

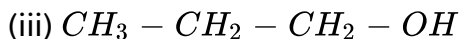
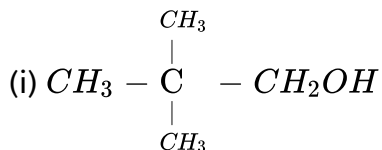
CHEMISTRY

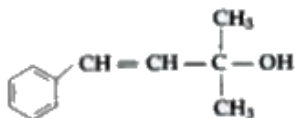
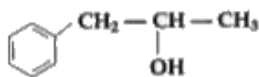
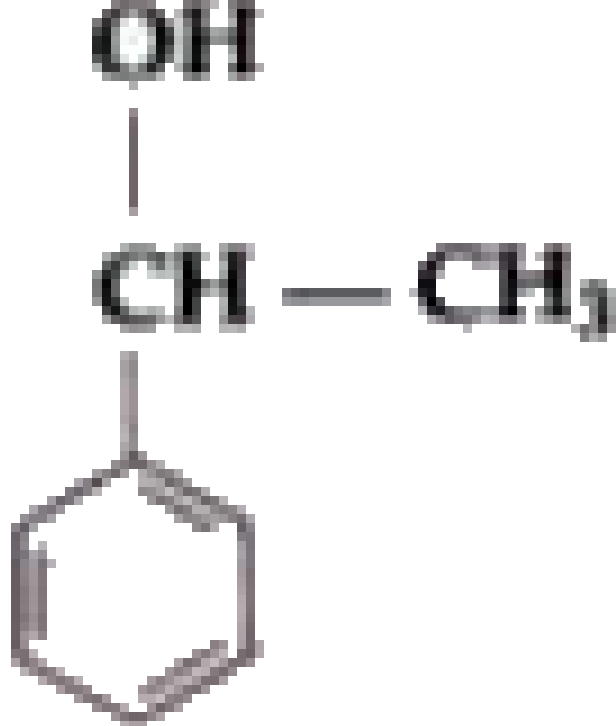
BOOKS - U-LIKE CHEMISTRY (HINGLISH)

ALCOHOLS, PHENOLS AND ETHERS

Ncert Intext Questions

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



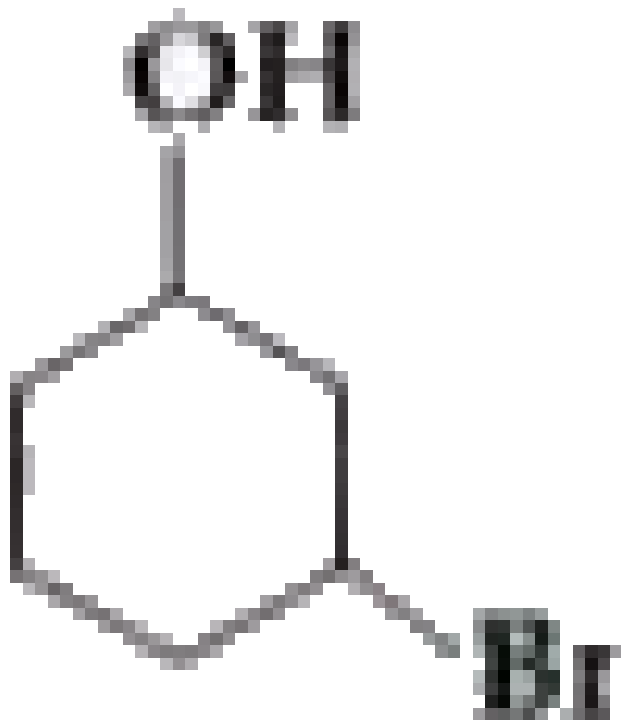
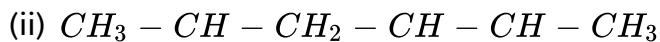
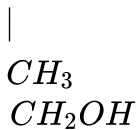
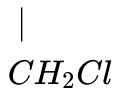
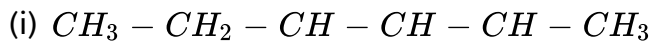
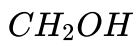


[View Text Solution](#)

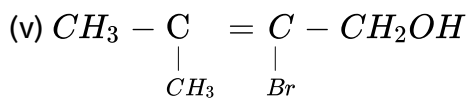
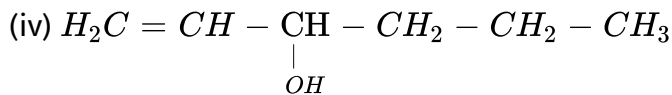
2. Identify allylic alcohols in the above examples.

[View Text Solution](#)

3. Name the following compounds according to IUPAC system :

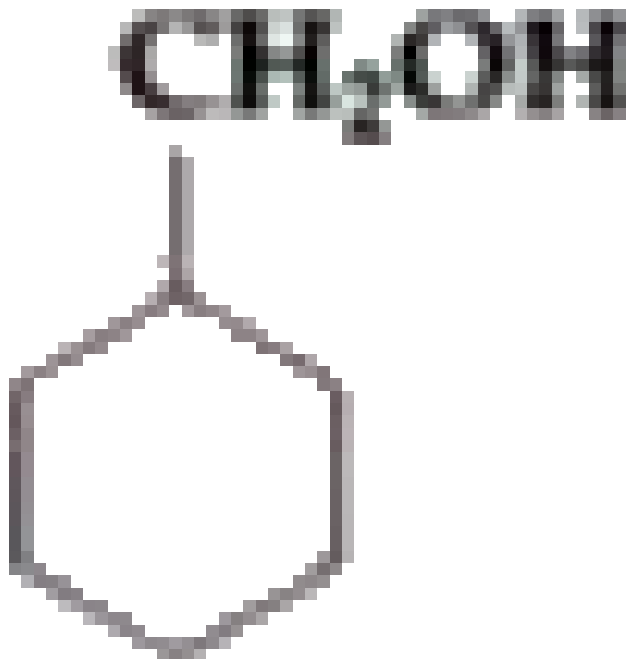
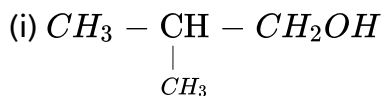


(iii)



 [View Text Solution](#)

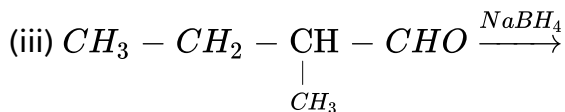
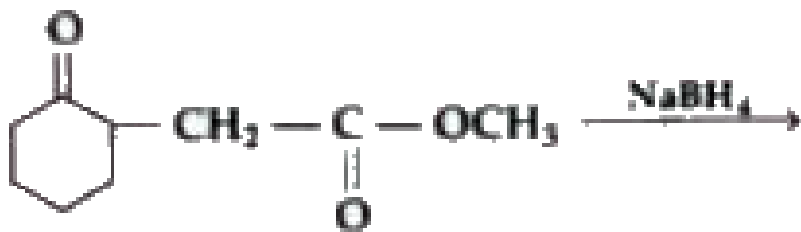
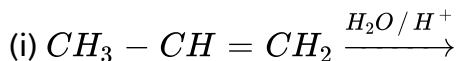
4. Show how are the following alcohols prepared by the reaction of a suitable Grignard reagent on methanal?



(ii)

[View Text Solution](#)

5. Write structures of the product of the following reactions :



[View Text Solution](#)

6. Give structures of the products you would expect when each of the following alcohol reacts with (a) $HCl - ZnCl_2$ (b) HBr and (c) $SOCl_2$.

(i) Butan-1-ol

(ii) 2-Methylbutan-2-ol

[View Text Solution](#)

7. Predict the major product of acid catalysed dehydration of

(i) 1 - methylcyclohexanol and (ii) Butan-1-ol

 [View Text Solution](#)

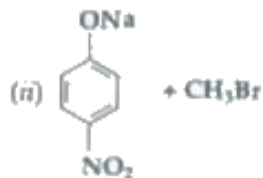
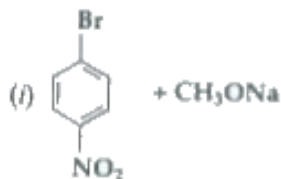
8. Ortho and para - nitrophenols are more acidic than phenol. Draw the resonance structures of the corresponding phenoxide ions.

 [View Text Solution](#)

9. Write the reaction of Williamson synthesis of 2-ethoxy-3-methylpentane starting from ethanol and 3-methylpentan-2-ol.

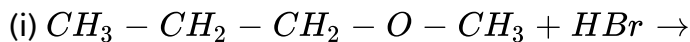
 [View Text Solution](#)

10. Which of the following is an appropriate set of reactants for the preparation of 1-methoxy-4-nitrobenzene and why?

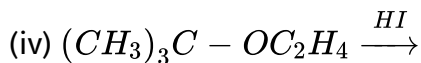


[View Text Solution](#)

11. Predict the products of the following reactions :

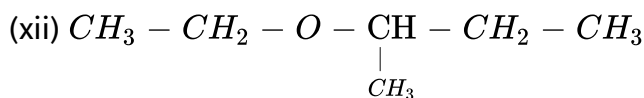
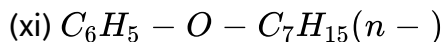
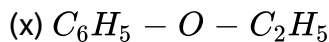
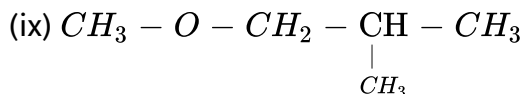
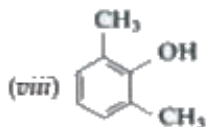
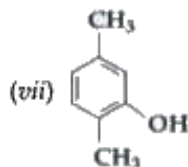
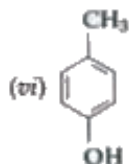
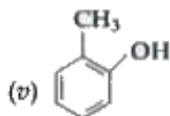
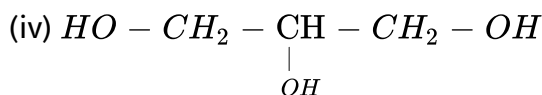
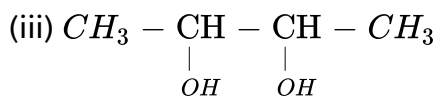
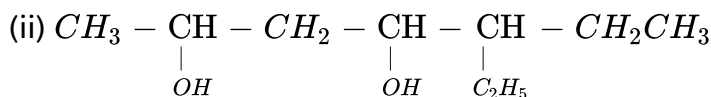
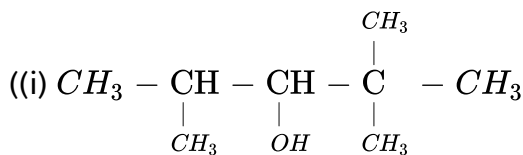


(ii)



[View Text Solution](#)

1. Write IUPAC names of the following compounds :



View Text Solution

2. Write structures of the compounds whose IUPAC names are as follows

:

(i) 2-Methylbutan-2-ol

(ii) 1-Phenylpropan-2-ol

(iii) 3, 5-Dimethylhexane-1, 3, 5- triol

(iv) 2, 3 - Diethylphenol

(v) 1-Ethoxypropane

(vi) 2-Ethoxy-3- methylpentane

(vii) Cyclohexylmethanol

(viii) 3- Cyclohexylpentan-3-ol

(ix) Cyclopent-3-en-1-ol

(x) 3-Chloromethylpentan-1-ol.



[View Text Solution](#)

3. (i) Draw the structures of all isomeric alcohols of molecular formula $C_5H_{12}O$ and give their IUPAC names.

(ii) Classify the isomers of alcohols in Question as primary, secondary and tertiary alcohols.



[View Text Solution](#)

4. Explain, why propanol has higher boiling point than that of the hydrocarbon, butane?

 [View Text Solution](#)

5. Alcohols are comparatively more soluble in water than hydrocarbons of comparable molecular masses. Explain this fact.

 [View Text Solution](#)

6. What is meant by hydroboration - oxidation reaction? Illustrate it with an example.

 [View Text Solution](#)

7. Give the structures and IUPAC names of monohydric phenols of molecular formula, C_7H_8O .

 [View Text Solution](#)

8. While separating a mixture of ortho-and para - nitrophenols by steam distillation, name the isomer which will be steam volatile. Give reason.

 [View Text Solution](#)

9. Write the mechanism of hydration of ethene to yield ethanol.

 [View Text Solution](#)

10. You are given benzene, conc. H_2SO_4 and $NaOH$. Write the equations for the preparation of phenol using these reagents.

 [View Text Solution](#)

11. Show how will you synthesise :

(i) 1- phenylethanol from a suitable alkene,

(ii) cyclohexylmethanol using an alkyl halide by an S_N2 reaction.

(iii) pentan-1-ol using a suitable alkyl halide?

 [View Text Solution](#)

12. Give two reactions that show the acidic nature of phenol. Compare the acidity of phenol with that of ethanol.

 [View Text Solution](#)

13. Explain why ortho-nitrophenol is more acidic than ortho-methoxyphenol?

 [View Text Solution](#)

14. Explain how does the $-OH$ group attached to a carbon of benzene ring activate it towards electrophilic substitution?

 [View Text Solution](#)

15. Give equations of the following reactions :

- (i) Oxidation of propan -1- ol with alkaline $KMnO_4$ solution.
- (ii) Bromine in CS_2 with phenol.
- (iii) Dilute HNO_3 with phenol.
- (iv) Treating phenol with chloroform in presence of aqueous $NaOH$.



[View Text Solution](#)

16. Explain the following with an example :

- (i) Kolbe's reaction (ii) Reimer - Tiemann reaction.
- (iii) Williamson ether synthesis. (iv) Unsymmetrical ether.



[View Text Solution](#)

17. Write the mechanism of acid dehydration of ethanol to yield ethene.



[View Text Solution](#)

18. How are the following conversions carried out?

- (i) Propene \rightarrow Propan -2- ol.
- (ii) Benzyl chloride \rightarrow Benzyl alcohol.
- (iii) Ethyl magnesium chloride \rightarrow Propan -1 - ol.
- (iv) Methyl magnesium bromide \rightarrow 2- Methylpropan -2-ol.

 [View Text Solution](#)

19. Name the reagents used in the following reactions :

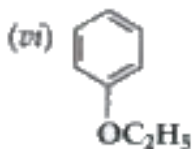
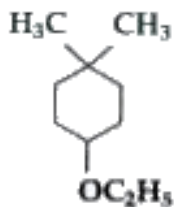
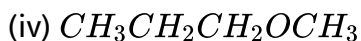
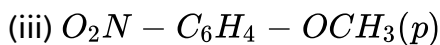
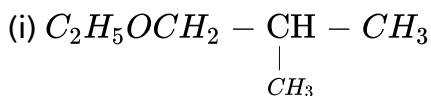
- (i) Oxidation of a primary alcohol to carboxylic acid,
- (ii) Oxidation of a primary alcohol to aldehyde.
- (iii) Bromination of phenol to 2, 4, 6 - tribromophenol.
- (iv) Benzyl alcohol to benzoic acid.
- (v) Dehydration of propan -2- ol to propene.
- (vi) Butan -2- one to butan -2- ol.

 [View Text Solution](#)

20. Give reason for the higher boiling point of ethanol in comparison the methoxymethane.

 [View Text Solution](#)

21. Give IUPAC names of the following ethers :



 [View Text Solution](#)

22. Write the names of reagents and equations for the preparation of the following ethers by Williamson's synthesis :

(i) 1 - Propoxypropane (ii) Ethoxybenzene

(iii) 2 - Methoxy -2- methylpropane (iv) 1 - Methoxyethane

 [View Text Solution](#)

23. How is 1 - propoxypropane synthesised from propan -1 - ol? Write mechanism of this reaction?

 [View Text Solution](#)

24. Preparation of ethers by acid dehydration of secondary or tertiary alcohols is not a suitable method. Give reason.

 [View Text Solution](#)

25. Write the equation of the reaction of hydrogen iodide with :

(i) 1-propoxypropane (ii) methoxybenzene and (iii) benzyl ethyl ether.

 [View Text Solution](#)

26. Explain the fact that in any alkyl ethers (i) the alkoxy group activates the benzene ring towards electrophilic substitution and (ii) it directs the incoming substituents to ortho - and para - positions in benzene ring.

 [View Text Solution](#)

27. Write the mechanism of the reaction of HI with methoxymethane.

 [View Text Solution](#)

28. Write equations of the following reactions :

(i) Friedel - Crafts reaction - alkylation of anisole.

(ii) Nitration of anisole.

(iii) Bromination of anisole in ethanoic acid medium.

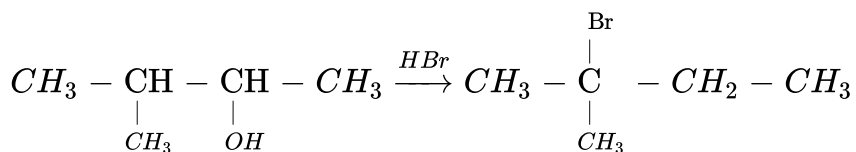
 [View Text Solution](#)

29. Show how would you synthesise the following alcohols from a appropriate alkenes ?



 [View Text Solution](#)

30. When 3 - methylbutan -2- ol is treated with HBr , the following reaction takes place :



Give a mechanism for this reaction.

 [View Text Solution](#)

1. Substitution of one or more hydrogen atom(s) from a hydrocarbon by another atom or a group of atoms result in the formation of an entirely new compound having altogether different properties and applications. Alcohols and phenols are formed when a hydrogen atom in a hydrocarbon, aliphatic and aromatic respectively, is replaced by $-OH$ group. These classes of compounds find wide applications in industry as well as in day-to-day life. For instance, have you ever noticed that ordinary spirit used for polishing wooden furniture is chiefly a compound containing hydroxyl group, ethanol. The sugar we eat, the cotton used for fabrics, the paper we use for writing, are all made up of compounds containing $-OH$ groups. Just think of life without paper, no note-books, books, newspapers, currency notes, cheques, certificates, etc. The magazines carrying beautiful photographs and interesting stories would disappear from our life. It would have been really a different world. An alcohol contains one or more hydroxyl (OH) group(s) directly attached to carbon atom(s), of an aliphatic system

(CH_3OH) while a phenol contains $-OH$ group(s) directly attached to carbon atom(s) of an aromatic system (C_6H_5OH).

How are alcohols and phenols formed ?



[View Text Solution](#)

2. Substitution of one or more hydrogen atom(s) from a hydrocarbon by another atom or a group of atoms result in the formation of an entirely new compound having altogether different properties and applications. Alcohols and phenols are formed when a hydrogen atom in a hydrocarbon, aliphatic and aromatic respectively, is replaced by $-OH$ group. These classes of compounds find wide applications in industry as well as in day-to-day life. For instance, have you ever noticed that ordinary spirit used for polishing wooden furniture is chiefly a compound containing hydroxyl group, ethanol. The sugar we eat, the cotton used for fabrics, the paper we use for writing, are all made up of compounds containing $-OH$ groups. Just think of life without paper, no note-books, books, newspapers, currency notes, cheques, certificates, etc. The magazines carrying beautiful photographs and interesting

stories would disappear from our life. It would have been really a different world. An alcohol contains one or more hydroxyl (OH) group(s) directly attached to carbon atom(s), of an aliphatic system (CH_3OH) while a phenol contains $-OH$ group(s) directly attached to carbon atom(s) of an aromatic system (C_6H_5OH).

What is the name and formula of the compound used to polish wooden furniture ?

 [View Text Solution](#)

3. Substitution of one or more hydrogen atom(s) from a hydrocarbon by another atom or a group of atoms result in the formation of an entirely new compound having altogether different properties and applications. Alcohols and phenols are formed when a hydrogen atom in a hydrocarbon, aliphatic and aromatic respectively, is replaced by $-OH$ group. These classes of compounds find wide applications in industry as well as in day-to-day life. For instance, have you ever noticed that ordinary spirit used for polishing wooden furniture is chiefly a compound containing hydroxyl group, ethanol. The sugar we eat, the

cotton used for fabrics, the paper we use for writing, are all made up of compounds containing $-OH$ groups. Just think of life without paper, no note-books, books, newspapers, currency notes, cheques, certificates, etc. The magazines carrying beautiful photographs and interesting stories would disappear from our life. It would have been really a different world. An alcohol contains one or more hydroxyl (OH) group(s) directly attached to carbon atom(s), of an aliphatic system (CH_3OH) while a phenol contains $-OH$ group(s) directly attached to carbon atom(s) of an aromatic system (C_6H_5OH).

Give some examples of compounds of daily use which contain hydroxyl group.



[View Text Solution](#)

4. Substitution of one or more hydrogen atom(s) from a hydrocarbon by another atom or a group of atoms result in the formation of an entirely new compound having altogether different properties and applications. Alcohols and phenols are formed when a hydrogen atom in a hydrocarbon, aliphatic and aromatic respectively, is replaced by $-OH$

group. These classes of compounds find wide applications in industry as well as in day-to-day life. For instance, have you ever noticed that ordinary spirit used for polishing wooden furniture is chiefly a compound containing hydroxyl group, ethanol. The sugar we eat, the cotton used for fabrics, the paper we use for writing, are all made up of compounds containing $-OH$ groups. Just think of life without paper, no note-books, books, newspapers, currency notes, cheques, certificates, etc. The magazines carrying beautiful photographs and interesting stories would disappear from our life. It would have been really a different world. An alcohol contains one or more hydroxyl (OH) group(s) directly attached to carbon atom(s), of an aliphatic system (CH_3OH) while a phenol contains $-OH$ group(s) directly attached to carbon atom(s) of an aromatic system (C_6H_5OH).

Give the name of next two homologues of CH_3OH .



[View Text Solution](#)

5. Substitution of one or more hydrogen atom(s) from a hydrocarbon by another atom or a group of atoms result in the formation of an entirely

new compound having altogether different properties and applications.

Alcohols and phenols are formed when a hydrogen atom in a hydrocarbon, aliphatic and aromatic respectively, is replaced by $-OH$ group. These classes of compounds find wide applications in industry as well as in day-to-day life. For instance, have you ever noticed that ordinary spirit used for polishing wooden furniture is chiefly a compound containing hydroxyl group, ethanol. The sugar we eat, the cotton used for fabrics, the paper we use for writing, are all made up of compounds containing $-OH$ groups. Just think of life without paper, no note-books, books, newspapers, currency notes, cheques, certificates, etc. The magazines carrying beautiful photographs and interesting stories would disappear from our life. It would have been really a different world. An alcohol contains one or more hydroxyl (OH) group(s) directly attached to carbon atom(s), of an aliphatic system (CH_3OH) while a phenol contains $-OH$ group(s) directly attached to carbon atom(s) of an aromatic system (C_6H_5OH).

Write the structure of a ring compound containing the hydroxyl group but not directly linked to the ring.



[View Text Solution](#)

6. Alcohols and phenols consist of two parts, an alkyl/aryl group and a hydroxyl group. The properties of alcohols and phenols are chiefly due to the hydroxyl group. The nature of alkyl and aryl groups simply modify these properties.

The boiling points of alcohols and phenols increase with increase in the number of carbon atoms (increase in van der Waals forces). In alcohols, the boiling points decrease with increase of branching in carbon chain (because of decrease in van der Waals forces with decrease in surface area). The $-OH$ group in alcohols and phenols is involved in intermolecular hydrogen bonding.

It is interesting to note that boiling points of alcohols and phenols are higher in comparison to other classes of compounds, namely hydrocarbons, ethers, haloalkanes and haloarenes of comparable molecular masses. For example, ethanol and propane have comparable molecular masses but their boiling points differ widely. The boiling point of methoxymethane is intermediate of the two boiling points. The high boiling points of alcohols are mainly due to the presence of

intermolecular hydrogen bonding in them which is lacking in ethers and hydrocarbons.

Which part in alcohols and phenols mainly determines their properties ?



[View Text Solution](#)

7. Alcohols and phenols consist of two parts, an alkyl/aryl group and a hydroxyl group. The properties of alcohols and phenols are chiefly due to the hydroxyl group. The nature of alkyl and aryl groups simply modify these properties.

The boiling points of alcohols and phenols increase with increase in the number of carbon atoms (increase in van der Waals forces). In alcohols, the boiling points decrease with increase of branching in carbon chain (because of decrease in van der Waals forces with decrease in surface area). The $-OH$ group in alcohols and phenols is involved in intermolecular hydrogen bonding.

It is interesting to note that boiling points of alcohols and phenols are higher in comparison to other classes of compounds, namely

hydrocarbons, ethers, haloalkanes and haloarenes of comparable molecular masses. For example, ethanol and propane have comparable molecular masses but their boiling points differ widely. The boiling point of methoxymethane is intermediate of the two boiling points. The high boiling points of alcohols are mainly due to the presence of intermolecular hydrogen bonding in them which is lacking in ethers and hydrocarbons.

Out of ethanol and propan-1-ol, which has the higher boiling point ?



[View Text Solution](#)

8. Alcohols and phenols consist of two parts, an alkyl/aryl group and a hydroxyl group. The properties of alcohols and phenols are chiefly due to the hydroxyl group. The nature of alkyl and aryl groups simply modify these properties.

The boiling points of alcohols and phenols increase with increase in the number of carbon atoms (increase in van der Waals forces). In alcohols, the boiling points decrease with increase of branching in carbon chain (because of decrease in van der Waals forces with decrease in surface

area). The $-OH$ group in alcohols and phenols is involved in intermolecular hydrogen bonding.

It is interesting to note that boiling points of alcohols and phenols are higher in comparison to other classes of compounds, namely hydrocarbons, ethers, haloalkanes and haloarenes of comparable molecular masses. For example, ethanol and propane have comparable molecular masses but their boiling points differ widely. The boiling point of methoxymethane is intermediate of the two boiling points. The high boiling points of alcohols are mainly due to the presence of intermolecular hydrogen bonding in them which is lacking in ethers and hydrocarbons.

Which kind of hydrogen bonding is involved in alcohols ?



[View Text Solution](#)

9. Alcohols and phenols consist of two parts, an alkyl/aryl group and a hydroxyl group. The properties of alcohols and phenols are chiefly due to the hydroxyl group. The nature of alkyl and aryl groups simply modify these properties.

The boiling points of alcohols and phenols increase with increase in the number of carbon atoms (increase in van der Waals forces). In alcohols, the boiling points decrease with increase of branching in carbon chain (because of decrease in van der Waals forces with decrease in surface area). The $-OH$ group in alcohols and phenols is involved in intermolecular hydrogen bonding.

It is interesting to note that boiling points of alcohols and phenols are higher in comparison to other classes of compounds, namely hydrocarbons, ethers, haloalkanes and haloarenes of comparable molecular masses. For example, ethanol and propane have comparable molecular masses but their boiling points differ widely. The boiling point of methoxymethane is intermediate of the two boiling points. The high boiling points of alcohols are mainly due to the presence of intermolecular hydrogen bonding in them which is lacking in ethers and hydrocarbons.

Why do branched alcohols show a smaller boiling points than straight chain alcohols ?

 [View Text Solution](#)

10. Alcohols and phenols consist of two parts, an alkyl/aryl group and a hydroxyl group. The properties of alcohols and phenols are chiefly due to the hydroxyl group. The nature of alkyl and aryl groups simply modify these properties.

The boiling points of alcohols and phenols increase with increase in the number of carbon atoms (increase in van der Waals forces). In alcohols, the boiling points decrease with increase of branching in carbon chain (because of decrease in van der Waals forces with decrease in surface area). The $-OH$ group in alcohols and phenols is involved in intermolecular hydrogen bonding.

It is interesting to note that boiling points of alcohols and phenols are higher in comparison to other classes of compounds, namely hydrocarbons, ethers, haloalkanes and haloarenes of comparable molecular masses. For example, ethanol and propane have comparable molecular masses but their boiling points differ widely. The boiling point of methoxymethane is intermediate of the two boiling points. The high boiling points of alcohols are mainly due to the presence of intermolecular hydrogen bonding in them which is lacking in ethers and

hydrocarbons.

Arrange methoxymethane, ethanol and propane in increase order of their boiling points.



[View Text Solution](#)

11. In wine making, grapes are the source of sugars and yeast. As grapes ripen, the quantity of sugar increases and yeast grows on the outer skin. When grapes are crushed, sugar and the enzyme come in contact and fermentation starts. Fermentation takes place in anaerobic conditions i.e., in absence of air. Carbon dioxide is released during fermentation.

The action of zymase is inhibited once the percentage of alcohol formed exceeds 14 per cent. If air gets into fermentation mixture, the oxygen of air oxidises ethanol to ethanoic acid which in turn destroys the taste of alcoholic drinks.

Ethanol is a colourless liquid with boiling point 351 K. It is used as a solvent in paint industry and in the preparation of a number of carbon compounds. The commercial alcohol is made unfit for drinking by

mixing in it some copper sulphate (to give it a colour) and pyridine (a foul smelling liquid). It is known as denaturation of alcohol. Nowadays, large quantities of ethanol are obtained by hydration of ethene.

Name the sources in the process of making wine.



[View Text Solution](#)

12. In wine making, grapes are the source of sugars and yeast. As grapes ripen, the quantity of sugar increases and yeast grows on the outer skin. When grapes are crushed, sugar and the enzyme come in contact and fermentation starts. Fermentation takes place in anaerobic conditions i.e., in absence of air. Carbon dioxide is released during fermentation.

The action of zymase is inhibited once the percentage of alcohol formed exceeds 14 per cent. If air gets into fermentation mixture, the oxygen of air oxidises ethanol to ethanoic acid which in turn destroys the taste of alcoholic drinks.

Ethanol is a colourless liquid with boiling point 351 K. It is used as a solvent in paint industry and in the preparation of a number of carbon

compounds. The commercial alcohol is made unfit for drinking by mixing in it some copper sulphate (to give it a colour) and pyridine (a foul smelling liquid). It is known as denaturation of alcohol. Nowadays, large quantities of ethanol are obtained by hydration of ethene.

Under what conditions is the fermentation of grapes for making wines, carried out ?



[View Text Solution](#)

13. In wine making, grapes are the source of sugars and yeast. As grapes ripen, the quantity of sugar increases and yeast grows on the outer skin. When grapes are crushed, sugar and the enzyme come in contact and fermentation starts. Fermentation takes place in anaerobic conditions i.e., in absence of air. Carbon dioxide is released during fermentation.

The action of zymase is inhibited once the percentage of alcohol formed exceeds 14 per cent. If air gets into fermentation mixture, the oxygen of air oxidises ethanol to ethanoic acid which in turn destroys the taste of alcoholic drinks.

Ethanol is a colourless liquid with boiling point 351 K. It is used as a solvent in paint industry and in the preparation of a number of carbon compounds. The commercial alcohol is made unfit for drinking by mixing in it some copper sulphate (to give it a colour) and pyridine (a foul smelling liquid). It is known as denaturation of alcohol. Nowadays, large quantities of ethanol are obtained by hydration of ethene.

What are the uses of commercial alcohol ?



[View Text Solution](#)

14. In wine making, grapes are the source of sugars and yeast. As grapes ripen, the quantity of sugar increases and yeast grows on the outer skin. When grapes are crushed, sugar and the enzyme come in contact and fermentation starts. Fermentation takes place in anaerobic conditions i.e., in absence of air. Carbon dioxide is released during fermentation.

The action of zymase is inhibited once the percentage of alcohol formed exceeds 14 per cent. If air gets into fermentation mixture, the oxygen of air oxidises ethanol to ethanoic acid which in turn destroys the taste of

alcoholic drinks.

Ethanol is a colourless liquid with boiling point 351 K. It is used as a solvent in paint industry and in the preparation of a number of carbon compounds. The commercial alcohol is made unfit for drinking by mixing in it some copper sulphate (to give it a colour) and pyridine (a foul smelling liquid). It is known as denaturation of alcohol. Nowadays, large quantities of ethanol are obtained by hydration of ethene.

What is meant by denaturation of alcohol ?



[View Text Solution](#)

Multiple Choice Questions

1. Resorcinol has the structure

A. 

B. 

C. 

D. 

Answer: B

 [View Text Solution](#)

2. Which of the following reactions is related to the preparation of ethers?

A. Kolbe's reaction.

B. Reimer Tiemann reaction.

C. Grignard reaction.

D. Williamson synthesis.

Answer: D

 [View Text Solution](#)

3. Hydroboration - oxidation method is used for the preparation of

- A. ethers.
- B. phenols.
- C. aldehydes.
- D. alcohols.

Answer: D



[View Text Solution](#)

4. Which of the following compound reacts with acetic anhydride to produce a compound which is a pain killer and antipyretic?

- A. Oxalic acid
- B. Cinnamic acid
- C. Benzoic acid

D. Salicylic acid

Answer: C

 [View Text Solution](#)

5. Which of the following acids reacts with acetic anhydride to produce a compound which is a pain killer and antipyretic?

A. Oxalic acid

B. Cinnamic acid

C. Benzoic acid

D. Salicylic acid

Answer: D

 [View Text Solution](#)

6. IUPAC name of phenatole is

A. methoxymethane.

B. ethoxybenzene.

C. ethoxyethane.

D. methoxybenzene.

Answer: B



[View Text Solution](#)

7. Which of the following metals does not react with alcohols and phenols to yield alkoxides/phenoxides?

A. Cobalt

B. Sodium

C. Potassium

D. Aluminium.

Answer: A

 [View Text Solution](#)

8. Which of the following cannot be used for converting aldehydes and ketones to alcohols?

A. Finely divided nickel

B. Finely divided magnesium

C. $NaBH_4$

D. $LiAlH_4$.

Answer: B

 [View Text Solution](#)

9. Which by - product is obtained in the manufacture of phenol from cumene ?

- A. Acetone
- B. Acetaldehyde
- C. Benzaldehyde
- D. Acetic acid.

Answer: A



[View Text Solution](#)

10. The process of converting alkyl halides into alcohols involves _____ reaction.

- A. addition
- B. substitution

C. dehydrohalogenation

D. rearrangement

Answer: B

 [View Text Solution](#)

11. The compound that undergoes dehydration very easily is

A. 2 - methylpropan-2- ol

B. ethyl alcohol

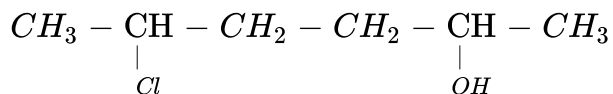
C. 3-methyl-2- butanol

D. propyl alcohol.

Answer: A

 [View Text Solution](#)

12. Give IUPAC name of the compound given below :



A. 2 - Chloro-5-hydroxyhexane

B. 2-Hydroxy-5- chlorohexane

C. 5-Chlorohexan-2- ol

D. 2-Chlorohexan-5-ol

Answer: C



[View Text Solution](#)

13. Phenol on treatment with conc. HNO_3 produces

A. 2-nitrophenol.

B. 4-nitrophenol

C. 2, 4- Dinitrophenol

D. 2, 4, 6 - Trinitrophenol

Answer: D



[View Text Solution](#)

14. Phenol is heated with a solution of mixture of KBr and $KBrO_3$.

The major product obtained in the above reaction is

A. 2-bromophenol.

B. 3-bromophenol.

C. 4-bromophenol.

D. 2, 4, 6- tribromophenol.

Answer: D



[View Text Solution](#)

15. CH_3CH_2OH can be converted into CH_3CHO by _____.

- A. catalytic hydrogenation
- B. treatment with $LiAlH_4$
- C. treatment with pyridinium chlorochromate
- D. treatment with $KMnO_4$

Answer: C



[View Text Solution](#)

16. IUPAC name of m - cresol is _____.

- A. 3-methylphenol
- B. 3-chlorophenol
- C. 3-methoxyphenol
- D. benzene-1, 3-diol

Answer: A



View Text Solution

17. Phenol can be distinguished from ethanol by the reaction with _____.

A. Br_2 /water

B. Na

C. Neutral $FeCl_3$

D. All the above

Answer: A::C



View Text Solution

18. IUPAC name of the compound $CH_3 - \underset{\substack{| \\ CH_3}}{CH} - OCH_3$ is _____.

A. 1 - methoxy -1- methylethane

B. 2 - methoxy -2- methylethane

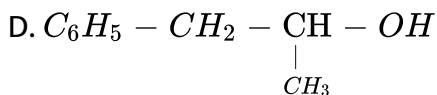
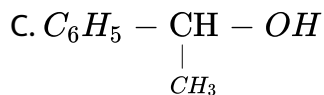
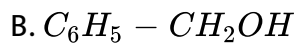
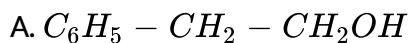
C. 2 - methoxypropane

D. isopropylmethyl ether

Answer: C

 [View Text Solution](#)

19. Which of the following are benzylic alcohols ?



Answer: B::C

Assertion Reason Questions

1. Assertion (A) : The catalyst used in Friedel Crafts reaction is anhydrous $AlCl_3$.

Reason (R) : Anhydrous aluminium chloride is a Lewis acid.

- A. Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).
- B. Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).
- C. Assertion (A) is correct, but Reason (R) is incorrect statement.
- D. Assertion (A) is incorrect, but Reason (R) is correct statement.

Answer: A

2. Assertion (A) : Ethers are classified on the basis of alkyl groups attached to the oxygen atom.

Reason (R) : The presence of $-OH$ group in phenols deactivates the aromatic ring towards electrophilic substitution.

A. Both Assertion (A) and Reason (R) are correct statements, and

Reason (R) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason (R) are correct statements, but

Reason (R) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct, but Reason (R) is incorrect statement.

D. Assertion (A) is incorrect, but Reason (R) is correct statement.

Answer: C



[View Text Solution](#)

3. Assertion (A) : Alcohols have higher boiling points than hydrocarbons, ethers and haloalkanes of comparable molecular masses.

Reason (R) : Alcohol molecules form intermolecular bonding amongst one another.

A. Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct, but Reason (R) is incorrect statement.

D. Assertion (A) is incorrect, but Reason (R) is correct statement.

Answer: A



[View Text Solution](#)

4. Assertion (A) : Reimer-Tiemann reaction of phenol yields salicylic acid.

Reason (R) : Ethers may be prepared by Williamson synthesis.

A. Both Assertion (A) and Reason (R) are correct statements, and

Reason (R) is the correct explanation of the Assertion (A).

B. Both Assertion (A) and Reason (R) are correct statements, but

Reason (R) is not the correct explanation of the Assertion (A).

C. Assertion (A) is correct, but Reason (R) is incorrect statement.

D. Assertion (A) is incorrect, but Reason (R) is correct statement.

Answer: D

 [View Text Solution](#)

5. Assertion (A) : On oxidation, primary alcohols yield aldehydes with mild oxidising agent.

Reason (R): The $C - O$ bond in ethers cannot be cleaved by hydrogen halide.

- A. Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).
- B. Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).
- C. Assertion (A) is correct, but Reason (R) is incorrect statement.
- D. Assertion (A) is incorrect, but Reason (R) is correct statement.

Answer: C

 [View Text Solution](#)

6. Assertion (A) : The weak polarity of ethers does not appreciably affect their boiling points which are comparable to those of alkanes of comparable molecular masses.

Reason (R) : Miscibility of ethers with water resembles that of alcohols of the same molecular mass.

- A. Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).
- B. Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).
- C. Assertion (A) is correct, but Reason (R) is incorrect statement.
- D. Assertion (A) is incorrect, but Reason (R) is correct statement.

Answer: B

 [View Text Solution](#)

7. Assertion (A) : Ethanol is obtained commercially by fermentation of sugars.

Reason (R) In wine making, grapes are the source of sugars and yeast.

- A. Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).
- B. Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).
- C. Assertion (A) is correct, but Reason (R) is incorrect statement.
- D. Assertion (A) is incorrect, but Reason (R) is correct statement.

Answer: B



[View Text Solution](#)

8. Assertion (A) : Most of the methanol is prepared by catalytic hydrogenation of carbon monoxide in the presence of Al_2O_3 .

Reason (R) : The enzyme used in the hydrolysis of cane sugar to glucose and fructose is invertase.

- A. Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).
- B. Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).
- C. Assertion (A) is correct, but Reason (R) is incorrect statement.
- D. Assertion (A) is incorrect, but Reason (R) is correct statement.

Answer: D

 [View Text Solution](#)

9. Assertion (A) : Phenol on oxidation with $Na_2Cr_2O_7$ and H_2SO_4 gives benzoquinone.

Reason (R) : Intramolecular hydrogen bonding occurs in o-nitrophenol.

- A. Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).

- B. Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).
- C. Assertion (A) is correct, but Reason (R) is incorrect statement.
- D. Assertion (A) is incorrect, but Reason (R) is correct statement.

Answer: B

 [View Text Solution](#)

10. Assertion (A) : The analgesic and antipyretic aspirin is prepared by the acetylation of salicylic acid.

Reason (R) : The acidity of phenol can be explained in terms of the stability of phenoxide ion.

- A. Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).

- B. Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).
- C. Assertion (A) is correct, but Reason (R) is incorrect statement.
- D. Assertion (A) is incorrect, but Reason (R) is correct statement.

Answer: B

 [View Text Solution](#)

Fill In The Blanks

1. Phenol on treatment with $CO_2/NaOH$ gives salicylic acid. This reaction is known as _____.

 [View Text Solution](#)

2. The commetrical alcohol is made unfit for drinking by mixing in it, copper sulphate and pyridine. This is called _____ of alcohol.

 [View Text Solution](#)

3. Electron _____ groups in phenol decrease its acidic strength.

 [View Text Solution](#)

4. o-nitrophenol is steam volatile due to _____ hydrogen bonding.

 [View Text Solution](#)

5. The major substitution product that is obtained by nitration of anisole is _____.

 [View Text Solution](#)

6. Phenol on treatment with Br_2 in _____ gives a mixture of o - and p - bromophenol.

 [View Text Solution](#)

7. Wood spirit is the name of given to _____ .

 [View Text Solution](#)

8. An alkyl halide reacts with alkoxide to form ether. This is known as _____ synthesis.

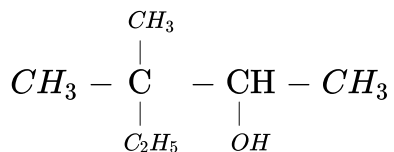
 [View Text Solution](#)

9. The large difference in boiling points of alcohols and ethers is due to _____ in alcohols.

 [View Text Solution](#)

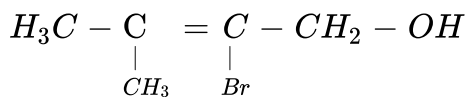
Very Short Answer Questions

1. Write the IUPAC name of the following :



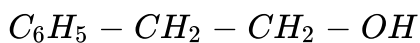
 [View Text Solution](#)

2. Write the IUPAC name of the following compound :



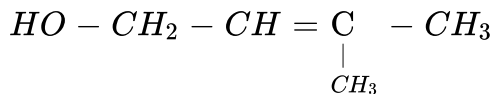
 [View Text Solution](#)

3. Write the IUPAC name of the following compound :



 [View Text Solution](#)

4. Write the IUPAC name of the given compound :



 [View Text Solution](#)

5. Write the IUPAC name of the given compound :



 [View Text Solution](#)

6. Which of the following isomers is more volatile ?

o - nitrophenol or p - nitrophenol

 [View Text Solution](#)

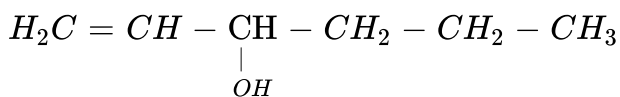
7. How would you convert ethanol to ethene?

 [View Text Solution](#)

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

 [View Text Solution](#)

9. Give the IUPAC name of the following compounds :



 [View Text Solution](#)

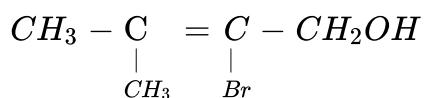
10. Draw the structural formula of 2 - methylpropan -2- ol molecule.

 [View Text Solution](#)

11. Write Reimer Tiemann reaction giving an example.

 [View Text Solution](#)

12. Give the IUPAC name of the following compounds :



 [View Text Solution](#)

13. Write the structure of phenyl isopentylether.

 [View Text Solution](#)

14. Why is o-nitrophenol more acidic than o-methoxyphenol?

 [View Text Solution](#)

15. Which of the following has higher boiling point and why?

CH_3NH_2 and CH_3OH

 [View Text Solution](#)

16. Name the factors responsible for the solubility of alcohol in water.

 [View Text Solution](#)

17. Out of 2- chloroethanol and ethanol, which is more acidic and why?

 [View Text Solution](#)

18. Write the products obtained when benzyl phenylether is heated with

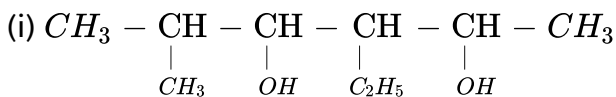
HI .

 [View Text Solution](#)

19. How do you account for the miscibility of ethoxyethane with water?

 [View Text Solution](#)

20. Write the IUPAC names of the following compounds :



(ii) 

 [View Text Solution](#)

21. What is denaturaed alcohol?

 [View Text Solution](#)

22. Write the structure and IUPAC name of glycerol.

 [View Text Solution](#)

23. Suggest a reagent for the following conversion :



 [View Text Solution](#)

24. Out of o - nitrophenol and p - nitrophenol, which is more volatile?

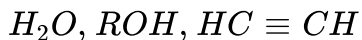
Explain.

 [View Text Solution](#)

25. Alcohols react with active metals e.g., Na , K , etc. To give corresponding alkoxides. Write down the decreasing order of reactivity of sodium metal towards primary, secondary and tertiary alcohols.

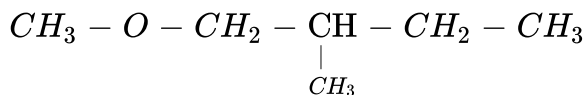
 [View Text Solution](#)

26. Arrange the following compounds in decreasing order of acidity :



 [View Text Solution](#)

27. Write IUPAC name of the following :



 [View Text Solution](#)

28. Write one example each of (i) a nucleophile (ii) an electrophile.

 [View Text Solution](#)

29. Out of o - nitrophenol and o - cresol, which is more acidic?

 [View Text Solution](#)

30. Give the structural formula and name of the product of the following reaction : Phenol is treated with excess of aqueous solution of bromine.

 [View Text Solution](#)

31. When phenol is treated with bromine water, white precipitate is obtained. Give the structure and the name of the compound formed.

 [View Text Solution](#)

32. How is tertiary butyl alcohol obtained from acetone?

 [View Text Solution](#)

33. Give the reason for the following :

Ortho-nitrophenol is more acidic than ortho-methoxy phenol.

 [View Text Solution](#)

34. Write IUPAC name of 

 [View Text Solution](#)

35. How is acetone obtained from 2-bromopropane?

 [View Text Solution](#)

36. How is ethanol obtained from 2-butene?

 [View Text Solution](#)

37. How is CO converted into methanol?

 [View Text Solution](#)

38. How is ethanoic acid industrially obtained from ethanol?

 [View Text Solution](#)

39. How is phenol obtained from aniline?

 [View Text Solution](#)

40. In the process of wine making, ripened grapes are crushed so that sugar and enzyme should come in contact with each other and fermentation should start. What will happen if anaerobic conditions are not maintained during this process?

 [View Text Solution](#)

41. Give the reaction for the preparation of phenol from cumene.

 [View Text Solution](#)

42. Which alcohols contain the $-OH$ group attached to a sp^3 – hybridised carbon atom next to an aromatic ring?

 [View Text Solution](#)

43. Give the IUPAC name for the compound $HO - CH_2 - CH_2 - OH$.

 [View Text Solution](#)

44. Name the reaction used to prepare alcohol by the reaction between alkene and diborane.

 [View Text Solution](#)

45. rignard reagent is used to prepare carboxylic acids. What is the other reagent in this reaction ?

 [View Text Solution](#)

46. What is the other name for phenol ?

 [View Text Solution](#)

47. What kind of acids are alcohols and phenols ?

 [View Text Solution](#)

48. Which test is used to distinguish between primary, secondary and tertiary alcohol?

 [View Text Solution](#)

49. What is product obtained when tertiary butyl alcohol is treated with 20 % H_3PO_4 at 358 K ?

 [View Text Solution](#)

50. Which acid is produced when phenol is treated with conc. HNO_3 ?

 [View Text Solution](#)

51. Phenol is subjected to Kolbe's reaction. What will be the product ?

 [View Text Solution](#)

52. Phenol is required to be converted to benzene. Which reagent should be used ?

 [View Text Solution](#)

53. Which chemical is used as wood spirit ?

 [View Text Solution](#)

54. When ethanol on dehydration with conc. H_2SO_4 at 443 K gives ethane. What will be obtained if the temperature is raised to 413 K ?

 [View Text Solution](#)

55. Name the reaction for the preparation of ethers using alkyl halide and sodium ethoxide.

 [View Text Solution](#)

56. Out of n-pentane, ethoxyethane and butan-1-ol, which has the highest boiling point ?

 [View Text Solution](#)

57. What is the major product when anisole is treated with Br_2 in ethanoic acid?

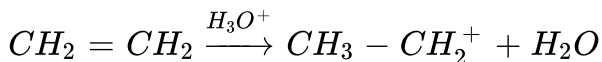
 [View Text Solution](#)

Short Answer Questions

1. (a) Arrange the following compounds in the increasing order of their acid strength :

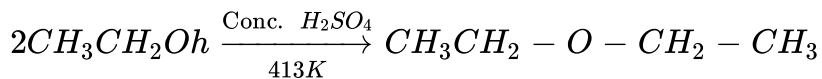
p - cresol, p - nitrophenol, phenol

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



 [View Text Solution](#)

2. Write the mechanism of the following reaction :



 [View Text Solution](#)

3. How are the following conversions carried out?

(i) Propene to propan-2-ol

(ii) Phenol to salicylaldehyde

 [View Text Solution](#)

4. How would you account for the following :

(i) Phenols are much acidic than alcohols.

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

 [View Text Solution](#)

5. How would you obtain

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

(ii) 2 - Methylpropene from 2 - methylpropanol?



[View Text Solution](#)

6. Explain the following giving one example for each :

(i) Reimer - Tiemann reaction.

(ii) Friedel - Crafts acetylation of anisole.



[View Text Solution](#)

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

(i) Kolbe's reaction,

(ii) Williamson synthesis.



[View Text Solution](#)

8. Describe the mechanism of alcohol reacting both as nucleophiles and electrophiles in reactions.

 [View Text Solution](#)

9. Complete the following reaction equations :



 [View Text Solution](#)

10. Describe the mechanism of the formation of diethyl ether from ethanol in the presence of concentrated sulphuric acid.

 [View Text Solution](#)

11. Give chemical tests to distinguish between compounds in each of the following pairs :

(i) Phenol and Benzyl alcohol.

(ii) Butan-2-ol and 2 - methylpropane -2- ol

 [View Text Solution](#)

12. Why is the reactivity of all the three classes of alcohols with conc. HCl and $ZnCl_2$ (Lucas reagent) different ?

 [View Text Solution](#)

13. In Koble.s reaction, instead of phenol, phenoxide ion is treated with carbon dioxide. Why?

 [View Text Solution](#)

14. Ethers can be prepared byWilliamson synthesis in which an alkyl halide is reacted with sodium alkoxide. Di - tert butyl ether cannot be prepare by this method. Explain.



[View Text Solution](#)

15. Which is a stronger acid - phenol or cresol ? Explain.



[View Text Solution](#)

16. Write steps to carry out the conversion of phenol to aspirin.



[View Text Solution](#)

17. Nitration is an example of electrophilic substitution and its rate depends upon the group already present in the benzene ring. Out of benzene and phenol, which one is more easily nitrated and why?



[View Text Solution](#)

18. Dipole moment of phenol is smaller than that of methanol. Why?



[View Text Solution](#)

19. How many the following conversions be carried out :

(i) Propene to propan -2- ol

(ii) Anisole to phenol (write the reaction only).



[View Text Solution](#)

20. Write one chemical reaction each to illustrate the following :

(i) Williamson.s synthesis

(ii) Reimer - Tiemann reaction



[View Text Solution](#)

21. What happens when ethanol is heated with conc. H_2SO_4 at 453 K ?

Explain the mechansim of this reaction.



[View Text Solution](#)

22. Write the reaction and the conditions involved in the conversion of :

(a) Propene to 1 - propanol

(b) Phenol to Salicylic acid

 [View Text Solution](#)

23. How are the following conversions carried out ?

(a) Benzyl chloride to benzyl alcohol

(b) Ethyl magnesium bromide to propan -1- ol

 [View Text Solution](#)

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

 [View Text Solution](#)

25. How are the following conversions carried out?

(i) Phenol to Toluene

(ii) Ethanol to 1, 1 - dichloroethane.



[View Text Solution](#)

26. Give an illustration of Reimer - Tiemann reaction.



[View Text Solution](#)

27. How are the following conversions carried out? (Write the reactions and conditions in each case):

(i) Ethanol to 2 - propanol.

(ii) Phenol to Acetophenone.



[View Text Solution](#)

28. Write reaction and conditions for the following conversions :

(i) 2 - Propanone into 2 - methyl -2- propanol.

(ii) n-Propyl alcohol into hexane.

 [View Text Solution](#)

29. How are the following conversions carried out? (Write reaction with conditions)

(a) 1- propanol to 1-chloro-2- propanol,

(b) Phenol to salicylic acid.

 [View Text Solution](#)

30. Phenol is a very weak acid. What substitutions in the molecule can make it a stronger acid and a weaker acid and why?

 [View Text Solution](#)

31. (a) Give chemical test to distinguish between phenol and ethanol in seemingly similar conditions.

(b) Write the reaction for what happens when tertiary butyl alcohol is heated with reduced copper at about 573 K.

 [View Text Solution](#)

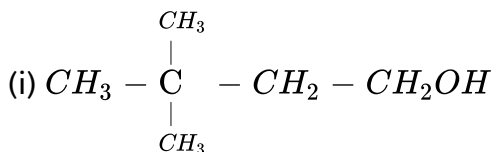
32. (a) Give reasons for the following :

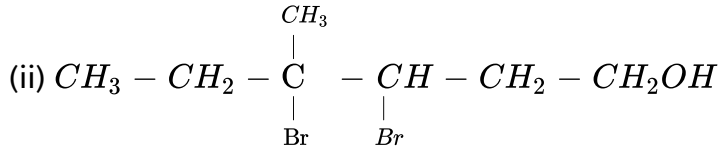
Phenol does not undergo protonation readily.

(b) Give chemical test to distinguish between the followings pairs of compounds -2- butanol and 2-methyl -2- propanol.

 [View Text Solution](#)

33. Write the IUPAC names of the following compounds :





 [View Text Solution](#)

34. Why is it that phenol is acidic and hexanol is neutral towards a solution of $NaOH$?

 [View Text Solution](#)

35. Out of benzene and phenol which is more easily nitrated and why?

 [View Text Solution](#)

36. How will you carry out following conversions :

(a) Ethyl alcohol to ethylene glycol

(b) 2-Propanol to 1-bromopropane?

 [View Text Solution](#)

37. Convert :

Ethyl alcohol into diethyl ether.

(ii) Acetone to tertiary butyl alcohol.

 [View Text Solution](#)

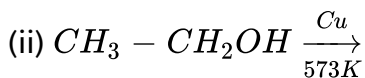
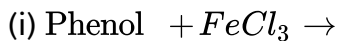
38. What is Williamson's synthesis? What type of compounds are prepared by this reaction ? Give an example.

 [View Text Solution](#)

39. How is ethyl iodide converted into diethyl ether?

 [View Text Solution](#)

40. Complete the following equations and name the products formed :



[View Text Solution](#)

41. Write a short note on the following with one example of each :

(i) Friedel - Crafts reaction.

(ii) Coupling reaction



[View Text Solution](#)

42. Explain with equations, the reaction of sulphuric acid with ethyl alcohol under different conditions.



[View Text Solution](#)

43. Complete the following equations and name the products formed :

(i) 

(ii) $C_6H_5OH + Br_2(aq) \rightarrow$

 [View Text Solution](#)

44. Nitration of phenol gives only ortho and para products. Give reasons.

 [View Text Solution](#)

45. How will you prepare butan-1-ol from

(i) 1-bromobutane and (ii) a suitable alkene?

 [View Text Solution](#)

46. Write equations for preparation of propan -2- ol, from (i) an alkene, and (ii) a Grignard reagent.

 [View Text Solution](#)

47. Explain why cleavage of phenyl alkyl ether with HBr always gives phenol and alkyl bromide.

 [View Text Solution](#)

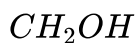
48. Etherial solution of an organic compound .A. when heated with magnesium gave .B.. .B. on treatment with ethanal followed by acid hydrolysis gave 2- propanol. Identify the compound .A.. What is .B. known as?

 [View Text Solution](#)

49. How are following conversions done ?

 [View Text Solution](#)

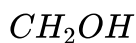
50. Write the IUPAC name of the following compound :



|



|



 [View Text Solution](#)

Long Answer Questions I

1. Write the structures of the main products in the following reactions :



 [View Text Solution](#)

2. What happens when :

(a) $(CH_3)_3C - OH$ is treated with Cu to 573 K,

(b) Anisole is treated with CH_3Cl /anhydrous $AlCl_3$.

(c) Phenol is treated with Zn dust ?

Write chemical equations in support of your answer.



[View Text Solution](#)

3. What happens when :

(a) $(CH_3)_3C - O - CH_3$ is treated with HI,

(b) Anisole is treated with CH_3COCl /anhydrous $AlCl_3$.

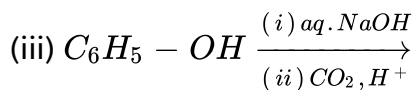
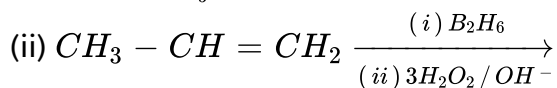
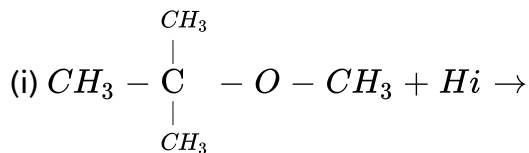
(c) Phenol is treated with $B\frac{r_2}{C}S_2$?

Write chemical equations in support of your answer.



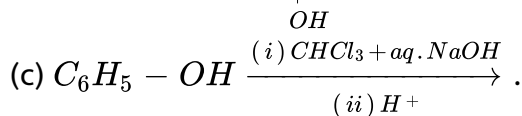
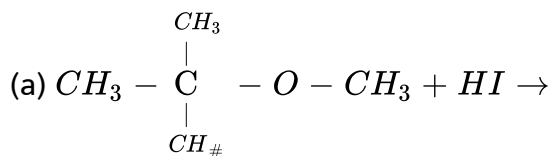
[View Text Solution](#)

4. Write the main product(s) in each of the following reactions :



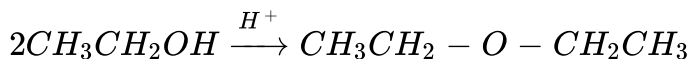
 [View Text Solution](#)

5. Write the final product(s) in each of the following reactions :



 [View Text Solution](#)

6. (a) Write the mechanism of the following reaction :



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

 [View Text Solution](#)

7. How will you convert the following :

(i) Phenol to anisole

(ii) Propan-2-ol to 2-methylpropan-2-ol

(iii) Aniline to phenol.

 [View Text Solution](#)

8. Give reasons 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 ($109^\circ 28'$).

(iii) $(CH_3)_2C - O - CH_3$ on reaction with HI gives $(CH_3)_3C - I$ and $CH_3 - OH$ as the main products and not $(CH_3)_3C - OH$ and $CH_3 - I$.



[View Text Solution](#)

9. (a) Why are alkyl halides insoluble in water ?

(b) Why is Butan-1-ol optically inactive but Butan-2-ol is optically active ?

?

(c) Although chlorine is an electron-withdrawing group, yet it is ortho-para-directing in electrophilic aromatic substitution reactions. Why?



[View Text Solution](#)

10. How would you obtain the following :

(i) Benzoquinone from phenol.

(ii) 2-Methylpropan-2-ol from methylmagnesium bromide.

(iii) Propan-2-ol from propene.

 [View Text Solution](#)

11. How would you convert ethanol to ethene?

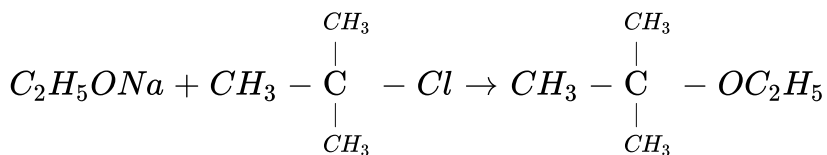
(i) Phenol to benzoquinone

(ii) Propanone to 2-methylpropan-2-ol

(iii) Propene to propan-2-ol

 [View Text Solution](#)

12. The following is not an appropriate reaction for the preparation of t-butylethyl ether :



(i) What would be the major product of the reaction ?

(ii) Write a suitable reaction for the preparation of ter-butyl ethyl ether.

 [View Text Solution](#)

13. Give chemical tests to distinguish between :

- (i) Isopropyl alcohol and n - propyl alcohol
- (ii) Phenol and alcohol
- (iii) Methyl ethanoate and ethyl ethanoate.

 [View Text Solution](#)

14. Give plausible explanation for each of the following:

- (a) Ortho - nitrophenol is more acidic than ortho - methoxyphenol.
- (b) Alcohols are easily protonated in comparison to phenols.
- (c) The relative ease of dehydration of alcohols is tertiary > secondary > primary.

 [View Text Solution](#)

15. The carbon - oxygen bond in phenol is slightly stronger than that in methanol. Why?

 [View Text Solution](#)

16. 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.

 [View Text Solution](#)

17. Arrange water, ethanol and phenol in increasing order of acidity and give reason for your answer.

 [View Text Solution](#)

18. Explain the following behaviours :

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

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

(iii) Cumene is a better starting material for the preparation of phenol.

 [View Text Solution](#)

Self Assessment Test Section A Multiple Choice Questions Choose The Correct Option

1. Carbon atoms bearing the $-OH$ group in phenols and $CH_2 = CH - OH$ are

- A. both hybridised sp^2
- B. both hybridised sp^3
- C. sp^2 and sp^3 hybridised respectively.
- D. sp^3 and sp^0 hybridised respectively.

Answer: A

 [View Text Solution](#)

2. Hydroboration-oxidation of alkenes gives

A. alkanes

B. alkynes

C. ethers

D. alcohols.

Answer: D



[View Text Solution](#)

3. Diazotisation of aniline followed by hydrolysis gives

A. nitrophenol

B. phenol

C. chlorobenzene

D. benzoic acid

Answer: B



[View Text Solution](#)

4. Solubility of alcohols decreases with increase in alkyl group because of

- A. decrease in hydroge bonding.
- B. decrease in van der Waals forces.
- C. increase in hydrocarbon part.
- D. decrease in polar part.

Answer: C



[View Text Solution](#)

5. Out of CH_3OH , RCH_2OH , $R_2 - CHOH$ and R_3COH , which is the least acidic ?

A. CH_3OH has higher boiling point than CH_3NH_2 . This is because there is strong intermolecular hydrogen bonding in CH_3OH . Because of lower electronegativity of N than O, hydrogen bonding does not take place in CH_3NH_2 .

B. R_3COH

C. R_2CHOH

D. RCH_2OH

Answer: B

 [View Text Solution](#)

6. Assertion (A) : Phenols are stronger acids than alcohols.

Reason (R) : Phenol exhibits resonance in which the phenoxide ion gets stabilised.

- A. Both Assertion (A) and Reason (R) are correct statements, and Reason (R) is the correct explanation of the Assertion (A).
- B. Both Assertion (A) and Reason (R) are correct statements, but Reason (R) is not the correct explanation of the Assertion (A).
- C. Assertion (A) is correct, but Reason (R) is incorrect statement.
- D. Assertion (A) is incorrect, but Reason (R) is correct statement.

Answer: A



[View Text Solution](#)