



## **CHEMISTRY**

## **BOOKS - CHETANA PUBLICATION**

# ALCOHOLS, PHENOLS AND ETHERS

#### Exercise

1. Define alcohol



2. Define ether.



**3.** What are Epoxides. Give example.

<b>Vatch Video Solution</b>
<b>4.</b> What is the name and formula of 2nd member of homologous series of alcohol.
Watch Video Solution
<b>5.</b> What is the structural formula of functional group of ether.
<b>Watch Video Solution</b>

6. What is name of compound having -OH group bounded to

benzene ring.



10. Classiify the following alcohols as  $1^{\circ}\,/\,2^{\circ}\,/\,3^{\circ}$  and allylic/

Benzylic. (2)





11. Classify the following alcohols as  $1^{\circ}/2^{\circ}/3^{\circ}$  and allylic/ Benzylic. (3)





12. Classify the following alcohols as  $1^\circ\,/\,2^\circ\,/\,3^\circ\,$  and allylic/ Benzylic. (4)





13. Classify the following alcohols as  $1^\circ \,/\, 2^\circ \,/\, 3^\circ$  and allylic/ Benzylic.(5)





14. Write IUPAC name of the following compounds. (1)





15. Write IUPAC name of the following compounds. (2)



Watch Video Solution

**16.** Write IUPAC name of the following compounds. (3)





17. Write IUPAC name of the following compounds. (4)



Watch Video Solution

18. Write IUPAC name of the following compounds. (5)





#### 19. Write IUPAC name of the following compounds. (6)



### **20.** Write IUPAC name of the following compounds. (7)





21. Write IUPAC name of the following compounds. (8)



Watch Video Solution

22. Draw structure of: (1) Prop-2-en-1-ol.

Watch Video Solution

23. Draw structure of: (2) Phenyl methanol



Phenol

28. Write the structure and IUPAC name of following phenols. (2)

o-Cresol

**Watch Video Solution** 

29. Write the structure and IUPAC name of following phenols. (3)

orthoNitro phenol

Watch Video Solution

30. Write the structure and IUPAC name of following phenols. (4)

Catechol

31. Write the structure and IUPAC name of following phenols. (5)

Resorcinol

Watch Video Solution 32. Write the structure and IUPAC name of following phenols. (6) Quinol/Hydroquinol Watch Video Solution 33. Write the structure and IUPAC name of following phenols. (7) Phloroglucinol Watch Video Solution

34. Write the structure and IUPAC name of following phenols. (8)

Pyrogallol

<b>Watch Video Solution</b>
<b>35.</b> Draw structure of 2,5-Diethyl Phenol.
Watch Video Solution

36. Give structure and IUPAC. Name of following compounds. (1)

**Dimethyl ether** 



37. Give structure and IUPAC. Name of following compounds. (2)

Ethyl methyl ether

Watch Video Solution 38. Give structure and IUPAC. Name of following compounds. (3) Methyl n-propylether Watch Video Solution 39. Give structure and IUPAC. Name of following compounds. (4) Anisole Watch Video Solution

40. Give structure and IUPAC. Name of following compounds. (5)

Phenyl-n-propylether



42. Write IUPAC name of following compound. (2)







isomer of compound having molecular formula  $C_3H_8O$ 

Watch Video Solution

47. Write structure of optically active alcohol having molecular

formula  $C_4 H_{10} O$ 



48. Write structure of optically active alcohol having molecular

formula  $C_4 H_{10} O$ 

<b>Vatch Video Solution</b>
<b>49.</b> How will you prepare ethanol from Bromoethane?
Watch Video Solution
<b>50.</b> How will you bring about following conversions? (1) Ethene to
Ethyl alcohol



51. How will you bring about following conversions? (2) Propene

to Propan-2-ol.

Watch Video Solution 52. How will you bring about following conversions? (3) 2-Methyl Propene to 2-Methyl Propan-ol. Watch Video Solution 53. Explain acid catased hydration of alkene. Watch Video Solution

**54.** How will you prepare propan-1-ol from propene by hydroboration oxidation?



**55.** Answer in one sentence/word. Hydrobroation Oxidation of propene gives....

Watch Video Solution

56. Predict the major product of the following reactions.

$$CH_3-CH=CH_2 \stackrel{B_2H_6-THF}{(ii)\, H_2O_2OH} ?$$

**57.** Predict the major product of the following reactions.



Watch Video Solution

58. How will you convert aldehyde to primary alcohol and Ketone

to secondary alcohol.

Watch Video Solution 59. Identify A in following  $CH_3 - CH = CH - CHO \xrightarrow{A} CH_3 - CH = CH - CH_2 - OH$ Watch Video Solution

60. Predict the products, for the following reaction





**61.** How will you convert acetic acid to ethanol.

**Watch Video Solution** 

62. From methyl magnesium iodide how are ethanol and propan-

2-ol prepared.



**63.** How will you prepare propan-1-ol from propanal.

64. How wil you prepare 2-Methyl propan-2-ol from Grignard

reagent.

Watch Video Solution

Watch Video Solution

65. How is propan-1-ol prepared from epoxide.



66. How Carbolic acid is prepared from benzene sulphonic acid?

67. Give reagent and condition necessary to prepare phenol from

Benzene sulfonic acid



69. Give equation of reaction for preparation of phenol from

isopropyl benzene.



70. Give reagent and condition necessary to prepare phenol from

chlorobenzene.



**73.** Arrange O-n, C-n and N-n bond in increasing order o

bond polarity.





alcohol and tert-butyl alcohol are  $118^{\,\circ}C$ , $108^{\,\circ}C$ , $99^{\,\circ}C$  and  $82^{\,\circ}C$ 

respectively. Explain.



**77.** Write the physical properties of phenol.

Watch Video Solution

78. The solubility of o-nitrophenol and p-nitrophenol is 0.2 g and

1.7 g / 100 g of  $H_2O$  respectively Explain the difference.

Watch Video Solution

**79.** Arrange the following on basis of their increasing acidic strenght. (i) ROH (ii)Ar-OH (iii) HCl (iv) $H_2O$ 



**80.** Explain why phenol is more acidic than alcohol.

**81.** Explain why p-nitrophenol is stronger acid than phenol.

<b>Watch Video Solution</b>
-----------------------------

82. Arrange the following compounds in decreasing order of acid

strength. (i)  $CH_3 - CH_2 - OH$  (ii) $(CH_3)_3COH(iii)$ C\_6H\_6OH`

(iv) P-NO\_2C\_6H\_4OH.

$$2x + y = 5 \dots (i)$$

$$3x - y = 5 \dots (ii)$$
(i) and (ii)
$$x = ?$$
Substituting
$$x = in (i)$$

$$y = ?$$



**84.** Write two points of differnce between properties of phenol and ethylalcohol.



85. Explain Esterification.



83.

86. Give preparation of Aspirin.



by Lucas reagent.

> Watch Video Solution

**88.** What is the action of  $PCl_3$ ,  $PCl_5$  and  $SOCl_2$  on Ethanol?



89. How will convert OR Write reaction involved in dehydration of

 $1^{\,\circ},\!2^{\,\circ}$  and  $3^{\,\circ}$  alcohols. (1) Ethylalcohol to Ethene



90. How will convert OR Write reaction involved in dehydration of

 $1^{\circ}$ , $2^{\circ}$  and  $3^{\circ}$  alcohols. (2) Isopropyl alcohol to propene.

> Watch Video Solution

91. How will convert OR Write reaction involved in dehydration of

 $1^{\circ},\!2^{\circ}$  and  $3^{\circ}$  alcohols.(3) tert alcohol to Isobutylene.

Watch Video Solution

92. Write the reaction showing major and minor products formed

on heating butan-2-ol with concentrated sulfuric acid.



**93.** Write and explain reactions to convert propan-1-ol into propan-2-ol?

<b>Watch Video Solution</b>
<b>94.</b> What are various definition of oxidation?
Watch Video Solution

95. How will you distinguish primary alcohol, secondary alcohol

and teritary alcohols by Oxidation Reaction?



96. What is the action of hot copper on primary secondary and

tertiary alcohol?



**97.** An organic compound gives hydrogen on reaction with sodium metal. It forms an aldehyde having molecular formula  $C_2H_4O$  on oxidation with pyridinium chlorochromate Name the compounds and give equations of these reactions.

Watch Video Solution

**98.** What is the action of following reagents on phenol (1) Bromine is  $CS_2$  at low temperature.







**101.** Give action of dilute and concentrated Nitric and on phenol.



**102.** Write short note on Nitration of phenol.




106. How will you bring about following conversion. (1) Phenol to

Benzoquinone.



**109.** Give preparation of ether by dehydration of alcohol.

Vatch Video Solution
<b>110.</b> Write short note on continous etherification.
Watch Video Solution
<b>111.</b> Write a note on Willamson's Synthesis.
Watch Video Solution

**112.** Give preparation of ether by dehydration of alcohol.

Watch Video Solution

113. Give structure and IUPAC name of methyl n-propyl ether give

action of hot HI on it.

Watch Video Solution
<b>114.</b> What happens when ethyl methyl ether is hydrolysed by using dil $H_2SO_4$ .
<b>Vatch Video Solution</b>
<b>115.</b> What is action of dilute $H_2SO_4$ under pressure on ethoxy

ethane?

Watch Video Solution

116. Give physical properties of ether.



119. Give action of hot and dilute sulphuric acid on (3) 2-Methoxy

Propane

Watch Video Solution

**120.** Give action of hot and concentrated HI on Methoxy ethane.

121. Give action of hot and concentrated HI on tert-Butyl methyl

ether.

**Watch Video Solution** 

Watch Video Solution

122. Give action of hot HI on anisole.



123. Show that anisole is o,p direction group towards electrophilic

substitution.



**124.** What is the action of bromine in acetic acid on anisole.

<b>Vatch Video Solution</b>
<b>125.</b> Write note on Friedek Crafts reaction on anisole.
Watch Video Solution
<b>126.</b> Give action of Nitrating mixture on anisole.
Watch Video Solution

127. Give two uses of alcohol.

Watch Video Solution

128. Give two uses of ether.



**130.** An ether (A)  $C_5H_{12}O$ , when heated with excess of hot HI produce two alkyl halides which on hydrolysis from compound (B) and (C), oxidation of (B) gave and acid (D), whereas odixation of (C) gave a ketone (E). Deduce the structural formula of (A),(B),(C), (D) and (E).



**131.** Which of the following substrate will give ionic organic product on reaction?

A. 
$$CH_3 - CH_2 - OH + Na$$

B. 
$$CH_3-CH_2-OH+SOCl_2$$

 $\mathsf{C.}\,CH_3-CH_2-OH+PCl_5$ 

 $\mathsf{D.}\,CH_3-CH_2-OH+H_2SO_4$ 

# Answer:

Watch Video Solution

**132.** Which is the most resistant alcohol towards oxidation reaction among the following?

A. 
$$CH_3 - CH_2 - OH$$

$$\mathsf{B}.\left(CH_3\right)_2 - CH - OH$$

$$C.(CH_3)_3 - C - OH_3$$

D.

# Answer:

**Watch Video Solution** 

133. Resorcinol on distillation with ainc dust gives

A. Cyclohexane

B. Benzene

C. Toluene

D. Benzene-1,3-diol

# Answer:

**D** Watch Video Solution

134. Anisole on heating with concerntrated HI gives

A. Iodobenzene

B. Phenol+Methanol

C. Phenol+Iodomethane

D. Iodobenzene+methanol

### Answer:



135. Which of the following is the least acidic compound?





Β.



C.





# Answer:

Watch Video Solution

136. Ethers are kept in air tight brown bottles because

- A. Ethers absorb moisture
- B. Ethers evaporate readily

C. Ethers oxidise to explosive peroxide

D. Ethers are inert

# Answer:



137. Ethers reacts with cold and concentrated  $H_2SO_4$  to form

A. oxonium salt

B. alkene

C. alkoxides

D. alcohols

Answer:

> Watch Video Solution

138. Which of the following alcohols is prepared by acid catalysed

hydration of alkenes?

A. Butan-1-ol

B. Propan-1-ol

C. ethanol

D. methanol

# Answer:



**139.** Which of the following alcohols cannot be prepared by reduction of carbonyl compounds?

A. Pentan-1-ol

B. Pentan-2-ol

C. 2-Methylpentan-2-ol

D. 3-Methylpentan-2-ol

### Answer:

Watch Video Solution

**140.** Which of the following compounds gives 3-ethylpentan-3-ol by the action of ethy magnesium iodide followed by acid hydrolysis?

A. Propanone

B. Butanone

C. Pentan-2-one

D. Pentan-3-one



141. Which of the following compounds is covalent?

A. 2-Nitro ethoxybenzene

B. 3-Nitro ethoxybenzene

C. 4-Nitro ethoxybenzene

D. Nitrobenzene

# Answer:

Watch Video Solution

142. Benzyl phenyl ether reacts with hydrogen bromide to give

A. benzyl bromide and phenol

B. benzyl alcohol and bromobenzene

C. benzyl bromide and bromobenzene

D. benzyl alcohol and phenol

# Answer:



143. Ethers are considered as

A. monoalkyl derivatives of water

B. alkoxy derivatives of alkanes

C. alkyl derivatives of fatty acids

D. condensation products of acid and alcohol





144. Which of the following compounds is covalent?

A. 1-Methoxypropane

B. 2-Methoxypropane

C. 2-Methylpropan-2-ol

D. 2-Methylbutan-2-ol

# Answer:

Watch Video Solution

**145.** Which one of the following compounds dissolves in hot dilute sulphuric acid but does not react with sodium metal?

A. ethyl bromide

B. acetic acid

C. ethyl alcohol

D. diethyl ether

# Answer:



**146.** Which of the following alcohol will have the fastest rate of dehydration?

A.





C.



D.





# 147. The phenol having lowest acidity is





B.





D.



# Answer:



148. RNA does not contain

B. 2

C. 3

D. both 1 and 2

# Answer:



**149.** The intermediate product in the preparation of ethanol from ethylene and  $H_2SO_4$  is

A.  $C_2 H_5^{\,+}$ 

 $\mathsf{B.}\, C_2 H_4$ 

 $\mathsf{C.}\, C_2 H_5 HSO_4$ 

D.  $C_2H_5O^+H_2$ 

# Answer: Watch Video Solution

**150.** Primary alcohols are obtained by the reaction of Grignard reagent with-

A.  $CH_3COCH_3$ 

 $\mathsf{B}.\,HCOOH$ 

 $\mathsf{C}.\,HCHO$ 

D.  $CH_3CHO$ 

Answer:

Watch Video Solution

**151.** A 50% solution of sulphuric acid is subjected to electrolyte oxidation and the product is hydrolysed.

A. primary alcohol

B. secondary alcohol

C. tertiary alcohol

D. an aldehyde

# Answer:



**152.** How will you convert acetic acid to ethanol.

# A. $LiA1H_4$

 $\mathsf{B.}\,BH_3$ 

 $C. PCl_3$ 

D.  $K_2 Cr_2 O_7 \,/\, H^{\,+}$ 

# Answer:

Watch Video Solution

**153.** In the reaction of 
$$C_6H_5OH arrow {NH_3}{ZnCl_2} X$$
, 'X' may be

A.  $C_2H_5OAg$ 

 $\mathsf{B.}\, C_2 H_4$ 

 $C. CH_3 CHO$ 

 $\mathsf{D.}\, C_2 H_5 OH$ 



**154.** High boiling point of  $C_2H_5OH$  is due to

A. strong electrostatic forces

B. intra molecular hydrogen bonding

C. inter molecular hydrogen bonding

D. Van der Waals force of attraction

# Answer:

Watch Video Solution

155. Benzene diazonium chloride on hydrolysis gives

A. Benzene

B. Benzyl alcohol

C. Phenol

D. Chlorobenzene

# Answer:

Watch Video Solution

**156.** Cumene 
$$\xrightarrow{(i) O_2}_{(ii) H_2 O_2 H^+}$$
 (X) and (Y) (X) and (YO respectively

are

A. toluene, propene

B. toluene, propylchloride

C. phenol, acetone

D. phenol, acetaldehyde



**157.** What amount of bromine will be required to convert 2 g of phenol into 2,4,6-tribromophenol?

A. 4.00

B.6.00

 $C.\,10.22$ 

D. `20.44

# Answer:



**158.** Phenol  $\xrightarrow{(i) CHCl_3 / NaOH} Salicyladehyde$  This reaction is

known as

A. Gattermann aldehyde synthesis

- B. Sandmeyer's reaction
- C. Perkin's reaction
- D. Reimer-Tiemann reaction

# Answer:



**159.** Phenol reacts with bromine in carbon disulphide at low temperature to give

A. m-bromophenol

- B. o-and p-bromophenol
- C. p-bromophenol
- D. 2,4,6-tribromophenol

# Answer:

**Watch Video Solution** 

**160.** Phenol on treatment with conc. $HNO_3$  gives

A. picric acid

B. o- and m- nitrophenols

C. o- and m- nitrophenols

D. none of these



**161.** In the reaction  $C_6H_5NH_2 \xrightarrow{NaNO_2 + HCl\,, O^\circ C} X \xrightarrow{H_2O\,, warm} Y$ . Y

is

# A. $C_6H_5Cl$

 $\operatorname{B.} C_6H_6$ 

 $\mathsf{C.}\, C_6H_5OH$ 

D.  $C_6H_5CHO$ 

# Answer:

**Watch Video Solution** 

162. Which one of the following compounds will not be soluble in

sodium bicarbonate?

A. 2,4,6-trinitrophenol

B. Benzoic acid

C. o-nitrophenol

D. Benzene sulphonic acid

# Answer:



# 163. The central oxygen atom in ether is

A. sp hybridised

 $B. sp^2 hybridised$ 

 $C. sp^3 hybridised$ 

 ${\tt D.}\, sp^3d^2hybridised$ 



164. The number of metameric ethers possible with the formula

 $C_4 H_{10} O$  are

A. 4 B. 3 C. 2 D. 5

# Answer:



**165.** Which of the following compounds is not isomeric with ethoxyethane?

A. Butanone

- B. Methyl propyl ether
- C. 2-methyl propane-2-ol
- D. Butanol-1

# Answer:



**166.** The reaction, Sodium alkoxide+Alkyl halide  $\rightarrow$ Ether+Sodium halide is called

A. Wurtz reaction

B. Kolbe's reaction

C. Wiilamson's synthesis

D. Perkin's reaction
# Answer:

**Watch Video Solution** 

167. Anisole by reacting with  $Br_2 \,/\, CH_3 COOH$  will give mainly

A. p-bromoanisole

B. o-bromoanisole

C. both (a) and (b)

D. m-bromoanisole

### Answer:



168. Following one is formed when a diethyl ether is eposed to air

for longer period

A. Ethyl alcohol

B. Acetaldehyde

C. Ethylene

D. Peroxide of diethyl ether

## Answer:



169. Diethyl ether is used as

A. Anaesthetic

B. Solvent

C. Refrigerant

D. All of these

Answer:

Watch Video Solution

**170.** Which of the following alcohols cannot be prepared by reduction of carbonyl compounds?

A. Propan-1-ol

B. Propan-2-ol

C. 2-methylpropan-1-ol

D. 2-methylpropan-2-ol

Answer:



171. Kolbe's synthesis is used to prepare

A. phenol

B. salicyladehyde

C. salicyclic acid

D. Benzoic acid

### Answer:

**Watch Video Solution** 

172. Benzyl Phenyl ether when treated with HI gives

A. Benzyl iodide and phenol

B. Iodobenzene and benzyl iodide

C. Both Benzyl iodide

D. lodobenzene and benzyl alcohol

### Answer:

Watch Video Solution

173. Give IUPAC name for Iso butyl alcohol.



174. Name the reagent which is used to convert phenol to picric

acid

> Watch Video Solution

175. Answer in one sentence / word. Write name of electrophile

used in Kolbe's Reaction.



Watch Video Solution

**179.** Give preparation of phenol from cumene.

Watch Video Solution
<b>180.</b> Distinguish between alcohol and phenol by chemical test.
<b>Vatch Video Solution</b>
<b>181.</b> Write short note on Reimer-Tiemann reaction.
Watch Video Solution

182. How will you distinguish primary alcohol, secondary alcohol

and teritary alcohols by Oxidation Reaction?



183. How will you bring about following conversions. (i) Ethyl

alcohol to Ethyl acetate

Watch Video Solution

184. How will you bring about following conversions.(ii) Ethyl

chloride to ethene

**D** Watch Video Solution

185. How will you bring about following conversion.2-Methyl

propan - 2 -ol to 2 - methyl propene

