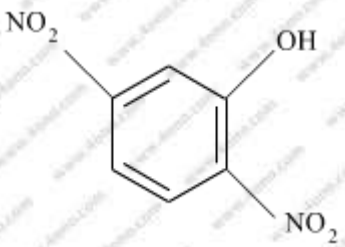
$$CH_3 - \underset{|}{\overset{CH_3}{C}} = \underset{|}{\overset{Br}{C}} - CH_2OH$$

Q.3. Draw the structure of 3-methyl butanol.

Q.4. Explain "Reimer-Tiemann reaction" with one example.

Q.5. Draw the structural formula of-2 ol molecule.

Q.6. Write the IUPAC name of the given compound:

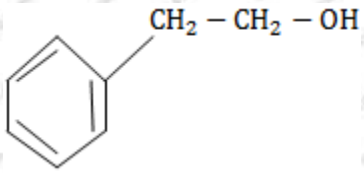


Q.7. Give the IUPAC name of the following compound:

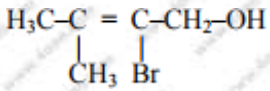
$$H_2C = CH - \underset{|}{\overset{OH}{CH}} - CH_2 - CH_2 - CH_3$$

Q.8. Write the structure of the molecule of compound whose IUPAC name is 1-phenylpropan-2-ol.

Q.9. Write the IUPAC name of the given compound.



Q.10. Write the IUPAC name of the following compound:



Q.11. Give the IUPAC name of the following compound:

$$H_2C = CH - CH - CH_2 - CH_2 - CH_3$$
$$|$$
$$OH$$

Q.12. Which of the following isomers is more volatile: o-nitrophenol or p-nitrophenol.

SECTION B

(Each question in this section carry 2 marks)

Q. 13. How are the following conversions carried out?

(i) Benzyl chloride to benzyl alcohol,
(ii) Methyl magnesium bromide to 2-methylpropan-2-ol.

Q.14. Illustrate the following reactions giving a chemical equation for each:

(i) Kolbe's reaction,
(ii) Williamson synthesis.

Q.15. How would you obtain?

(i) Picric acid (2, 4, 6-trinitrophenol) from phenol

(ii) 2-Methylpropene from 2-methylpropanol?

Q.16. Explain the mechanism of the following reaction:

Q.17. How will you convert:

(i) Propene to Propan-2-ol?

(ii) Phenol to 2, 4, 6 – trinitrophenol?

Q.18. Write the mechanism of the following reaction

$$2CH_3CH_2OH \xrightarrow[413K]{conc.\ H_2So_4} CH_3CH_2 - O - CH_2 - CH_3$$

Q.19. How would you convert ethanol to ethene?

Q.20. Explain the mechanism of acid catalysed hydration of an alkene to form corresponding alcohol.

Q.21. Explain the following behaviors:

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

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

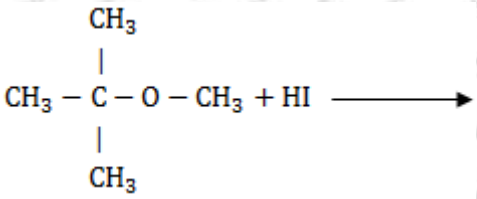
Q.22. Write the equation involved in the following reactions:

(i) Reimer - Tiemann reaction

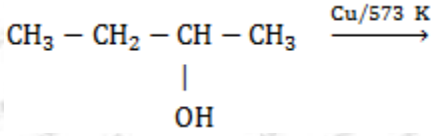
(ii) Williamson's ether synthesis

Q.23. Write the major product in the following equations:

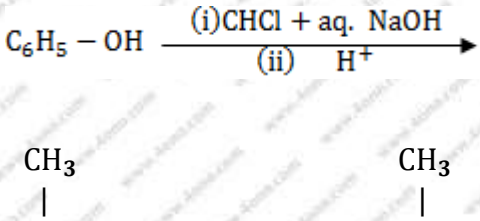
(i)



(ii)



(iii)



Q.24. (a) Arrange the following compounds in the increasing order of their acid strength:
P-cresol, p-nitrophenol, phenol.
(b) Write the mechanism (using curved arrow notation) of the following reaction:

$$CH_2 = CH_2 \xrightarrow{H_3O^+} CH_3 - CH_2^+ + H_2O$$

Q.25. Write the structures of the products when Butan-2-ol reacts with the following:

(a) CrO_3

(b) $SOCl_2$

Q.26. Write the reagents required in the following reactions:

(i) $CH_2 = CH - CH_2OH \xrightarrow{?} CH_2 = CH - CHO$

(ii) $CH_3 - COOH \xrightarrow{?} CH_3 - CONH_2$

Q.27. Write the chemical equations involved in the following reactions:

(i) Hoffmann-bromoimides degradation reaction

(ii) Carbylamines reaction

Q.28. Give reasons for the following:

(i) Aniline does not undergo Friedal-Crafts reactions.

(ii) $(CH_3)_2NH$ **is more basic than** $(CH_3)_3N$ **in an aqueous solution.**

(iii) Primary amines have higher boiling point than tertiary amines.

SECTION C

(Each question in this section carry 3 marks)

Q.29. How would you convert the following:

(i) Phenol to benzoquinone

(ii) Propanone to 2-methylpropan-2 ol

(iii) Propene to propan-2-ol

Q.30. Name the reagents which are used in the following conversions:

(i) A primary alcohol to an aldehyde

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

(iii) Phenol to 2, 4, 6-tribromophenol

Q.31. Explain the mechanism of the following reactions:

(i) Addition of Grignard's reagent to the carbonyl group of a compound forming an adduct followed by hydrolysis.

(ii) Acid catalyzed dehydration of an alcohol forming an alkene.

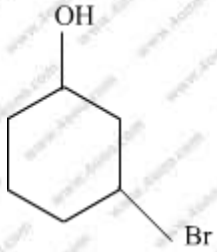
(iii) Acid catalyzed hydration of an alkene forming an alcohol.

Q.32. Name the following compounds according to IUPAC system.

(i)

$$CH_3 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_2 - \underset{\displaystyle OH}{\underset{|}{CH}} - CH - CH_3$$

(ii)



(iii) $\mathbf{CH - C = C - CH_2 - OH}$

$$\begin{array}{ll} & \;\;| \quad\; | \\ & \mathbf{CH_3 \; Br} \end{array}$$

Q.33. (a) Write the mechanism of the following reaction.

$$CH_3CH_2OH \xrightarrow{HBr} CH_3CH_2Br + H_2O$$

(b) Write the equation involved in Reimer-Tiemann reaction.

Q.34. (a) How do you convert the following:

(i). Phenol to anisole
(ii). Propan-2-ol to 2-methylpropan-2-ol
(iii). Aniline to phenol

Q.35. (a) Write the mechanism of the following reaction:

$$2CH_3CH_2OH \xrightarrow{H^+} CH_3CH_2 - O - CH_2CH_3$$

(b)Write the equation involved in the acetylation of Salicylic acid.

Q.36. Mention one use each of the following drugs:

(i) Ranitidine
(ii) Paracetamol
(iii) Tincture of iodine.

Q.37. Classify the following as primary, secondary and tertiary alcohols:

(i)

$$\begin{array}{l} CH_3 \\ | \\ CH_3 - C - CH_2OH \\ | \\ CH_3 \end{array}$$

(ii) $H_2C = CH - CH_2OH$

(iii) $CH_3 - CH_2 - CH_2 - OH$

Q.38. How would you convert the following:

(i) Phenol to benzoquinone

(ii) Propanone to 2-methylpropan-2 ol

(iii) Propene to propan-2-ol

Q.39. How would you obtain the following:

(i) Benzoquinone from phenol

(ii) 2-Methylpropan-2-ol from methyl magnesium bromide

(iii) Propan-2-ol from propene

Q.40. Name the reagents used in the following reactions:

(i) Benzyl alcohol to benzoic acid.

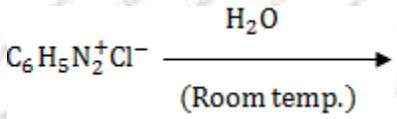
(ii) Dehydration of propan-2-ol to propene.

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

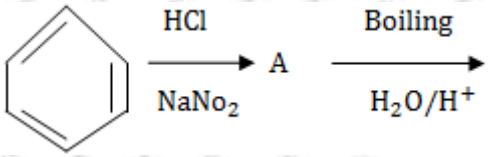
Q.41. Complete the following reactions:

(i) $CH_3\ CH_2\ NH_2 + CHCl_3$**+alc. KOH⟶**

(II)



(III)

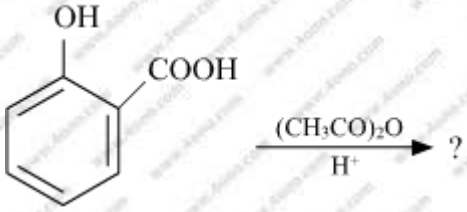


SECTION D

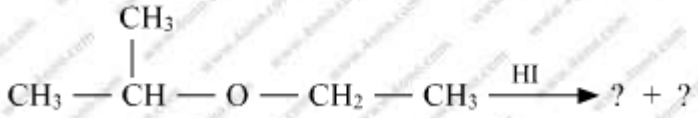
(Each question in this section carry 5 marks)

Q.42. (a) Write the product(s) in the following reactions:

(i)



(ii)



(iii) $CH_3 - CH = CH - CH_2 - OH \xrightarrow{PCC} ?$

(b) Give simple chemical tests to distinguish between the following pairs of compounds:

(i) Ethanol and Phenol
(ii) Propanol and 2-methylpropan-2-ol

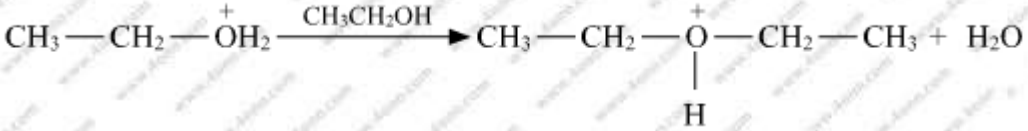
Q.43. (a) Write the formula of reagents used in the following reactions:

(i) Bromination of phenol to 2,4,6-tribromophenol
(ii) Hydroboration of propene and then oxidation to propanol.

(b) Arrange the following compound groups in the increasing order of their property indicated:

(i) p-nitrophenol, ethanol, phenol (acidic character)
(ii) Propanol, Propane, Propanal (boiling point)

(c) Write the mechanism (using curved arrow notation) of the following reaction :



Q.44. (a) Write the products formed when CH_3CHO reacts with the following reactions:
(i) HCN
(ii) $H_2N - OH$
(iii) CH_3CHO the presence of dilute NaOH

(b) Give simple chemical tests to distinguish between the following pairs of compounds:
(i) Benzoic acid and Phenol
(ii) Propanal and Propanone

Q.45. Give reason for the following:

(i) Phenol is more acidic than methanol.

(ii) The C-O-H bond angle in alcohols is slightly less than the tetrahedral angle ($109^o28'$).

(iii) $(CH_3)_3C-O-CH_3$ on reaction with HI gives $(CH_3)_3C-I$ and CH_3-OH as the main products and not $(CH_3)_3C-OH$ and CH_3-I.