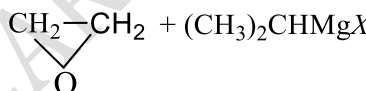
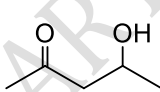
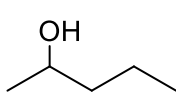
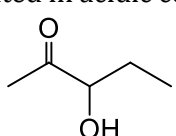
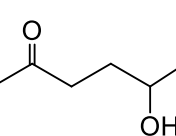


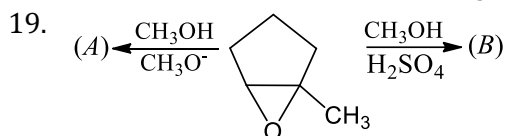
ALCOHOLS, PHENOLS AND ETHERS

CHEMISTRY

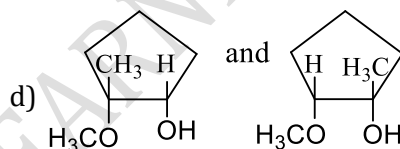
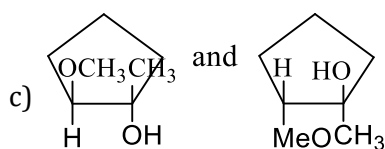
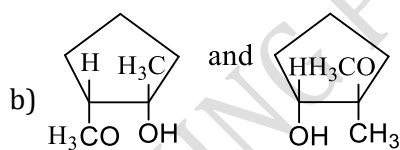
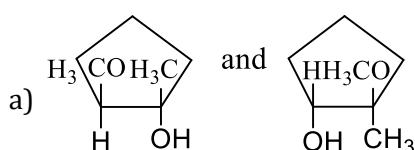
Single Correct Answer Type

- An organic compound 'X' on treatment with pyridinium chloro chromate in dichloromethane gives compound 'Y'. Compound 'Y' reacts with I_2 and alkali to form triiodomethane. The compound 'X' is
a) C_2H_5OH b) CH_3CHO c) CH_3COCH_3 d) CH_3COOH
- Ethyl alcohol is industrially prepared from the ethylene by:
a) Permanganate oxidation
b) Catalytic reduction
c) Absorbing in sulphuric acid followed by hydrolysis
d) Fermentation
- CH_2ClCH_2OH is stronger acid than CH_3CH_2OH because:
a) $+IE$ of Cl disperses -ve charge on O -atom to produce more stable anion
b) $-IE$ of Cl disperses -ve charge on O -atom to produce more stable anion
c) $+IE$ of Cl increases -ve charge on O -atom to alcohol
d) None of the above
- Alcohol $(CH_3)_2CHCH_2OH$ cannot be obtained by
a) $HCHO + (CH_3)_2CHCH_2MgX$
b)  $CH_2-CH_2 + (CH_3)_2CHMgX$
c) $(CH_3)_2CHCH_2CH_2MgX + O_2$ air
d) $(CH_3)_2CHCHO + CH_3MgX$
- Lucas reagent is used to distinguish among primary, secondary and tertiary:
a) Alkyl halides b) Alcohols c) Aliphatic amines d) Aromatic amines
- Ketone upon treatment with Grignard reagent gives
a) Primary alcohol b) Secondary alcohol c) Tertiary alcohol d) Aldehyde
- The starting material for the preparation of CH_3I in one step reaction is:
a) CH_3OH b) C_2H_5OH c) CH_3CHO d) CH_3COCH_3
- From methyl alcohol we get:
a) Neoprene rubber
b) Perspex rubber
c) Bakelite a hard plastic
d) Sponge rubber
- Which one of the following will most readily be dehydrated in acidic condition?
a)  b)  c)  d) 
- Tert*-butyl methyl ether on heating with anhydrous HI in ether gives
a) $CH_3OH + (CH_3)_3Cl$ b) $CH_3I + (CH_3)_3COH$ c) $CH_3I + (CH_3)_3Cl$ d) None of the above
- Diethyl ether is decomposed on heating with:
a) NaOH b) Water c) $KMnO_4$ d) HI
- Ether fire can be extinguished by:
a) Sand b) Pyrene c) CO_2 d) All of these
- Diethyl ether on reaction with CO in specific conditions forms:
a) Acetic acid b) Carbon dioxide c) Ethyl propanoate d) Acetyl chloride
- Most viscous among the following is:

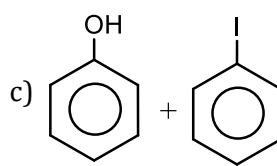
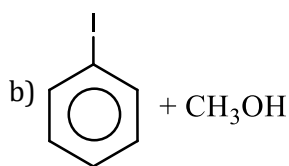
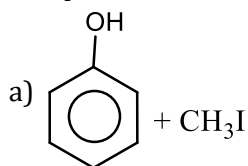
- a) Propan-1-ol b) Propan-2-ol c) Propane-1, 2-diol d) Propane-1,2,3-triol
15. In the fermentation of sugar molasses, the percentage of ethanol formed is:
 a) 10 % b) 40 % c) 95 % d) 70 %
16. A liquid was mixed with ethanol and a drop of concentrated H_2SO_4 was added. A compound with a fruity smell was formed. The liquid was:
 a) HCHO b) CH_3COCH_3 c) CH_3COOH d) CH_3OH
17. Ethyl alcohol reacts with following to form a compound of fruity smell:
 a) PCl_5 b) $\text{K}_2\text{Cr}_2\text{O}_7 + \text{H}_2\text{SO}_4$ c) CH_3COOH d) CH_3COCH_3
18. Carbolic acid is
 a) HCOOH b) CH_3COOH c) $\text{C}_6\text{H}_5\text{COOH}$ d) $\text{C}_6\text{H}_5\text{OH}$

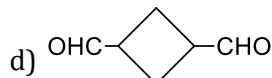
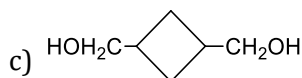
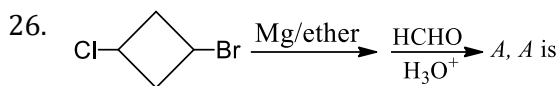


A and B are

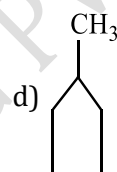
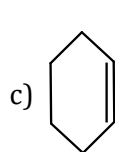
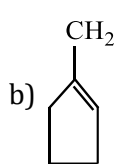
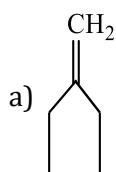
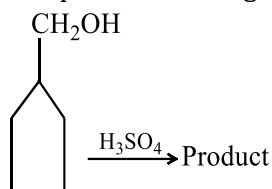


20. 2-methyl-2-butanol on treatment with HCl gives predominantly
 a) 2-chloro-3-methylbutane b) 2,2-dimethylpentane
 c) 2-chloro-2-methylbutane d) 1-chloro-2-methylbutane
21. In Williamson's synthesis ethoxy ethane is prepared by
 a) Passing ethanol over heated alumina
 b) Heating sodium ethoxide with ethyl bromide
 c) Treating ethyl alcohol with excess of H_2SO_4 at 430-440 K
 d) Heating ethanol with dry Ag_2O
22. Which of the following reacts fastest with a mixture of anhydrous ZnCl_2 and conc. HCl ?
 a) Trimethyl carbinol
 b) Ethanol
 c) Propanol
 d) Methanol
23. Ethers are made free from peroxide linkage on distilling impure sample with:
 a) Conc. HNO_3 b) Conc. H_2SO_4 c) Conc. HCl d) None of these
24. Which of the property given below is not associated with glycerol?
 a) Formation of water and CO_2 on reduction
 b) Formation of tartronic acid on oxidation
 c) Formation of acrolein on dehydration
 d) Formation of allyl iodide with PI_3
25. The products obtained when anisole is heated in a sealed tube with HI are





27. The product in the given reaction is:



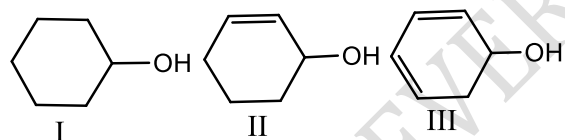
28. When CH_3MgI is made to react with acetone and the addition product formed is hydrolysed, we get:

- a) A primary alcohol b) A secondary alcohol c) A tertiary alcohol d) An aldehyde

29. The factor adversely affecting the process of fermentation is:

- a) Low concentration of sugar
b) High concentration of sugars
c) Presence of ammonium salts
d) Presence of air

30. The correct order of ease of dehydration of following is

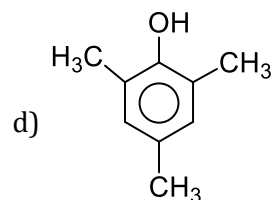
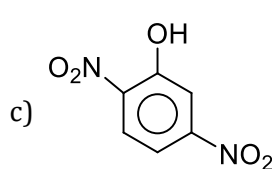
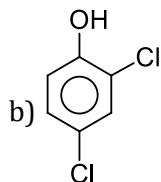
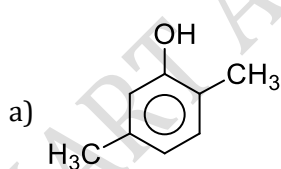


- a) I > II > III b) III > II > I c) I > III > II d) III > I > II

31. The correct order of boiling point for primary (1°), secondary (2°) and tertiary (3°) alcohols is

- a) $1^\circ > 2^\circ > 3^\circ$ b) $3^\circ > 2^\circ > 1^\circ$ c) $2^\circ > 1^\circ > 3^\circ$ d) $2^\circ > 3^\circ > 1^\circ$

32. Which substance will not react with ϕNCl (ϕ = Phenyl) to give dye?



33. Phenol can be distinguished from ethanol by the following reagents except

- a) Sodium b) NaOH/I_2
c) Neutral FeCl_3 d) $\text{Br}_2/\text{H}_2\text{O}$

34. The compound which does not react with sodium is:

- a) $\text{CH}_3\text{CHOHCH}_3$ b) $\text{CH}_3\text{—O—CH}_3$ c) CH_3COOH d) $\text{C}_2\text{H}_5\text{OH}$

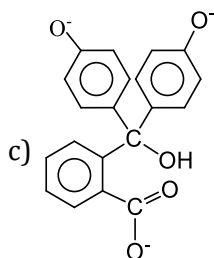
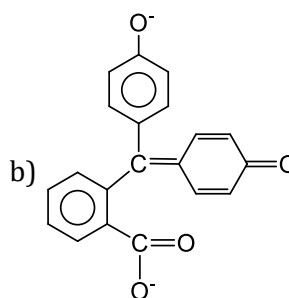
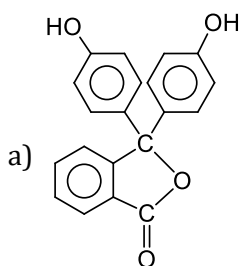
35. Ethylene glycol reacts with excess of PCl_5 to give

- a) 1, 1-dichloroethane b) 1, 2-dichloroethane
c) 1, 1, 1-trichloroethane d) 2, 2-dichloroethane

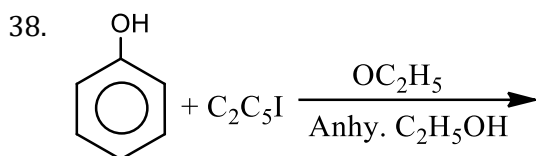
36. Alcohol is sometimes used in:

- a) Baking powder b) Paints c) Thermometers d) Weighing

37. Phenolphthalein is formed by condensation of phthalic anhydride and ϕ OH. Which structure shows colour in basic medium?

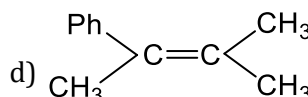
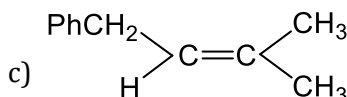
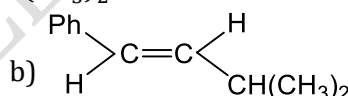
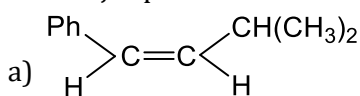


d) All of the above



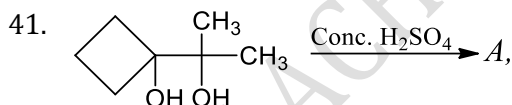
- a) $C_6H_5OC_2H_5$ b) $C_2H_5OC_2H_5$ c) $C_6H_5OC_6H_5$ d) C_6H_5I

39. The major product in the reaction of $PhCH_2CH(OH)CH(CH_3)_2$ with concentrated H_2SO_4 is

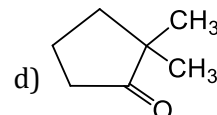
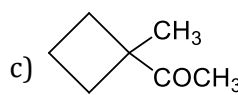
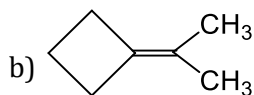


40. Which is not an alcohol?

- a) $CH_2=CHCH_2OH$ b) CH_2OHCH_2OH c) $C_6H_5CH_2OH$ d) C_6H_5OH



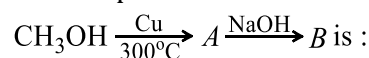
The product A is



42. Glycerol catches fire on mixing with:

- a) $KMnO_4$ b) $K_2Cr_2O_7$ c) HNO_3 d) None of these

43. The end product of the reaction,

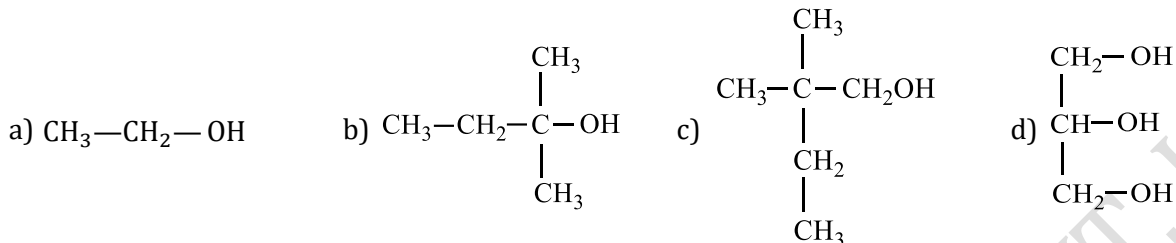


- a) Alkane
b) Carboxylic acid
c) Sodium salt of carboxylic acid
d) Ketone

44. What is the hybridisation of carbon and oxygen in electronic structure of ether?

- a) sp^3 and sp^2 b) sp^3 and sp^3 c) sp and sp d) sp^2 and sp^2
45. During dehydration of alcohols to alkenes by heating with concentrated H_2SO_4 the initiation step is
- Protonation of alcohol molecule
 - Formation of carbocation
 - Elimination of water
 - Formation of an ester

46. Which of the following is tertiary alcohol?



47. Which of the following reagent will convert glycerol to acrolein?



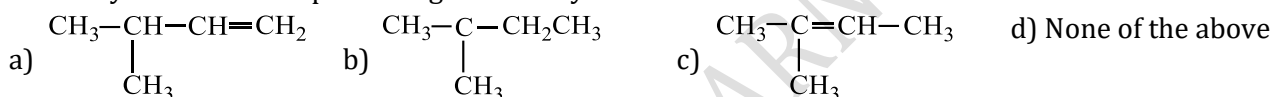
48. Among the following, which is least acidic?



49. Glycerol on heating with oxalic acid at $110^\circ C$ gives



50. The dehydration of neo-pentanol gives mainly:



51. Phenol, when it first reacts with concentrated sulphuric acid and then with concentrated nitric acid, gives



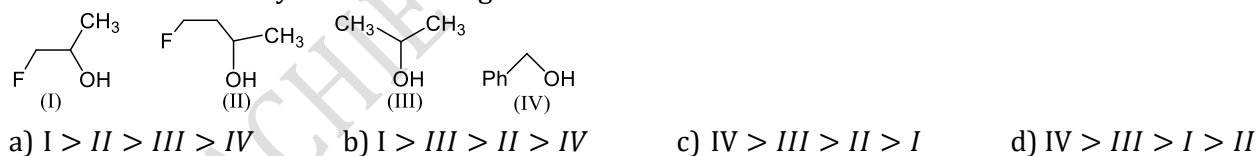
52. Which of the following is dihydric alcohol?



53. Absolute alcohol contains:



54. The order of reactivity of the following alcohols



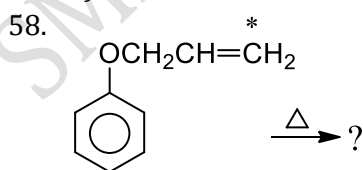
55. The most important ingredient of dynamite is:



56. 2-methoxy butane is obtained by reacting diazomethane with

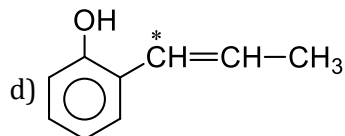
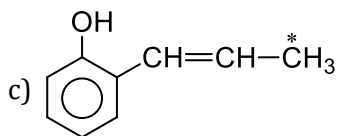


57. How many structural isomers are known for $C_4H_{10}O$?



Product is





59. Amongst the following, HBr reacts fastest with

a) Propane-1-ol

c) 2-methyl propane-1-ol

b) Propane-2-ol

d) 2-methyl propane-2-ol

60. Physical properties of:

a) Alcohols lie between alkanes and H₂O

b) H₂O lie between alcohols and alkenes

c) Alkenes lie between alcohols and H₂O

d) None of the above

61. Which of the following ethers form peroxide readily?

a) Me—O—Me

b) Et—O—Et

c) iPr—O—iPr

d) Me—O—Et

62. Association of alcohol molecules takes place because of:

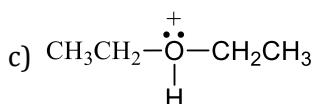
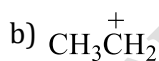
a) Electrovalent bond

b) Ionic bond

c) Covalent bond

d) Hydrogen bond

63. The reaction, $2\text{CH}_3\text{CH}_2\text{OH} \xrightarrow[413\text{ K}]{\text{H}^+} \text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$ is believed to occur through the formation of



d) Both (b) and (c)

64. Ethyl iodide on treatment with dry Ag₂O will yield:

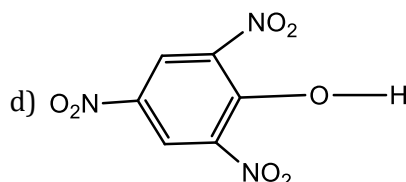
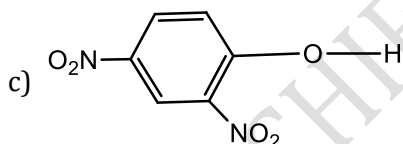
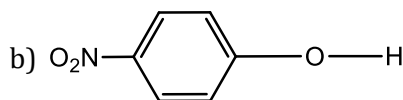
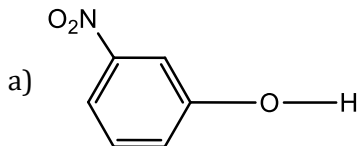
a) Ethyl alcohol

b) Diethyl ether

c) Ethyl methyl ether

d) Ethylene

65. Which of the following compounds is weakest acid?



66. Fusel oil is a mixture of:

a) Alcohols

b) Ethers

c) Ethers and alcohols

d) Alcohols and acetone

67. When benzene sulphonic acid and *p*-nitrophenol are treated with NaHCO₃, the gases released respectively are

a) SO₂, NO₂

b) SO₂, NO

c) SO₂, CO₂

d) CO₂, CO₂

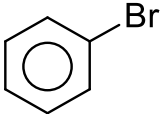
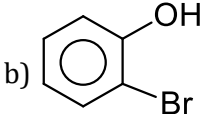
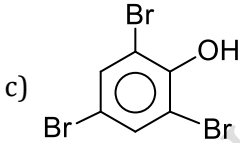
68. Which is correctly matched?

	Alcohol	α -H	β- H	Colour in Victor Meyer test
A.	X	3	0	Colourless
B.	Y	1	6	Blue
C.	Z	0	9	Red

a) A and B

b) B and C

- c) Only C
d) Only B
69. Lucas reagent is
a) Conc. HCl and anhydrous $ZnCl_2$
b) Conc. HNO_3 and hydrous $ZnCl_2$
c) Conc. HCl and hydrous $ZnCl_2$
d) Conc. HNO_3 and anhydrous $ZnCl_2$
70. An aldehyde on treatment with Zn/HCl yields:
a) 1° alcohol
b) 2° alcohol
c) 3° alcohol
d) None of these
71. In the reaction,

$$A \xrightarrow[H_2SO_4]{K_2Cr_2O_7} \text{acetone} \xrightarrow{\text{Oxidation}} \text{acetic acid}, A \text{ is}$$
 a) 1-propanol
b) 2-butanol
c) 2-propanol
d) Ethanol
72. When glycerol is treated with excess of HI, it produces:
a) 2-iodopropane
b) Allyl iodide
c) Propene
d) Glycerol tri-iodide
73. The product obtained by the reaction of HBr with phenol is
 a)  b)  c)  d) There is no reaction
74. An ether is more volatile than an alcohol having the same molecular formula. This is due to
a) Dipolar character of ethers
b) Alcohols having resonance structures
c) Intermolecular hydrogen bonding in ethers
d) Intermolecular hydrogen bonding in alcohols
75. Glycol condenses with ketones to give:
a) Cyclic acetals
b) Cyclic ketals
c) Acetaldehyde
d) Oxalic acid
76. In the following reaction sequence

$$R-OH \xrightarrow{P+I_2} R-I \xrightarrow{AgNO_2} RNO_2 \xrightarrow{HNO_2} \text{no reaction}$$
 The alcohol is a
a) Primary alcohol
b) Secondary alcohol
c) Tertiary alcohol
d) Phenol
77. The explosive nitroglycerine is:
a) A soap
b) A salt
c) An ester
d) A complex compound
78. The compound $CH_3CH_2CH_2Br$ is converted into $CH_3CH_2CH_2OH$ by:
a) Dehydration
b) Hydrogenation
c) Elimination
d) Substitution
79. Consider the following reaction,

$$\text{ethanol} \xrightarrow{PBr_3} X \xrightarrow{\text{alc. KOH}} Y \xrightarrow[\text{(ii) } H_2O, \text{ heat}]{\text{(i) } H_2SO_4 \text{ at room temperature}} Z;$$
- The product Z is:
a) CH_3CH_2OH
b) $CH_2=CH_2$
c) $CH_3CH_2-O-CH_2-CH_3$
d) $CH_3-CH_2-O-SO_3H$
80. Glycerol reacts with potassium bisulphate to produce
a) Allyl iodide
b) Allyl sulphate
c) Acryl aldehyde
d) Glycerol trisulphate
81. To prepare an ether by Williamson's synthesis, the reactants needed are
a) Ethyl alcohol and tert butyl alcohol
b) Sodium ethoxide and tert butyl bromide
c) Sodium tertiary butoxide and ethyl bromide
d) Sodium ethoxide and sodium tert butoxide
82. Fenton's reagent is:
a) $H_2O + FeSO_4$
b) $H_2O_2 + FeSO_4$
c) $H_2O_2 + ZnSO_4$
d) $NaOH + FeSO_4$
83. Which of the following is simple ether?

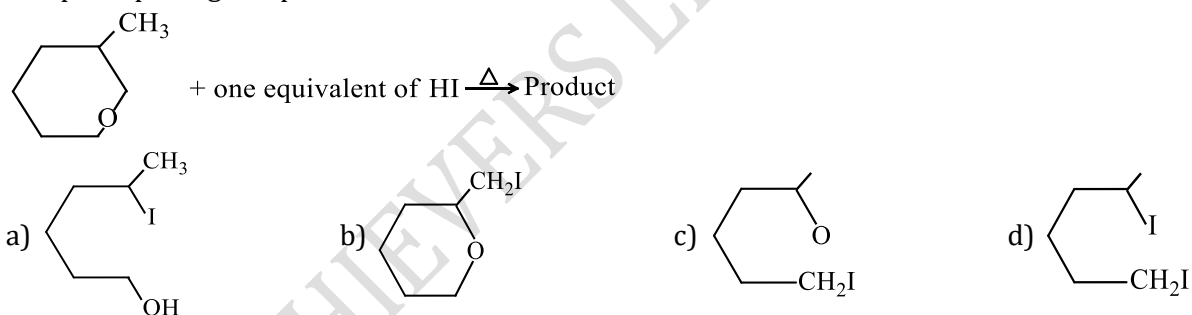
- a) Phenol red b) Methyl orange c) Salicylic acid d) Phenolphthalein
100. When ethyl alcohol is dissolved in water, it is accompanied with:
- a) Absorption of heat and contraction in volume
 b) Evolution of heat and contraction in volume
 c) Absorption of heat and increase in volume
 d) Evolution of heat and increase in volume

101. The products obtained when benzyl phenyl ether is heated with HI in the mole ratio 1:1 are
- I. Phenol
 II. Benzyl alcohol
 III. Benzyl iodide
 IV. Iodobenzene

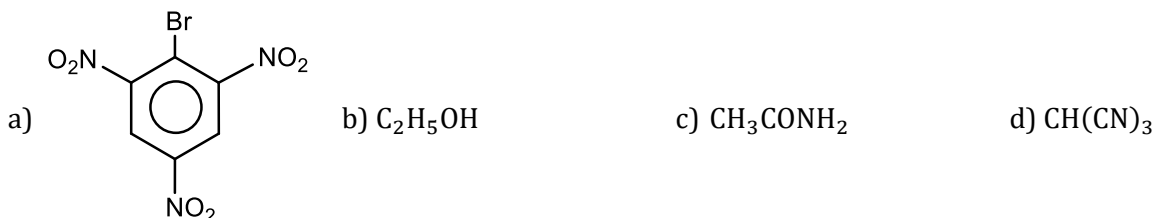
- a) 1 and 3 only b) 3 and 4 only c) 1 and 4 only d) 2 and 4 only
102. Which of the following is an example of elimination reaction?
- a) Chlorination of CH_4
 b) Dehydration of $\text{C}_2\text{H}_5\text{OH}$
 c) Nitration of benzene
 d) Hydroxylation of C_2H_4

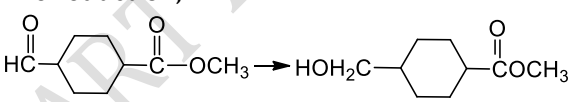
103. Glycerol on oxidation with conc. HNO_3 mainly yields:
- a) Glyceric acid b) Tartronic acid c) Mesoxalic acid d) Both (a) and (b)
104. During fermentation little H_2SO_4 is added:
- a) To get acidic medium
 b) To hydrolyse the glucose solution
 c) To prevent the growth of undesirable bacteria
 d) Which acts as dehydrating agent

105. The principal organic product in the reaction is:



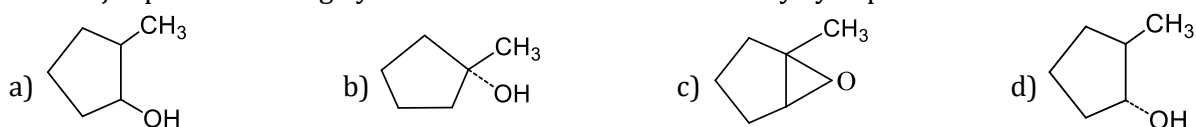
106. Dialkyl sulphides are known as:
- a) Sulphonal b) Mercaptan c) Thioethers d) Thioesters
107. Acrolein is obtained when glycerol is dehydrated with:
- a) KHSO_4 b) P_2O_5 c) Conc. H_2SO_4 d) All of these
108. In the following reaction, X and Y respectively are
- $$\text{C}_2\text{H}_5\text{OH} \xrightarrow{\text{KMnO}_4/\text{H}^+} \text{X} \xrightarrow[\text{H}_2\text{SO}_4/\Delta]{\text{Y}} \text{CH}_3\text{CO}_2\text{C}_2\text{H}_5$$
- a) CH_3OH , $\text{C}_2\text{H}_5\text{OH}$ b) CH_3CHO , CH_3OH c) $\text{CH}_3\text{CO}_2\text{H}$, $\text{C}_2\text{H}_5\text{OH}$ d) C_2H_4 , $\text{CH}_3\text{CO}_2\text{H}$
109. The compound which gives turbidity immediately with Lucas reagent at room temperature is
- a) Butan-1-ol b) Butan-2-ol
 c) 2-methyl propan-2-ol d) 2-methyl propan-1-ol
110. Which of the following will not react with NaOH ?



111. The alcohol manufactured from water gas is
 a) CH₃OH b) C₂H₅OH c) CH₃CH₂COOH d) (CH₃)₂CHOH
112. The -OH group of an alcohol or the -COOH group of a carboxylic acid can be replaced by -Cl using
 a) Phosphorus pentachloride b) Hypochlorous acid
 c) Chlorine d) Hydrochloric acid
113. Methanol cannot be dried with anhydrous CaCl₂ because
 a) CaCl₂ dissolves in it b) It is not good dehydrating agent
 c) It forms a solid CaCl₂ · 4CH₃OH d) It reacts with CH₃OH
114. Sodium ethoxide has reacted with ethanoyl chloride. The compound that is produced in the above reaction is:
 a) Diethyl ether b) 2-Butanone c) Ethyl chloride d) Ethyl ethanoate
115. Which method is employed to convert alkyl halide into alcohol?
 a) Substitution b) Addition c) Dehydration d) Rearrangement
116. Lucas test is associated with
 a) Aldehydes b) Phenols c) Carboxylic acids d) Alcohols
117. $C_2H_6 \xrightarrow[350\text{ K}]{H_2SO_4} A \xrightarrow[\text{Fusion}]{\text{Alkali}} B \xrightarrow[H_2O]{Br} C$
 In the above sequence, C is
 a) *o*-bromophenol b) *p*-bromophenol
 c) *m*-bromophenol d) 2, 4, 6-tribromophenol
118. The boiling points of thio-ethers are...than those of ether.
 a) Lesser b) Equal c) Higher d) None of these
119. $B \xleftarrow{PCl_5} C_2H_5OH \xrightarrow{Na} A$
 $A + B \rightarrow C$
 $C \xrightarrow[BF_3]{CO} D$
 In the above sequence D is
 a) CH₃COOC₂H₅ b) CH₃COOCH₃ c) C₂H₅COOC₂H₅ d) (C₂H₅)₂O → BF₃
120. The toxicity order for CH₃OH, C₂H₅OH and C₃H₇OH is:
 a) C₂H₅OH < CH₃OH < C₃H₇OH
 b) C₃H₇OH < C₂H₅OH < CH₃OH
 c) C₂H₅OH < C₃H₇OH < CH₃OH
 d) CH₃OH < C₂H₅OH < C₃H₇OH
121. The alcohol that forms fats with fatty acids is:
 a) Glycerol b) Ethanol c) Methanol d) Glycol
122. The reduction,

 Can be achieved by using
 a) NaBH₄ b) LiAlH₄
 c) CuO · CuCN₂O₄ d) None of these
123. Williamson's synthesis is used for the preparation of
 a) Acid b) Ester c) Ether d) Alcohol
124. Fermentation of starch solution to ethyl alcohol does not require:
 a) Diastase b) Invertase c) Maltase d) Zymase
125. Wood spirit is:
 a) CH₃OH b) C₂H₅OH c) CH₃CH₂CH₂OH d) None of these
126. Which of the following reagents can convert acetic acid into ethanol?
 a) Sn + HCl b) H₂ + Pt c) LiAlH₄ + ether d) Na + alcohol

127. By heating phenol with chloroform in alkali, it is converted into
a) Salicylic acid b) Salicylaldehyde c) Anisole d) Phenyl benzoate

128. The major product during hydroboration-oxidation of 1-methylcyclopentene is



129. Carbinol is the trivial name for:

a) $(\text{CH}_3)_3\text{COH}$ b) $\text{C}_2\text{H}_5\text{OH}$ c) CH_3OH d) $\text{CH}_3\text{CH}_2\text{CHOHCH}_3$

130. When acetamide is treated with LiAlH_4is formed.

a) Ethanol b) Acetic acid c) Formic acid d) Methanol

131. Which of the following is used as antiseptic?

a) $\text{C}_2\text{H}_5\text{OH}$ b) Iodoform c) Both (a) and (b) d) None of these

132. Proof spirit contains about:

a) 48% alcohol by weight
b) 10% alcohol by weight
c) 5% alcohol by weight
d) 90% alcohol by weight

133. A simple method to remove peroxides from ether is to treat them with an aqueous solution of

a) KI b) KCNS c) $\text{Na}_2\text{S}_2\text{O}_3$ d) Br_2

134. Isopropyl alcohol and n-propyl alcohol are:

a) Position isomers b) Chain isomers c) Functional isomers d) None of these

135. Which one of the following is not the characteristics of the alcohols?

a) Their boiling points rise fairly uniformly with a rise in molecular weight
b) Lower members have a pleasant smell but burning taste and the higher ones are odourless and tasteless
c) They are lighter than water
d) Lower members are insoluble in water and organic solvents but the solubility goes on increasing with the rise of molecular weight

136. Primary amine on treatment with NaNO_2 and HCl yields:

a) Nitro compound b) Ammonia c) Secondary alcohol d) Primary alcohol

137. Diethyl ether on treatment with Cl_2 in presence of sunlight gives:

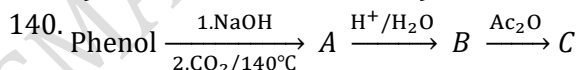
a) Trichlorodiethyl ether
b) Perchlorodiethyl ether
c) Trichloroacetaldehyde
d) 1,1-dichlorodiethyl ether

138. $\text{CH}_3 - \text{CH}_2 - \text{O} - \text{CH}_2 - \text{CH}_3$ reacts with hot and excess HI, then formed product is

a) $\text{CH}_3 - \text{CH}_2 - \text{I}$ and $\text{CH}_3\text{CH}_2\text{OH}$ b) $\text{CH}_3 - \text{CH}_2 - \text{OH}$
c) $\text{CH}_3 - \text{CH}_2 - \text{I}$ d) None of the above

139. A mixture of alcohol and ether is called:

a) Natalite b) Power alcohol c) Peroxide d) None of these



In this reaction, the end product C is

a) Salicylaldehyde b) Salicylic acid c) Phenyl acetate d) Aspirin

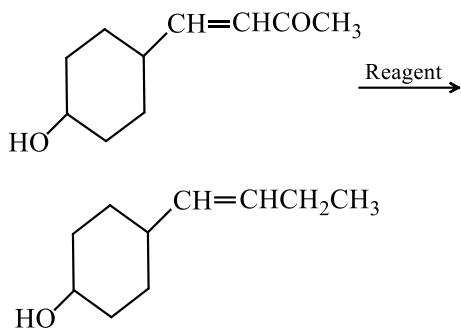
141. In fermentation by zymase, alcohol and CO_2 are obtained from

a) Invert sugar b) Glucose c) Fructose d) All of these

142. Oxidation of allyl alcohol, $(\text{CH}_2=\text{CH}-\text{CH}_2\text{OH})$ gives a mixture of oxalic acid and formic acid. If this oxidation is done in presence of bromine. One would expect only:

a) Oxalic acid b) Formic acid c) Succinic acid d) Acrylic acid

143. In the given transformation, which of the following is the most appropriate reagent?



- a) Zn – Hg/HCl b) Na, Liq. NH_3 (v) c) NaBH_4 d) $\text{NH}_2\text{NH}_2, \text{OH}$

144. Glycerol is highly viscous. It is due to the fact that:

- a) It is highly polar
 b) It forms extensive H-bonding
 c) It shows intramolecular H-bonding
 d) It has high b.p.

145. The best method to prepare cyclohexene from cyclohexanol is by using

- a) Conc. HCl + ZnCl_2 b) Conc. H_3PO_4 c) HBr d) Conc. HCl

146. Phenol on treatment with diethyl sulphate in presence of NaOH gives

- a) Phenetole b) Anisole c) Diphenyl ether d) Diethyl ether

147. Vapours of an alcohol were passed over hot reduced copper. It gave an olefin. The alcohol is:

- a) Primary b) Secondary c) Tertiary d) None of these

148. Propane, $\text{CH}_3 - \text{CH} = \text{CH}_2$ can be converted into 1-propanol by oxidation. Which set of reagents among the following is ideal to effect the conversion?

- a) H_2O b) $\text{B}_2\text{H}_6, \text{H}_2\text{O}_2$ c) H_2SO_4 d) None of these

149. $\text{C}_4\text{H}_{10}\text{O}$ gives white precipitate within 5 min with concentrated hydrochloric acid in the presence of anhydrous zinc chloride.

Alcohol can be

- a) b) c) d)

150. Propan-2-ol on reacting with Cl_2 produces:

- a) Trichloroethanal b) Trichloroacetone c) Acetone d) None of these

151. Which of the following compounds is resistant to nucleophilic attack by hydroxyl ions?

- a) Acetamide b) Methyl acetate c) Diethyl ether d) Acetonitrile

152. Ethers are quite stable towards:

- a) Oxidizing agents b) Reducing agents c) Na metal d) All of these

153. The function of ZnCl_2 in Lucas test for alcohols is

- a) To act as acid catalyst and react with HCl to form H_2ZnCl_4
 b) To act as base catalyst and react with NaOH to form $\text{Na}_2\text{Zn}(\text{OH})_4$
 c) To act as amphoteric catalyst
 d) To act as neutral catalyst

154. When ethyl alcohol is heated with conc. H_2SO_4 , the product obtained is

- a) $\text{CH}_3\text{COOC}_2\text{H}_5$ b) C_2H_2 c) C_2H_6 d) C_2H_4

155. Phenol is heated with phthalic anhydride in presence of conc H_2SO_4 . The product gives pink colour with alkali. The product is

- a) Phenolphthalein b) Bakelite c) Salicylic acid d) Fluorescein

156. The action of halogen acids on an ether, has the following order of reactivity:

- a) $\text{HCl} > \text{HBr} > \text{HI}$ b) $\text{HI} > \text{HCl} > \text{HBr}$ c) $\text{HI} > \text{HBr} > \text{HCl}$ d) $\text{HCl} > \text{HI} > \text{HBr}$

157. Rectified spirit contains:

- a) 75.0 % alcohol b) 85.5% alcohol c) 95.6% alcohol d) 100.0% alcohol

158. Phenyl magnesium bromide reacts with methanol to give a mixture of:

- a) Anisole and Mg(OH)Br
- b) Benzene and Mg(OMe)Br
- c) Toluene and Mg(OH)Br
- d) Phenol and Mg(Me)Br

159. Phenol $\xrightarrow{\text{NaNO}_2/\text{H}_2\text{SO}_4}$ B $\xrightarrow{\text{H}_2\text{O}}$ C $\xrightarrow{\text{NaOH}}$ D

Name of the reaction is

- a) Liebermann's reaction
- b) Phthalein fusion test
- c) Reimer-Tiemann reaction
- d) Schotten-Baumann reaction

160. The commonly used dehydrating agent in the preparation of an ester is:

- a) P₂O₅
- b) Anhydride CaCl₂
- c) Anhydride AlCl₃
- d) Conc. H₂SO₄

161. Nobel's oil is:

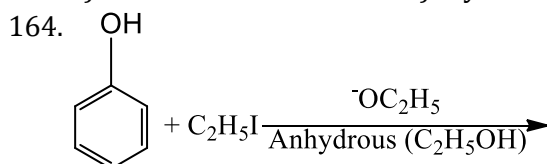
- a) Fire extinguisher
- b) Insecticide
- c) Explosive
- d) Detergent

162. Phenol, *p*-methylphenol, *m*-nitrophenol and *p*-nitrophenol follows order of increasing strength as

- a) Phenol, *p*-methylphenol, *p*-nitrophenol, *m*-nitrophenol
- b) *p*-methylphenol, phenol, *m*-nitrophenol, *p*-nitrophenol
- c) *p*-methylphenol, *m*-nitrophenol, phenol, *p*-nitrophenol
- d) *m*-nitrophenol, *p*-nitrophenol, phenol, *p*-methylphenol

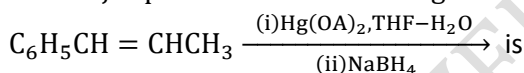
163. Ethylene glycol on oxidation with per-iodic acid gives:

- a) Oxalic acid
- b) Glyoxal
- c) Formaldehyde
- d) Glycollic acid



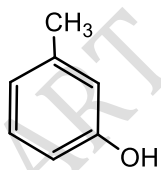
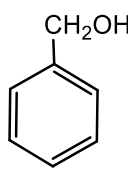
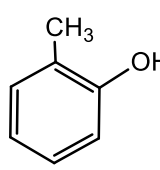
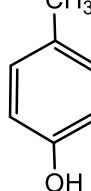
- a) C₆H₅OC₂H₅
- b) C₂H₅OC₂H₅
- c) C₆H₅OC₆H₅
- d) C₆H₅I

165. The major product of the following reaction,



- a) 
- b) 
- c) 
- d) 

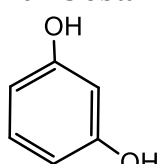
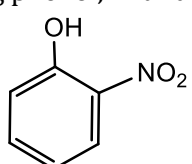
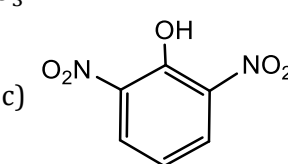
166. The structure of the compound that gives a tribromo derivative on treatment with bromine water is

- a) 
- b) 
- c) 
- d) 

167. Which of the following reagents may be used to distinguish between phenol and benzoic acid?

- a) Aqueous NaOH
- b) Tollen's reagent
- c) Molisch reagent
- d) Neutral FeCl₃

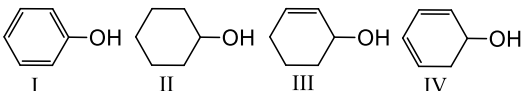
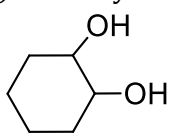
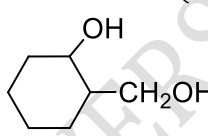
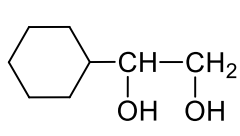
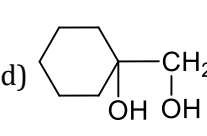
168. Which is obtained on treating phenol, with dilute HNO₃?

- a) 
- b) 
- c) 
- d) None of these

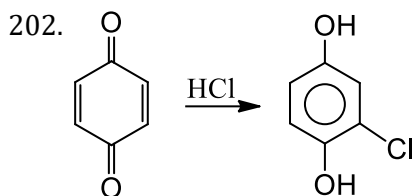
169. Consider the following reaction,



Among the following, which one cannot be formed as a product under any conditions?

- a) Ethyl hydrogen sulphate
c) Acetylene
- b) Ethylene
d) Diethyl ether
170. Dehydration of the following in increasing order is
- 
- a) I < II < III < IV b) II < III < IV < I c) I < II < III < IV d) I < IV < II < III
171. Excess of glycol when dehydrated gives:
- a) Ethylene oxide b) Ethanol c) Acrolein d) 1,4-dioxan
172. In the reduction,
 $R-CHO + H_2 \rightarrow RCH_2OH$
The catalyst used is:
- a) Ni b) Pd c) Pt d) All of these
173. Action of HNO_2 on CH_3NH_2 gives:
- a) CH_3OH b) $CH_3 \cdot O \cdot CH_3$ c) $CH_3O-N=O$ d) Both (b) and (c)
174. Primary and secondary alcohols on action of reduced copper give:
- a) Aldehydes and ketones respectively
b) Ketones and aldehydes respectively
c) Only aldehydes
d) Only ketones
175. Diethyl ether absorbs oxygen to form:
- a) Red coloured sweet smelling compound
b) Acetic acid
c) Ether suboxide
d) Ether peroxide
176. (A) $\xrightarrow{HIO_4}$ cyclohexanone + HCHO. What is (A)?
- a)  b)  c)  d) 
177. Which of the following undergoes dehydration most readily?
- a) 1-phenyl-1-butanol b) 1-phenyl-2-butanol c) 2-phenyl-2-butanol d) 2-phenyl-1-butanol
178. Ether in contact with air for a long time forms peroxides. The presence of peroxide in ether can be tested by adding Fe^{+2} ion in it and then adding:
- a) KCNS b) $SnCl_2$ c) $HgCl_2$ d) KI
179. Cyclohexanol is a:
- a) Phenol b) Primary alcohol c) Sec. alcohol d) *tert.* Alcohol
180. Glycerol on oxidation with dil. HNO_3 gives:
- a) Tartronic acid b) Mesoxalic acid c) Oxalic acid d) Glyceric acid
181. Butan-2-ol is:
- a) Primary alcohol b) Secondary alcohol c) Tertiary alcohol d) None of these
182. Peppermint can be extracted from plant sources by using solvents like:
- a) NH_3 b) H_2O c) CH_3COOH d) C_2H_5OH
183. Chlorine reacts with ethanol to give:
- a) Ethyl chloride b) Chloroform c) Acetaldehyde d) Chloral
184. Molasses contains:
- a) 70 % sugar b) 50% sugar c) 60% sugar d) 10% sugar
185. Which of the following are known as mercaptans?
- a) Thio-alcohols b) Thio-ethers c) Thio-aldehydes d) Thio-acids
186. Which forms most stable hydrate?
- a) CH_3CHO b) C_6H_5CHO c) CCl_3CHO d) CH_3COCH_3

187. An organic compound dissolved in dry benzene evolved hydrogen on treatment with sodium. It is:
 a) A ketone b) An aldehyde c) A tertiary amine d) An alcohol
188. Sodium ethoxide is obtained by the reaction of ethyl alcohol with:
 a) NaOH b) Na c) NaCl d) NaHCO₃
189. Which one of the following compounds will not react with CH₃MgBr?
 a) Ethyl acetate b) Acetone c) Dimethyl ether d) Ethanol
190. The major organic product in the reaction,
 $\text{CH}_3\text{—O—CH(CH}_3)_2 + \text{HI} \rightarrow \text{Product is:}$
 a) $\begin{array}{c} \text{CH}_3\text{OC(CH}_3)_2 \\ | \\ \text{I} \end{array}$ b) CH₃I + (CH₃)₂CHOH c) CH₃OH + (CH₃)₂CHI d) ICH₂OCH(CH₃)₂
191. Structure of diethyl ether can be confirmed by:
 a) Kolbe's synthesis
 b) Frankland's synthesis
 c) Wurtz's synthesis
 d) Williamson's synthesis
192. Glycerol on oxidation with bismuth nitrate mainly gives:
 a) Glyceric acid b) Tartronic acid c) Mesoxalic acid d) Oxalic acid
193. The end product of the following sequence is:
 $\text{CH}_3\text{Br} \xrightarrow{\text{KCN(alc.)}} (\text{A}) \xrightarrow{\text{H}_3\text{O}^+} (\text{B}) \xrightarrow[\text{Ether}]{\text{LiAlH}_4} (\text{C})$
 a) CH₃CHO b) CH₃CH₂OH c) CH₃COCH₃ d) CH₄
194. Saponification means hydrolysis of an ester with:
 a) Enzyme b) CH₃COOH c) H₂SO₄ d) NaOH
195. Which of the following can work as dehydrating agent for alcohols?
 a) H₂SO₄ b) Al₂O₃ c) H₃PO₄ d) All of these
196. In CH₃CH₂OH the bond which most readily undergoes heterolytic cleavage during its reaction with CH₃COOH/H₂SO₄ is:
 a) C—C b) C—O c) O—H d) C—H
197. When ethyl alcohol vapours mixed with air, are passed over heated platinized asbestos, the compound formed is:
 a) Acetaldehyde b) Diethyl ether c) Acetone d) None of these
198. Which of the following reactions will not yield *p*-tert butylphenol?
 a) $\text{Phenol} + \text{CH}_3 - \overset{\text{CH}_3}{\underset{|}{\text{C}}} = \text{CH}_2 \xrightarrow{\text{H}^+}$
 b) $\text{Phenol} + (\text{CH}_3)_3\text{COH} \xrightarrow{\text{H}^+}$
 c) $\text{Phenol} + (\text{CH}_3)_3\text{C} \cdot \text{Cl} \xrightarrow{\text{AlCl}_3}$
 d) $\text{Phenol} + \text{CHCl}_3 \xrightarrow{\text{NaOH}}$
199. One mole of an organic compound *A* with the formula C₃H₈O reacts completely with two moles of HI to form *X* and *Y*. When *Y* is boiled with aqueous alkali it forms *Z*. *Z* answers the iodoform test. The compound *A* is
 a) Propan-2-ol b) Propan-1-ol c) Ethoxyethane d) Methoxyethane
200. Which one of the following alcohol is used as an antifreeze reagent for making explosives?
 a) Glycerol b) Glycol c) Ethanol d) Phenol
201. The IUPAC name of CH₃OCH(CH₃)₂ is:
 a) 1-methoxy propane
 b) 3-methoxy propane
 c) Methyl-isopropylether
 d) 2-methoxy propane



is an example of

- a) 1, 2-addition of HCl followed by tautomerism b) 1, 2-addition followed by reduction
c) 1, 4-addition followed by tautomerism d) 1, 4-addition followed by oxidation

203. Absolute ethanol cannot be obtained by simple fractionation of a solution of ethanol and water because:

- a) Their boiling points are very near
b) Ethanol remains dissolved in water
c) They form a constant boiling mixture
d) Ethanol molecules are solvated

204. Etherates are

- a) Ethers b) Solution in ether
c) Complexes of ethers with Lewis acid d) Complexes of ethers with Lewis base

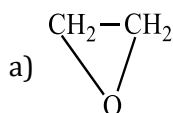
205. Glycerol is not used in:

- a) Cosmetics b) Matches c) Explosives d) Soaps

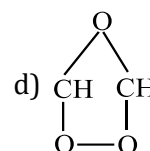
206. Which will not form a yellow precipitate on heating with an alkaline solution of iodine?

- a) $\text{CH}_3\text{CHOHCH}_3$ b) $\text{CH}_3\text{CH}_2\text{CHOHCH}_3$ c) CH_3OH d) $\text{CH}_3\text{CH}_2\text{OH}$

207. Which of the following is an alkoxide?



- b) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{ONa}$ c) $\text{CH}_2\text{OH} \cdot \text{CH}_2\text{OH}$



208. The acidic character of 1° , 2° , 3° alcohols, H_2O and $\text{RC} \equiv \text{CH}$ is of the order

- a) $\text{H}_2\text{O} > 1^\circ > 2^\circ > 3^\circ > \text{RC} \equiv \text{CH}$ b) $\text{RC} \equiv \text{CH} > 3^\circ > 2^\circ > 1^\circ > \text{H}_2\text{O}$
c) $1^\circ > 2^\circ > 3^\circ > \text{H}_2\text{O} > \text{RC} \equiv \text{CH}$ d) $3^\circ > 2^\circ > 1^\circ > \text{H}_2\text{O} > \text{RC} \equiv \text{CH}$

209. The enzyme which can catalyse the conversion of glucose to ethanol is:

- a) Zymase b) Diastase c) Maltase d) Invertase

210. Oxygen atom of ether is:

- a) Very active b) Replaceable c) Active d) Comparatively inert

211. Argol, a brown crust, formed during the fermentation of grape juice contains

- a) CO_2 b) Fused oil
c) Potassium hydrogen tartarate d) lye

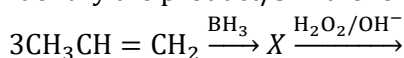
212. Benzoylation of phenol in alkaline medium is known as

- a) Friedel-Crafts reaction b) Wurtz-Fittig reaction
c) Schotten-Baumann reaction d)

213. The prospective fuel 'gashol' is a mixture of:

- a) Gaseous hydrocarbons and heavy water
b) Petrol and phenol
c) Petrol and ethanol
d) Radioactive substances

214. Identify the product/s in the following reaction.



Products + H_3BO_3

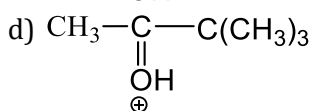
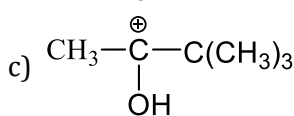
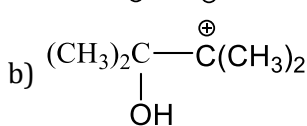
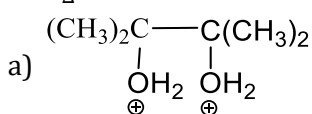
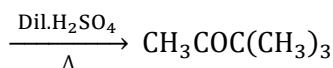
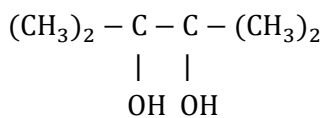
- a) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ b) $\text{CH}_3\text{CHOHCH}_3$ c) $\text{CH}_3\text{CH}_2\text{CHO}$ d) $\text{CH}_3\text{CH}_2\text{OH} + \text{CH}_3\text{OH}$

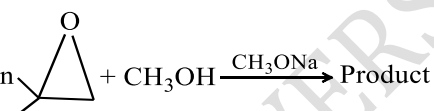
215. A fruity smell is obtained by the reaction of ethanol with

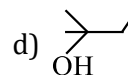
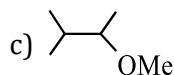
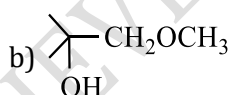
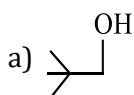
- a) CH_3COCH_3 b) PCl_5 c) CH_3COOH d) CH_3CHO

216. Which of the following reactions does not yield an ether?

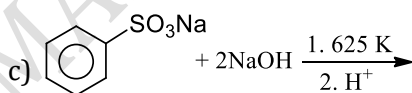
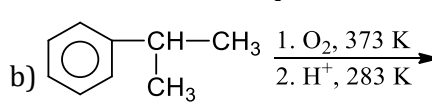
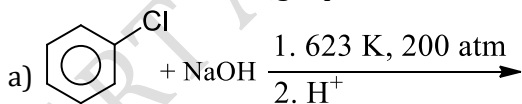
- a) Sodium methoxide reacts with dimethyl sulphate
 b) Sodium ethoxide reacts with ethyl bromide
 c) Sodium ethoxide reacts with bromocyclopropane
 d) Ethanol reacts with CH_2N_2 in presence of HBF_4
217. An alcohol on alk. KMnO_4 oxidation gives first acetone and on further oxidation acetic acid. It is:
 a) Ethyl alcohol
 b) Isopropyl alcohol
 c) Primary alcohol
 d) None of these
218. Which is not the intermediate stage of following conversion?



219. In the reaction  + $\text{CH}_3\text{OH} \xrightarrow{\text{CH}_3\text{ONa}}$ Product

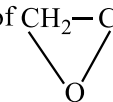
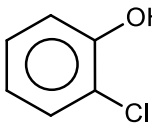
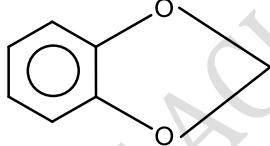
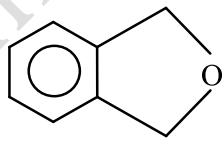
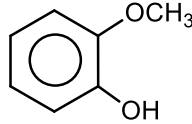
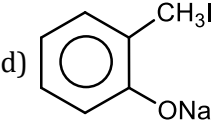


220. When diethyl ether is heated with an excess of PCl_5 , it yields
 a) Ethyl chloride
 b) Diethyl ether peroxide
 c) Ethanoyl chloride
 d) Perchlorodiethyl ether
221. Which of the following represents the Dow process for the manufacture of phenol?



d) None of the above

222. The organic compound present in tincture of iodine is:
 a) Alcohol
 b) CCl_4
 c) Acetone
 d) CS_2
223. Phenol on heating with CCl_4 and aqueous KOH gives salicylic acid. This reaction is
 a) Friedel-Craft reaction
 b) Diels-Alder reaction
 c) Reimer-Tiemann reaction
 d) Wittig reaction
224. The $-\text{OH}$ group of methyl alcohol cannot be replaced by chlorine by the action of:
 a) Chlorine
 b) HCl
 c) PCl_3
 d) PCl_5
225. The following substance can be used as a raw material for obtaining alcohol:

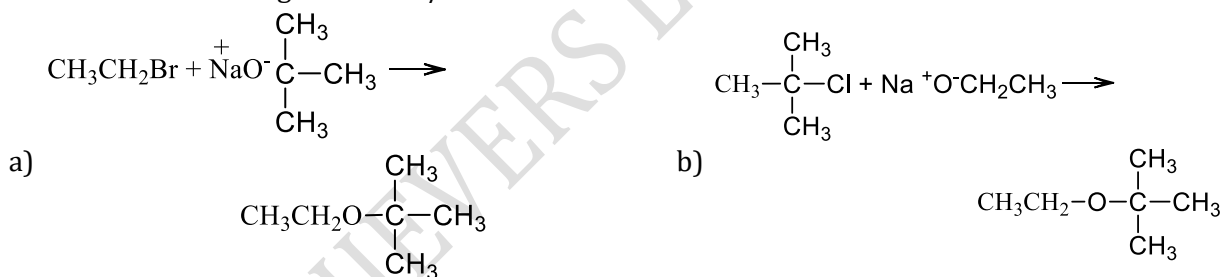
- a) Potatoes b) Molasses c) Maize d) All of these
226. On oxidation, an alcohol gives an aldehyde having the same number of carbon atoms as that of alcohol. The alcohol is:
- a) 1° alcohol
b) 2° alcohol
c) 3° alcohol
d) None of these
227. The end product of which of the following reaction is isomer of alcohols?
- a) $C_2H_4 \xrightarrow{B_2H_6} A \xrightarrow[NaOH]{H_2O_2} B$ b) $CHI_3 \xrightarrow[\Delta]{Ag} A \xrightarrow[Hg^{2+}]{Dil\ H_2SO_4} B \xrightarrow{Reduction} C$
- c) $C_2H_4 \xrightarrow{HI} A \xrightarrow{Aqueous\ KOH} B \xrightarrow[140^\circ C]{Conc.\ H_2SO_4} C$ d) $CH_3MgBr \xrightarrow{CH_2O} A \xrightarrow{H_2O} C$
228. From amongst the following alcohols the one that would react fastest with conc. HCl and anhydrous $ZnCl_2$ is
- a) 2-butanol b) 2-methyl propan-2-ol c) 2-methylpropanol d) 1 butanol
229. Which of the following is least soluble in water?
- a) C_2H_5OH b) C_3H_7OH c) C_4H_9OH d) $C_5H_{11}OH$
230. The reaction given below is called:
- $$C_2H_5OH + SOCl_2 \rightarrow C_2H_5Cl + SO_2 + HCl$$
- a) Kharasch effect b) Wurtz reaction c) Darzen's reaction d) Hunsdicker reaction
231. The compound with formula $C_4H_{10}O$ yields a compound C_4H_8O on oxidation. The compound $C_4H_{10}O$ is:
- a) An aldehyde b) An alcohol c) A ketone d) An anhydride
232. Reaction of CH_2-CH_2 with $RMgX$ followed
- 
- with hydrolysis produces :
- a) $RCHOHR$ b) RCH_2CH_2OH c) $RCHOHCH_3$ d) $RCH=CHOH$
233.  + $CH_2I_2 + NaOH \longrightarrow$
- The product is
- a)  b)  c)  d) 
234. C_2H_5OH cannot be dried by anhydrous $CaCl_2$, because:
- a) C_2H_5OH is soluble in water
b) Explosion takes place
c) C_2H_5OH reacts with $CaCl_2$
d) None of the above
235. Denatured spirit is mainly used as a:
- a) Good fuel
b) Drug
c) Solvent in preparing varnishes
d) Material in the preparation of oil
236. The dehydration of 2-methyl butanol with conc. H_2SO_4 gives
- a) 2-methyl butane as major product b) Pentene
c) 2-methyl but-2-ene as major product d) 2-methyl pent-2-ene
237. Ethers are not distilled to dryness for fear of explosion. This is due to formation of:

252. Which one can differentiate between C_2H_5OH and CH_3OH ?
 a) H_2O b) $Na_2CO_3 + I_2$ c) NH_3 d) HCl
253. Ethylene oxide when, treated with Grignard reagent yields:
 a) Cyclopropyl alcohol b) Primary alcohol c) Secondary alcohol d) Tertiary alcohol
254. Among the following compounds which can be dehydrated very easily?



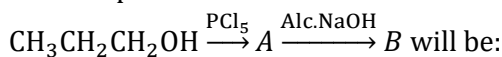
255. Catalytic dehydrogenation of a primary alcohol gives a
 a) Secondary alcohol b) Aldehyde c) Ketone d) Ester
256. Action of nitrous acid on ethyl amine gives:
 a) C_2H_6 b) C_2H_5OH c) NH_3 d) nitromethane
257. Which of the following compounds is most acidic?
 a) CH_4 b) C_2H_6 c) $CH \equiv CH$ d) C_2H_5OH
258. $2\text{-propanol} + NaBr \xrightarrow{\text{Reflux}} X$. What is X?
 a) 2-bromopropane
 b) Propane
 c) Propene
 d) Propanone

259. Which of the following reaction is/are feasible?



- c) Both (a) and (b) d) None of the above
260. Alcohols are neutral in character whereas thio-alcohols arein character.
 a) Strongly acidic b) Weakly acidic c) Basic d) Neutral
261. On boiling with concentrated hydrobromic acid, phenyl ethyl ether yields
 a) Phenol and ethane
 b) Phenol and ethyl bromide
 c) Bromobenzene and ethanol
 d) Bromobenzene and ethane
262. General formula of primary alcohol is:
 a) >COH b) >CHOH c) $-\text{CH}_2\text{OH}$ d) All of these

263. The compound B formed in the following sequence of reactions,



- a) Propyne b) Propene c) Propanal d) Propane
264. Formation of diethyl ether from ethanol is based on a
 a) Dehydration reaction b) Dehydrogenation reaction
 c) Hydrogenation reaction d) Homolytic fission reaction

265. Two aromatic compounds having formula C_7H_8O which are easily identifiable by $FeCl_3$ solution test (violet colouration) are
- a) *o*-cresol and benzyl alcohol
 b) *m*-cresol and *p*-cresol
 c) *o*-cresol and *p*-cresol
 d) Methyl phenyl ether and benzyl alcohol
266. In the reaction,
 $CH_3OH \xrightarrow{\text{Oxidation}} A \xrightarrow{NH_3} B$; *A* and *B* are
- a) HCHO, HCOONH₄
 b) HCOOH, HCOONH₄
 c) HCOOH, HCONH₂
 d) HCHO, HCONH₂
267. Acetic acid and methanol are obtained on a large scale by destructive distillation of:
- a) Wood
 b) Coal
 c) Turpentine oil
 d) CH₃COOH
268. Which of the following statement is incorrect?
- a) Enzymes are in colloidal state
 b) Enzymes are catalyst
 c) Enzymes can catalyse any reaction
 d) Urease is an enzyme
269. In the following sequence the product (C) is:
- $$CH_3CHO \xrightarrow[\text{Pd}]{H_2} (A) \xrightarrow{Na} (B) \xrightarrow{CH_3I} (C)$$
- a) Alcohol
 b) Ether
 c) Alkene
 d) None of these
270. In the reaction, the products formed are:
- $$(CH_3)_2CH_2 \cdot CH_2 \cdot O \cdot CH_2CH_3 + HI \xrightarrow{\text{Heated}}$$
- a) (CH₃)₂CHCH₃ + CH₃CH₂OH
 b) (CH₃)₂CH · CH₂OH + C₂H₆
 c) (CH₃)₂CHCH₂OH + C₂H₅I
 d) (CH₃)₂CH · CH₂I + CH₃CH₂OH
271. When glycerol is treated with a mixture of excess of conc. HNO₃ and H₂SO₄, the compound formed is:
- a) Glycerol mononitrate
 b) Glycerol dinitrate
 c) Glycerol trinitrate
 d) acrolein
272. Identify Z in the following series,
- $$CH_3-CH_2-CH_2OH \xrightarrow[160-180^\circ C]{\text{Conc. H}_2\text{SO}_4} X \xrightarrow{Br_2} Y \xrightarrow[2. NaNH_2]{1. \text{Alc. KOH}} Z:$$
- a) $\begin{array}{c} CH_3-CH-CH_2 \\ | \quad | \\ NH_2 \quad NH_2 \end{array}$
 b) $\begin{array}{c} CH_3-CH-CH_2 \\ | \quad | \\ OH \quad OH \end{array}$
 c) $\begin{array}{c} CH_3-C=CH_2 \\ | \\ OH \end{array}$
 d) CH₃-C≡CH
273. 2 mole of ethanol are burnt. The amount of CO₂ obtained will be:
- a) 132 g
 b) 44 g
 c) 176 g
 d) 88 g
274. In which case, methyl *t*-butyl ether is formed?
- a) (C₂H₅)₃CONa + CH₃Cl
 b) (CH₃)₃CONa + CH₃Cl
 c) (CH₃)₃CONa + C₂H₅Cl
 d) (CH₃)₂CHONa + CH₃Cl
275. Grignard reagent reacts with HCHO to produce
- a) Secondary alcohol
 b) Anhydride
 c) Acid
 d) Primary alcohol
276. Alcohol is not used in making:
- a) Chloral
 b) Chloroform
 c) Benzene
 d) Acetaldehyde
277. Among the alkenes which one produces tertiary butyl alcohol on acid hydration?
- a) CH₃CH₂CH = CH₂
 b) CH₃CH = CH - CH₃
 c) (CH₃)₂C = CH₂
 d) CH₃ - CH = CH₂
278. Diethyl ether is soluble in:
- a) Water
 b) Dilute HCl
 c) Conc. H₂SO₄
 d) Conc. KOH

279. Salicyl aldehyde is obtained when phenol is heated with CHCl_3 and aqueous NaOH . This reaction is known by which name?

- a) Carbyl amine reaction
b) Hofmann's reaction
c) Reimer-Tiemann reaction
d) Kolbe-Schmidt reaction

280. The conversion of *m*-nitrophenol to resorcinol involves respectively

- a) Hydrolysis, diazotization and reduction
b) Diazotization, reduction and hydrolysis
c) Hydrolysis, reduction and diazotization
d) Reduction, diazotization and hydrolysis

281. In Williamson's synthesis

- a) An alkyl halide is treated with sodium alkoxide
b) An alkyl halide is treated with sodium
c) An alcohol is heated with conc. H_2SO_4 at 130°C
d) None of the above

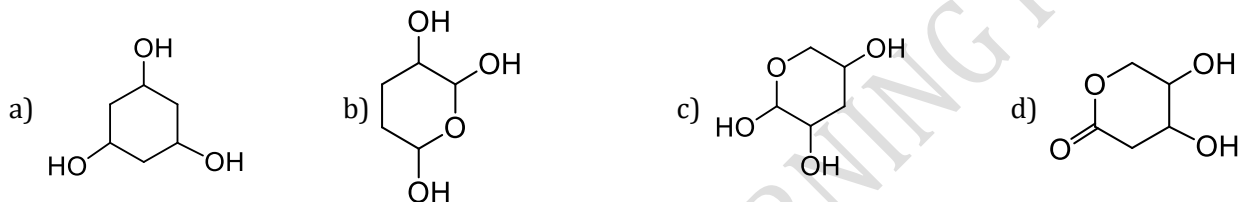
282. C – O – C angle would be maximum in

- a) $\text{CH}_3 - \text{O} - \text{CH}_3$
b) $\text{CH}_3 - \text{O} - \text{C}_2\text{H}_5$
c) $\text{C}_2\text{H}_5 - \text{O} - \text{C}_2\text{H}_5$
d) $(\text{CH}_3)_2\text{CH} - \text{O} - \text{CH}(\text{CH}_3)_2$

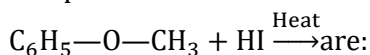
283. Ethers are very good solvent for which type of compounds?

- a) Lewis base
b) Acids
c) Lewis acid
d) None of these

284. In which molecule, cleavage by HIO_4 is not observed?



285. The products formed in the following reaction,



- a) $\text{C}_6\text{H}_5\text{OH}$ and CH_3I
b) $\text{C}_6\text{H}_5\text{I}$ and CH_3OH
c) $\text{C}_6\text{H}_5\text{CH}_3$ and HOI
d) C_6H_6 and CH_3OI

286. Acid catalysed hydration of alkenes except ethene leads to the formation of

- a) Mixture of secondary and tertiary alcohols
b) Mixture of primary and secondary alcohols
c) Secondary or tertiary alcohol
d) Primary alcohol

287. Which of the following compounds when heated with CO at 150°C and 500 atm pressure in presence of BF_3 forms ethyl propionate?

- a) $\text{C}_2\text{H}_5\text{OH}$
b) CH_3OCH_3
c) $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$
d) $\text{CH}_3\text{OC}_2\text{H}_5$

288. Which among the following compounds will give a secondary alcohol on reacting with Grignard reagent followed by acid hydrolysis?

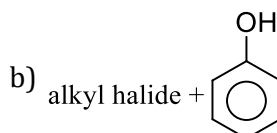
- I. HCHO
II. $\text{C}_2\text{H}_5\text{CHO}$
III. CH_3COCH_3
IV. HCOOC_2H_5

Select the correct answer using the codes given below.

- a) II only
b) III only
c) I and IV
d) II and IV

289. When phenolic ether is heated with HI , it yields

- a) Alkyl halide + aryl halide + water



- c) Alcohol + aryl halide

- d) None of the above

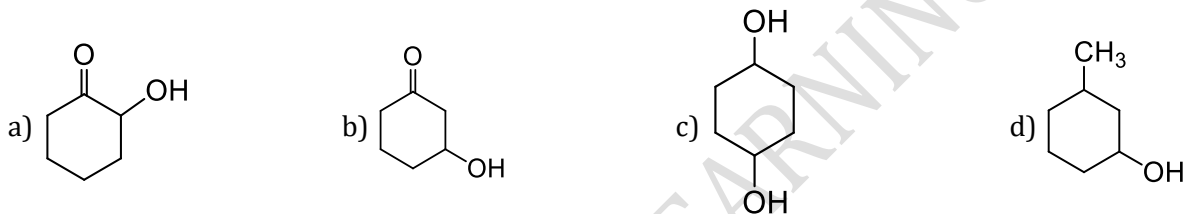
290. The red coloured compound formed during Victor-meyer's test for ethanol is:

- a) $\text{CH}_3\text{CHNO}_2-\text{Na}^+$
b) $\text{CH}_3\text{CH}_2\text{NOH}$
c) $\text{CH}_3\text{CH}-\text{NO}_2$
d) None of these
 NOH
 $\text{N}-\text{O}^-\text{Na}^+$

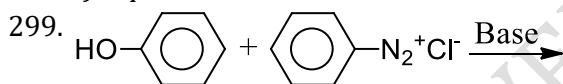
291. Picric acid is a stronger acid than acetic acid and benzoic acid. It contains

- a) $-\text{SO}_3\text{H}$ group
b) Two $-\text{COOH}$ groups

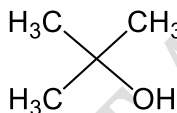
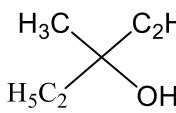
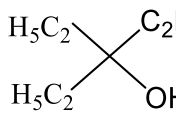
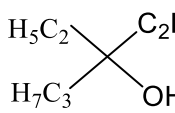
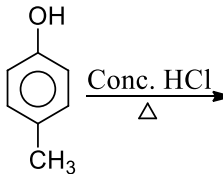
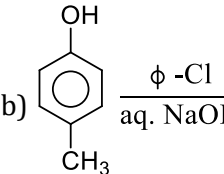
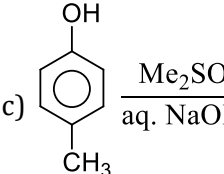
- c) Phenolic group d)
292. Which will not form yellow precipitate on heating with an alkaline solution of iodine?
 a) $\text{CH}_3\text{CH}_2\text{CHOHCH}_3$ b) $\text{CH}_3\text{CH}_2\text{CHOHCH}_3$ c) $\text{CH}_3\text{CH}_2\text{OH}$ d) CH_3OH
293. The cleavage of an aryl-alkyl ether with hydrogen halide will give:
 a) A molecule each of an alkyl halide and water
 b) A molecule each of an aryl halide and water
 c) A molecule each of an alkyl halide, aryl halide and water
 d) A molecule each of phenol and an alkyl halide
294. HBr reacts with $\text{CH}_2=\text{CH}-\text{OCH}_3$ under anhydrous conditions at room temperature to give:
 a) CH_3CHO and CH_3Br
 b) BrCH_2CHO and CH_3OH
 c) $\text{BrCH}_2-\text{CH}_2-\text{OCH}_3$
 d) $\text{H}_3\text{C}-\text{CHBr}-\text{OCH}_3$
295. In ether the active group is:
 a) Oxygen b) C_2H_5 c) Hydroxyl d) None of these
296. The correct order of solubility of 1° , 2° and 3° alcohol in water is:
 a) $3^\circ > 2^\circ > 1^\circ$ b) $1^\circ > 2^\circ > 3^\circ$ c) $3^\circ > 1^\circ > 2^\circ$ d) None of these
297. Maximum dehydration takes place in that of



298. The dehydration of butane-1-ol gives
 a) 1-butene as the main product b) 2-butene as the main product
 c) Equal amounts of 1-butene and 2-butene d) 2-methyl propene

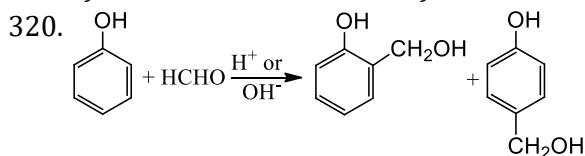


300. When an ether is treated with P_2S_5 we get:
 a) Thio-alcohol b) Thio-ester c) Thio-ether d) Thio-aldehyde
301. Order of reactivity of halogen acids towards an alcohol is
 a) $\text{HCl} > \text{HBr} > \text{HI}$ b) $\text{HBr} > \text{HI} > \text{HCl}$ c) $\text{HI} > \text{HBr} > \text{HCl}$ d) $\text{HI} > \text{HCl} > \text{HBr}$
302. In which of the following reactions the product is an ether?
 a) $\text{C}_6\text{H}_6 + \text{CH}_3\text{COCl}/\text{anhydrous AlCl}_3$ b) $\text{C}_2\text{H}_5\text{Cl} + \text{aq. KOH}$
 c) $\text{C}_6\text{H}_6 + \text{C}_6\text{H}_5\text{COCl}/\text{anhydrous AlCl}_3$ d) $\text{C}_2\text{H}_5\text{Cl} + \text{C}_2\text{H}_5\text{ONa}$
303. The b.p. of alcohols are....than corresponding thiols.
 a) More b) Less c) Same d) Either of these
304. Oxidation of 2-propanol by $\text{K}_2\text{Cr}_2\text{O}_7$ and dilute H_2SO_4 leads to the formation of:
 a) Propanal b) Propanoic acid c) Methanoic acid d) Propanone
305. When phenol is treated with excess of bromine water, it gives
 a) *m*-bromophenol b) *o*- and *p*-bromophenols
 c) 2, 4-dibromophenol d) 2, 4, 6-tribromophenol
306. An aqueous solution of ethyl alcohol:

- a) Turns blue litmus red
 b) Turns red litmus blue
 c) Does not affect the litmus colour
 d) Decolourises litmus
307. Enzymes are:
 a) Living organisms
 b) Dead organisms
 c) Complex nitrogenous substances produced from living cells
 d) None of the above
308. Which of the following is used as anaesthetic?
 a) CHCl_3
 b) $\text{C}_2\text{H}_5\text{OH}$
 c) $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$
 d) CHCl_3 and $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$
309. Picric acid is
 a) 2, 4, 6-tribromophenol
 b) *Sym*-trinitrophenol
 c) trinitrophenol
 d) 2, 4, 6-trinitrotoluene
310. The correct order of reactivity of hydrogen halides with ethyl alcohol is
 a) $\text{HF} > \text{HCl} > \text{HBr} > \text{HI}$
 b) $\text{HCl} > \text{HBr} > \text{HF} > \text{HI}$
 c) $\text{HBr} > \text{HCl} > \text{HI} > \text{HF}$
 d) $\text{HI} > \text{HBr} > \text{HCl} > \text{HF}$
311. Denatured alcohol is
 a) Ethanol + methanol
 b) Rectified spirit + methanol + naphtha
 c) Undistilled ethanol
 d) Rectified spirit
312. Which of the following reacts with water?
 a) CHCl_3
 b) CCl_4
 c) CCl_3CHO
 d) $\text{CH}_2\text{ClCH}_2\text{Cl}$
313. Formic acid is obtained when:
 a) $(\text{CH}_3\text{COO})_2\text{Ca}$ is heated with conc. H_2SO_4
 b) Calcium formate is heated with calcium acetate
 c) Glycerol is heated with oxalic acid
 d) Acetaldehyde is oxidized with $\text{K}_2\text{Cr}_2\text{O}_7$ and conc. H_2SO_4
314. Primary, secondary and tertiary alcohols are distinguished from one another by
 a) Ninhydrin test
 b) Tollen's reagent
 c) Lucas test
 d) Wittig reaction
315. Ethyl ester $\xrightarrow[\text{excess}]{\text{CH}_3\text{MgBr}}$ *P*. The product *P* will be
 a) 
 b) 
 c) 
 d) 
316. Metal alkoxides contain:
 a) Metal-carbon bond
 b) Metal-oxygen bond
 c) Metal-methyl bond
 d) None of these
317. 3-methyl-2-butanol on treatment with HCl gives predominantly:
 a) 2-chloro-2-methylbutane
 b) 2-chloro-3-methylbutane
 c) 2,2-dimethylpentane
 d) None of the above
318. Which reaction will occur?
 a) 
 b) 
 c) 
 d) None of these

319. No reacts rapidly with:

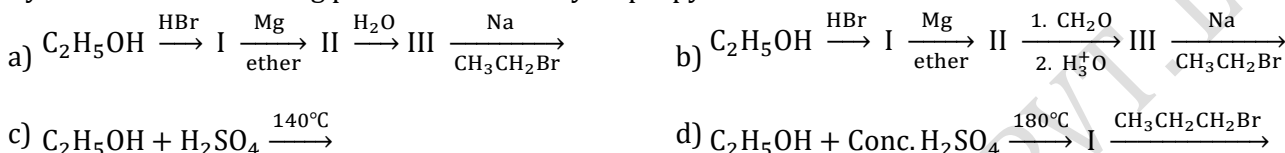
- a) 1° alcohol b) 2° alcohol c) 3° alcohol d) None of these



This reaction is called

- a) Reimer-Tiemann reaction b) Lederer-Manasse reaction
c) Sandmeyer reaction d) Kolbe's reaction

321. By which of the following procedures can ethyl *n*-propyl ether be obtained?



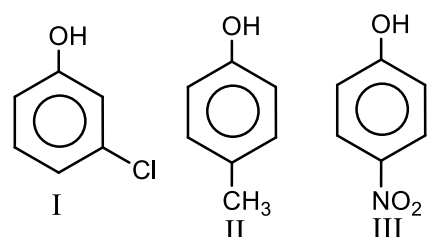
322. Which of the following statements is wrong in case of ethoxyethane?

- a) It is used as anaesthetic
b) It is inflammable
c) Its dipole moment is zero
d) It is soluble in conc. H_2SO_4

323. Which of the following alcohols is made by fermentation?

- a) Methanol b) Ethanol c) Glycerol d) Propanol

324. Correct acidic order of the following compounds is



- a) I > II > III b) III > I > II c) II > III > I d) I > III > II

325. How many isomers of $C_5H_{11}OH$ will be primary alcohols?

- a) 5 b) 4 c) 2 d) 3

326. Glycerol is oxidised by bismuth nitrate to produce

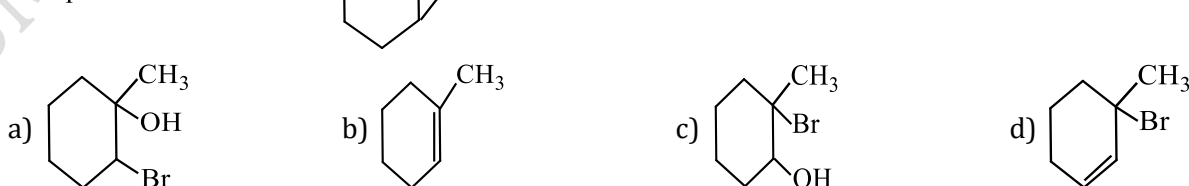
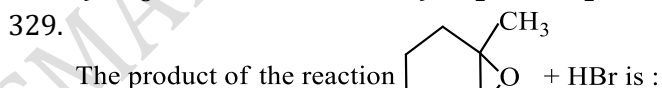
- a) Oxalic acid b) Mesoxalic acid c) Glyceric acid d) Glyoxalic acid

327. The alcohol that produces turbidity immediately with $ZnCl_2/conc. HCl$ at room temperature

- a) 1-hydroxy butane b) 2-hydroxy butane
c) 2-hydroxy-2-methyl propane d) 1-hydroxy-2-methyl propane

328. The formula for allyl alcohol is:

- a) $CH_3-CH=CHCl$ b) $CH_2=CHCH_2OH$ c) $CH_2ClCH_2CH_3$ d) None of these



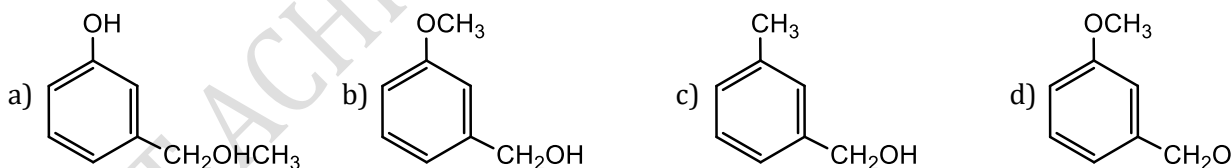
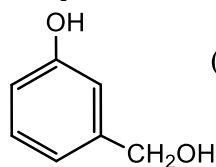
330. The compound that will react most readily with $NaOH$ to form methanol is:

- a) $(CH_3)_4N^+I^-$ b) CH_3OCH_3 c) $(CH_3)_3S^+I^-$ d) $(CH_3)_3C \cdot Cl$

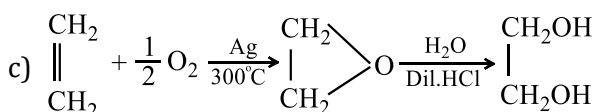
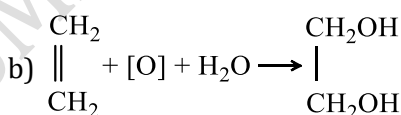
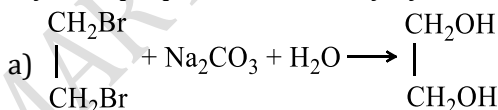
331. Ethylene reacts with 1% cold alkaline $KMnO_4$ to give:

- a) Oxalic acid b) Acetone c) Formaldehyde d) Glycol

332. In the Lucas test of alcohols, appearance of cloudiness is due to the formation of
 a) Aldehydes b) Ketones c) Acid chlorides d) Alkyl chlorides
333. Tertiary alcohol is obtained when Grignard reagent reacts with:
 a) Acetone b) Butanone c) Propanone d) All of these
334. On conversion into the Grignard reagent followed by treatment with absolute ethanol, how many isomeric alkyl chlorides would yield 2-methylbutane?
 a) 2
 b) 3
 c) 4
 d) 5
335. Ether on reacting with P_2S_5 form
 a) Diethyl sulphide b) Thioalcohol c) Thioether d) Thioaldehyde
336. The best reagent to convert pent-3-en-2-ol into pent-3-en-2-one is:
 a) Acidic $KMnO_4$
 b) Alkaline $K_2Cr_2O_7$
 c) Chromium anhydride in glacial acetic acid
 d) Pyridinium chlorochromate
337. For one mole of glycerol, how many mole of acetyl chloride are required for complete acetylation?
 a) One b) Two c) Three d) Four
338. In the reaction involving C—OH bond, in alcohols the order of reactivity is:
 a) $1^\circ > 2^\circ > 3^\circ$ b) $3^\circ > 2^\circ > 1^\circ$ c) $2^\circ > 3^\circ > 1^\circ$ d) None of these
339. Which is not correct?
 a) Phenol is more acidic than acetic acid. b) Ethanol is less acidic than phenol.
 c) Ethanol has higher boiling point than ethane. d) Ethane is non-linear molecule.
340. Under drastic conditions all the alcohols can be oxidized to carboxylic acids but the following alcohols give carboxylic acids having same number of carbon atoms:
 a) Primary b) Secondary c) Tertiary d) None of these
341. The product A is



342. Glycol is prepared industrially by the following reactions:



- d) None of the above
343. Scientific aspect of fermentation was first studied by:
 a) Pasteur b) Brot c) Buchner d) Liebig

344. Ethyl alcohol is also known as:

- a) Spirit of wine b) Methyl carbinol c) Grain alcohol d) All of these

345. Decreasing order of boiling points of *n*-pentanol (A), *n*-pentane (B), 3-pentanol (C) and 2,2-dimethyl propanol (D) is :

- a) A, C, D, B b) B, D, C, A c) C, A, D, B d) None of these

346. CH₃COOH reacts rapidly with:

- a) CH₃CH₂OH b) (CH₃)₂CHOH c) (CH₃)₃COH d) All of these

347. Reaction of *t*-butyl bromide with sodium methoxide produces:

- a) Isobutane b) Isobutylene c) Sodium *t*-butoxide d) *t*-butyl methyl ether

348. Which of the following reactions can be used for the preparation of tert. butylmethyl ether?

- a) CH₃Br + (CH₃)₃CO⁻Na⁺ → b) (CH₃)₃CCl + CH₃O⁻Na⁺ →
c) (CH₃)₃OH + CH₃Cl → d) (CH₃)₃CCl + CH₃OH →

349. Alcohols cannot be prepared from

- a) C₂H₅Br + aq. KOH → b) (CH₃)₂C = O $\xrightarrow{\text{LiAlH}_4}$ c) $\text{CH}_3 - \overset{\text{O}}{\parallel} \text{C} - \text{OCH}_3 \xrightarrow{\text{Na/EtOH}}$ d) CH₃CH₂Cl $\xrightarrow{\text{H}_2\text{O}}$

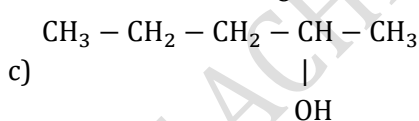
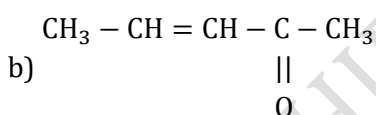
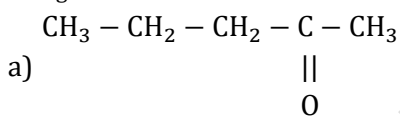
350. Alcohols of low molecular weight are:

- a) Soluble in water
b) Soluble in water on heating
c) Insoluble in all solvents
d) Soluble in all solvents

351. CH₃CH = CH - CH - CH₃



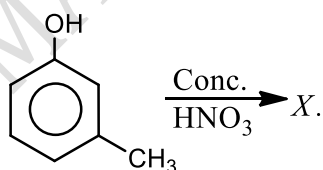
$\xrightarrow[\text{reagent}]{\text{Jones}}$? product is



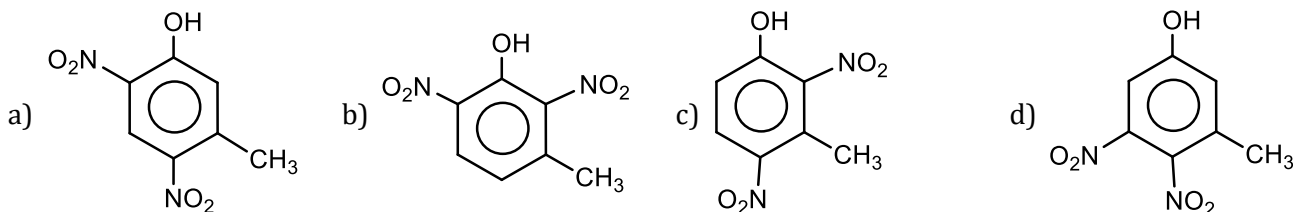
352. 23 g of sodium react with CH₃OH to give:

- a) 1 mole of O₂ b) 1/2 mole of H₂ c) 1 mole of H₂ d) None of these

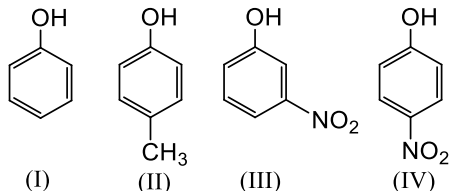
353. In the reaction for dinitration



The major dinitrated product X is



354. In the following compounds the order of acidic strength is



- a) III > IV > I > II b) I > IV > III > II c) II > I > III > IV d) IV > III > I > II

355. Diethyl ether may behave as:

- a) Lewis acid b) Lewis base c) Oxidising agent d) Reducing agent

356. For drying ether sodium metal can be used, but it cannot be used for drying ethyl alcohol because:

- a) Na is very reactive
b) Ether reacts easily with Na
c) Ethyl alcohol reacts with sodium metal
d) None of the above

357. Saccharification is the process of conversion of:

- a) Sugar solution into alcohol
b) Alcohol into starch
c) Starch into alcohol
d) Starch into alcohol

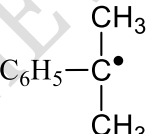
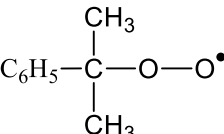
358. $R-CH=CH_2$ reacts with B_2H_6 in presence of H_2O_2 to give:

- a) $RCOCH_3$ b) $RCHOHCH_2OH$ c) RCH_2CH_2OH d) RCH_2CHO

359. Sodium phenoxide reacts with CO_2 at 400 K and 4.7 atm pressure to give

- a) Catechol b) Salicylaldehyde c) Sodium salicylate d) Benzoic acid

360. The reaction of *iso*-propylbenzene with oxygen in the presence of a catalytic amount of HBr followed by treatment with an acid gives phenol. The reaction proceeds through the intermediate formation of

- a) $HO\dot{O}$ b)  c)  d) All of these

361. Product formed when HCHO is heated with KOH (aq):

- a) CH_4 b) CH_3CHO c) CH_3OH d) C_2H_2

362. Diacetone alcohol is obtained by the reaction of:

- a) Acetone and ethanol
b) Acetone and conc. H_2SO_4
c) Acetone and $Ba(OH)_2$
d) Acetone and $Al(OH)_3$

363. The general formula of ether is:

- a) $R-CHO$ b) $R-CO-R'$ c) $R-O-R'$ d) $R-COOR'$

364. The enzyme pepsin hydrolyses:

- a) Proteins to amino acids
b) Fats to fatty acids
c) Glucose to ethyl alcohol
d) Polysaccharides to monosaccharides

365. CH_3CH_2OH convert into CH_3CHO in the presence of

a) $\text{Na}_2\text{Cr}_2\text{O}_7$ and NaOH

c) NaOH

b) $\text{Na}_2\text{Cr}_2\text{O}_7$ and dil. H_2SO_4

d) Fe in presence of NaOH

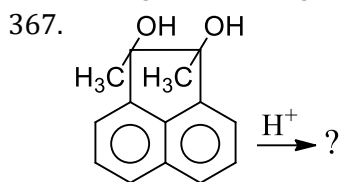
366. Which of the following combinations can be used to synthesise ethanol?

a) CH_3MgI and CH_3COCH_3

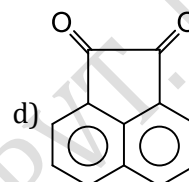
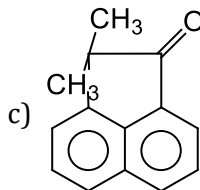
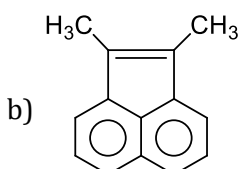
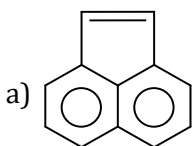
b) CH_3MgI and $\text{C}_2\text{H}_5\text{OH}$

c) CH_3MgI and $\text{CH}_3\text{COOC}_2\text{H}_5$

d) CH_3MgI and HCHO



Product is



368. The boiling point of ethyl alcohol is much higher than that of dimethyl ether and $\text{C}_2\text{H}_5\text{SH}$, though both have the same molecular weight. The reason for this is:

a) Ether is insoluble in water

b) Methyl groups are attached to oxygen in ether

c) Dipole moment of ethyl alcohol is less

d) Ethyl alcohol shows hydrogen bonding

369. Acetylene and formaldehyde interact in the presence of copper acetylide as a catalyst to furnish the compound:

a) Butyne-1, 4-diol

b) Butyne-2

c) Ethylene-1, 4-diol

d) None of these

370. An unknown compound 'D' first oxidised to aldehyde and then acetic acid by a dilute solution of $\text{K}_2\text{Cr}_2\text{O}_7$ and H_2SO_4 . The compound 'D' is

a) CH_3OH

b) $\text{C}_2\text{H}_5\text{OH}$

c) $\text{CH}_3\text{CH}_2\text{COOH}$

d) $\text{CH}_3\text{CH}_2\text{CHO}$

371. Glycerol on oxidation with Fenton's reagent produces:

a) Glyceraldehyde

b) Dihydroxy acetone

c) Tartaric acid

d) Glyceraldehyde and dihydroxy acetone

372. An organic compound $\text{C}_3\text{H}_6\text{O}$ neither gives precipitate with semicarbazide nor reacts with sodium. It could be

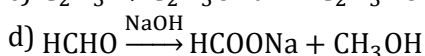
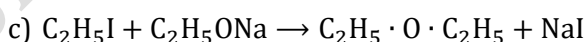
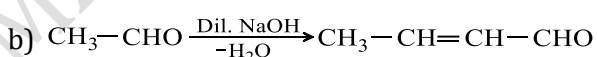
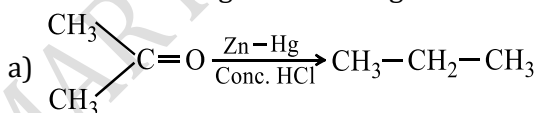
a) $\text{CH}_3\text{CH}_2\text{CHO}$

b) CH_3COCH_3

c) $\text{CH}_2 = \text{CHCH}_2\text{OH}$

d) $\text{CH}_2 = \text{CHOCH}_3$

373. Which one among the following is Williamson's synthesis?



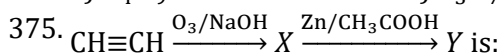
374. Which compound is capable of strong hydrogen bonding?

a) $\text{C}_4\text{H}_9\text{OH}$

b) $\text{C}_3\text{H}_7\text{OH}$

c) $\text{C}_2\text{H}_5\text{OH}$

d) $\text{C}_5\text{H}_{11}\text{OH}$



a) $\text{CH}_2\text{OH-CH}_2\text{OH}$

b) $\text{CH}_3\text{CH}_2\text{OH}$

c) CH_3COOH

d) CH_3OH

376. Which of the following statements is not correct?

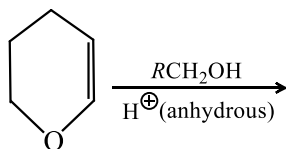
a) All alcohols are miscible with water

b) Only lower alcohols are miscible with water

c) All alcohols are not poisonous

d) Methanol is not poisonous

377. The major product of the following reaction is:



- a) A hemiacetal
- b) An acetal
- c) An ether
- d) An ester

378. Widespread deaths due to liquor poisoning occurs due to presence of:

- a) Lead compounds in liquor
- b) Methyl alcohol in liquor
- c) Ethyl alcohol in liquor
- d) Carbonic acid in liquor

379. An alcohol produced during the manufacture of soap is:

- a) Butanol
- b) Glycerol
- c) Ethanol
- d) Ethylene glycol

380. Which of the following reactions gives an dialkyl oxonium salt?

- a) Ethyl alcohol + sodium metal
- b) Diethyl ether + hydrochloric acid
- c) Tertiary amine + alkyl halide
- d) Nitromethane + sodium metal

381. The reaction of *neo*-pentyl alcohol with concentrated HCl gives

- a) *neo*-pentyl chloride
- b) 2-chloro-2-methylbutane
- c) 2-methyl-2-butene
- d) A mixture of *neo*-pentyl chloride and 2-methyl-2-butene

382. RCH_2CH_2OH can be converted to RCH_2CH_2COOH by the following sequence of steps

- a) PBr_3, KCN, H_3O^+
- b) $PBr_3, KCN, H_2/P^+$
- c) KCN, H_3O^+
- d) HCN, PBr_3, H_3O^+

383.
A, A is

- a)
- b)
- c)
- d)

384. When phenyl magnesium bromide reacts with *t*-butanol, the product would be

- a) Benzene
- b) Phenol
- c) *t*-butyl benzene
- d) *t*-butyl phenyl ether

385. Which of the following is not cleaved by HIO_4 ?

- A. Glycerol
- B. Glycol
- C. Propan-1,3-diol
- D. Methoxy-2-propanol

- a) A, B, C, D
- b) A, B
- c) B, C
- d) C, D

386. Ethyl propanoate on reduction with $LiAlH_4$ yields:

- a) Methanol
- b) Ethanol and propanol
- c) Propane
- d) Mixture of ethanol and methanol

387. When acetyl chloride is reduced with $LiAlH_4$, the product formed is:

- a) Methyl alcohol
- b) Ethyl alcohol
- c) Acetaldehyde
- d) Acetone

388. The correct order of acid strength of the following compounds is

- V. Phenol

VI. *p*-cresol

VII. *m*-nitrophenol

VIII. *p*-nitrophenol

a) III > II > I > IV

b) IV > III > I > II

c) II > IV > I > III

d) I > II > IV > III

389. Alkyd resins, made of glycerol are used:

a) As substitute for white chalk

b) Instead of alkanes

c) For paints and coatings

d) For making alcohol

390. Which reagent is more effective to convert but-2-enal to but-2-enol?

a) KMnO_4

b) NaBH_4

c) H_2/Pt

d) $\text{K}_2\text{Cr}_2\text{O}_7/\text{H}_2\text{SO}_4$

391. An organic compound *A* containing C, H and O has a pleasant odour with boiling point of 78°C . On boiling *A* with concentrated H_2SO_4 , a colourless gas is produced which decolourises bromine water and alkaline KMnO_4 . The organic liquid *A* is

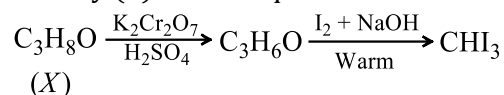
a) $\text{C}_2\text{H}_5\text{Cl}$

b) $\text{C}_2\text{H}_5\text{COOCH}_3$

c) $\text{C}_2\text{H}_5\text{OH}$

d) C_2H_6

392. Identify (*X*) in the sequence:



a) $\text{CH}_3\text{—CH}_2\text{—CH}_2\text{OH}$

b) $\begin{array}{c} \text{CH}_3\text{—CH—CH}_3 \\ | \\ \text{OH} \end{array}$

c) $\text{CH}_3\text{—O—CH}_2\text{—CH}_3$

d) $\text{CH}_3\text{—CH}_2\text{—CHO}$

393. Phenol on reaction with CHCl_3 and NaOH give benzaldehyde. Intermediate of this reaction is

a) Carbocation

b) Carbanion

c) Radical

d) Carbene

394. Increasing order of acid strength among *tert.* butanol, isopropanol and ethanol is:

a) Ethanol, isopropanol, *tert.* butanol

b) *tert.* butanol, isopropanol, ethanol

c) Isopropanol, *tert.* butanol, ethanol

d) *tert.* butanol, ethanol, isopropanol

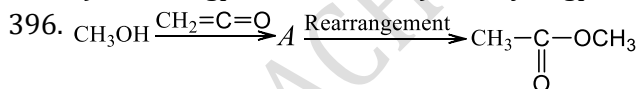
395. A neutral compound gives colour with ceric ammonium nitrate. It suggests that the compound has:

a) Alcohol gp.

b) Aldehyde gp.

c) Ether gp.

d) Ketone gp.



In the above reaction *A* is

a) $\begin{array}{c} \text{CH}_3\text{—C}=\text{CH}_2 \\ | \\ \text{OH} \end{array}$

b) $\begin{array}{c} \text{CH}_2=\text{C—OCH}_3 \\ | \\ \text{OH} \end{array}$

c) $\text{CH}_2 = \text{CHOH}$

d) None of these

397. Which compound will have highest boiling point?

a) CH_4

b) CH_3OH

c) $\text{C}_2\text{H}_5\text{OH}$

d) HCHO

398. What is formed when glycerol reacts with excess of HI ?

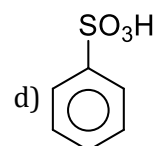
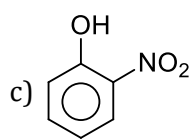
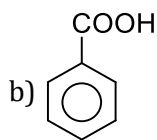
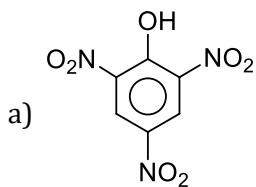
a) $\begin{array}{c} \text{CH}_2\text{OH} \\ | \\ \text{CHI} \\ | \\ \text{CH}_2\text{OH} \end{array}$

b) $\begin{array}{c} \text{CH}_2 \\ || \\ \text{CH} \\ | \\ \text{CH}_2\text{I} \end{array}$

c) $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CHI} \\ | \\ \text{CH}_3 \end{array}$

d) $\begin{array}{c} \text{CH}_2\text{OH} \\ | \\ \text{C}=\text{O} \\ | \\ \text{CH}_3 \end{array}$

399. Which of the following is not soluble in NaHCO_3 solution?



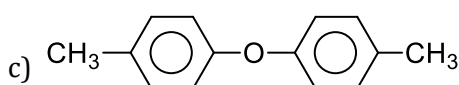
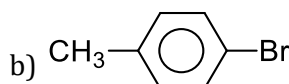
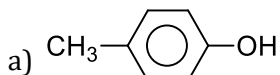
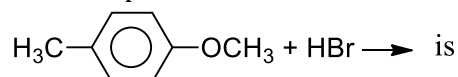
400. Pyroligneous acid doesn't contain

- a) Acetic acid b) C_2H_5OH c) CH_3OH d) CH_3COCH_3

401. Power alcohol is a mixture of petrol and alcohol in the ratio:

- a) 4 : 1 b) 1 : 4 c) 2 : 1 d) 1 : 2

402. The final product obtained in the reaction,



d) None of the above

403. Which one of the following gases is liberated when ethyl alcohol is heated with methyl magnesium iodide?

- a) Methane b) Ethane c) Carbon dioxide d) Propane

404. Phenol \xrightarrow{X} forms a tribromo derivative "X" is

- a) Bromine in benzene b) Bromine in water
c) Potassium bromide solution d) Bromine in carbon tetrachloride at $0^\circ C$

405. Phenol is more acidic than alcohol because

- a) Phenol is more soluble in polar solvents b) Alcohol does not lose hydrogen atom
c) Phenoxide ion is stabilised by resonance d) Phenoxide ion doesn't exhibit resonance

406. Which of the following is the best method for making *iso*-propylmethyl ether?

- a) $CH_3I + (CH_3)_2CHOH \rightarrow$ b) $CH_3I + (CH_3)_2CHO^- \rightarrow$
c) $(CH_3)_2CHI + CH_3O^- \rightarrow$ d) $(CH_3)_2CHCl + CH_3OH \rightarrow$

407. If the boiling point of ethanol (molecular weight=46) is $78^\circ C$, what is the boiling point of diethyl ether? (molecular weight=74)

- a) $100^\circ C$ b) $78^\circ C$ c) $86^\circ C$ d) $34^\circ C$

408. An organic compound A reacts with PCl_5 to give B. The compound B with sodium metal gives *n*-butane. Thus, A and B are:

- a) C_2H_5OH and C_2H_5Cl
b) C_2H_5Cl and C_2H_5ONa
c) C_3H_7OH and $CH_3CH_2CH_2OCl$
d) C_4H_9OH and C_4H_9OCl

409. Acetic acid is obtained from ethyl alcohol by the process of:

- a) Distillation b) Reduction c) Fermentation d) Dehydration

410. Intermolecular dehydration of alcohols gives:

- a) Alkenes b) Ketones c) Alkynes d) Ethers

411. Glycerol on warming with excess of HI:

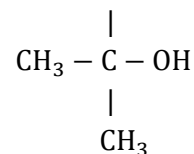
- a) 2-iodopropane b) 1-iodopropane c) 1,2,3-tri-iodopropane d) None of these

412. Cumene process is the most important commercial method for the manufacture of phenol. Cumene is

- a) 1-methyl ethyl benzene b) Ethyl benzene
c) Vinyl benzene d) Propyl benzene

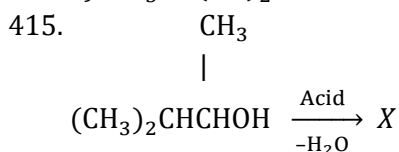
413. Which of the following alcohols cannot be oxidized by potassium dichromate in the presence of sulphuric acid?

- a) CH_3CH_2OH b) C_6H_5OH c) $C_6H_5CHOHCH_3$ d) CH_3



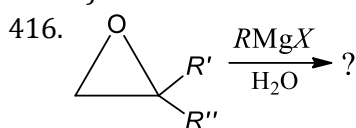
414. Which of the following is stable compound?

- a) $\text{CCl}_3\text{CH}(\text{OH})_2$ b) $\text{CH}_2=\text{CHOH}$ c) $\text{CH}_3-\text{CH}(\text{OH})_2$ d) $\text{HC}(\text{OH})_3$



The major product obtained in this reaction is

- a) $(\text{CH}_3)_2\text{CHCH}=\text{CH}_2$
 b) $(\text{CH}_3)_2\text{C}=\text{CH}-\text{CH}_3$
 c) 1 : 1 mixture of (a) and (b)
 d) None of the above



Product obtained is

- a) $\begin{array}{c} R \\ | \\ R' - \text{C} - \text{CH}_2\text{OH} \\ | \\ R'' \end{array}$ b) $\begin{array}{c} R' \\ | \\ \text{RCH}_2 - \text{C} - \text{OH} \\ | \\ R'' \end{array}$ c) $\begin{array}{c} R \\ | \\ R'\text{CH}_2 - \text{C} - \text{OH} \\ | \\ R'' \end{array}$ d) $\begin{array}{c} R \\ | \\ R''\text{CH}_2 - \text{C} - \text{OH} \\ | \\ R' \end{array}$

417. The reaction involved in the oil of winter green test is salicylic acid $\xrightarrow[\text{Conc. H}_2\text{SO}_4]{\Delta}$ product. The product is treated with Na_2CO_3 solution. The missing reagent in the above reaction is

- a) Phenol b) NaOH c) Ethanol d) Methanol

418. An example of a compound with functional group $-\text{O}-$ is:

- a) Acetic acid b) Methyl alcohol c) Diethyl ether d) Acetone

419. Phenol gives characteristic colouration with

- a) Iodine solution b) Bromine water
 c) Aqueous FeCl_3 solution d) Ammonium hydroxide

420. The correct order of the ease with which primary, secondary and tertiary alcohols can be dehydrated using concentrated H_2SO_4 is :

- a) Tertiary > secondary > primary
 b) Primary > secondary > tertiary
 c) Secondary > tertiary > primary
 d) Secondary > primary > tertiary

421. Which are explosives?

- a) Wood pulp (dynamite)
 b) Cellulose nitrate (blasting gelatin)
 c) Gun cotton or cellulose nitrate and Vaseline (cordite)
 d) All of the above

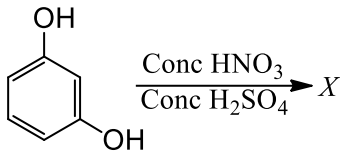
422. Some time explosion occurs while distilling ethers. It is due to the presence of

- a) Oxide b) Ketones c) Aldehyde d) Peroxides

423. Acidity of phenol is due to

- a) Hydrogen bonding b) Phenolic group
 c) Benzene ring d) Resonance stabilisation of its anion

424. Glycerol on reacting with sodium gives:

- a) Disodium glycerollate
 b) Monosodium glycerollate
 c) Trisodium glycerollate
 d) None of the above
425. The compound which reacts fastest with Lucas reagent at room temperature is
 a) 1-butanol b) 2-butanol c) 2-methylpropanol d) 2-methylpropan-2-ol
426. Mild oxidation of glycerol with $\text{H}_2\text{O}_2/\text{FeSO}_4$ gives
 a) Glyceraldehyde
 b) Dihydroxy acetone
 c) Both (a) and (b)
 d) None of the above
427. To prepare 2-propanol from CH_3MgI , the other chemical required is:
 a) HCHO b) CH_3CHO c) $\text{C}_2\text{H}_5\text{OH}$ d) CO_2
428. The first oxidation product of primary alcohol is:
 a) A ketone b) An ester c) An aldehydes d) A hydrocarbon
429. Phenol is soluble in water because
 a) Of weak hydrogen bonding between phenol and water molecules
 b) Of intermolecular hydrogen bonding between phenol molecules
 c) If has a higher boiling point than that of water
 d) None of the above
430. Consider the following reaction,

 product X is
 a) Picric acid b) Styphnic acid c) Salicylic acid d) Benzoic acid
431. Glycerol on treatment with oxalic acid at 110°C forms:
 a) Formic acid b) CO_2 and CO c) Allyl alcohol d) glycol
432. At 530 K, glycerol reacts with oxalic acid to produce
 a) Allyl alcohol b) Formic acid c) Glyceraldehydes d) Formaldehyde
433. Absolute alcohol is prepared from rectified spirit by:
 a) Fractional distillation
 b) Steam distillation
 c) Azeotropic distillation
 d) Vacuum distillation
434. Williamson's synthesis is used to prepare
 a) Diethyl ether b) Acetone c) PVC d) Bakelite
435. Anisole can be prepared by the action of methyl iodide on sodium phenate. The reaction is called
 a) Wurtz's reaction b) Williamson's reaction
 c) Fittig's reaction d) Etard's reaction
436. When *o*- or *p*-phenol sulphonic acid is treated with bromine water, the product formed is
 a) 2, 4-dibromophenol b) 2, 4, 6-tribromophenol
 c) 3-bromophenol boric acid d) 3, 5-dibromophenol
437. Esterification of alcohols involves:
 a) H of alcohol and OH of acid
 b) OH of alcohol and H of acid
 c) OH of alcohol and OH of acid
 d) H of alcohol and H of acid
438. An organic liquid A containing C, H and O has a pleasant odour with a b.p. of 78°C . On boiling A with conc. H_2SO_4 a colourless gas is produced which decolourises bromine water and alkaline KMnO_4 . One mole of

this gas also takes one mole of H_2 . The organic liquid A is:

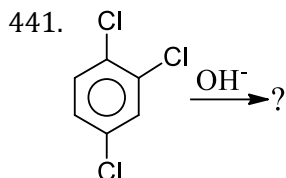
- a) C_2H_5Cl b) C_2H_5CHO c) C_2H_6 d) C_2H_5OH

439. In the presence of an acid catalyst, two alcohol molecules will undergo dehydration to give:

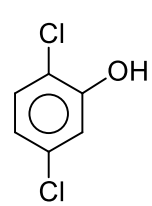
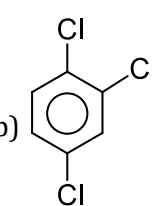
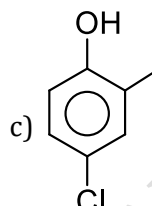
- a) Ester
b) Anhydride
c) Ether
d) Unsaturated hydrocarbon

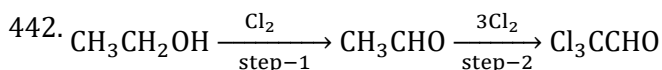
440. Complete combustion of ether gives:

- a) C_2H_5OH b) CO_2 and H_2O c) C_2H_4 d) C_2H_2



Product is

- a)  b)  c)  d) Both (a) and (b)



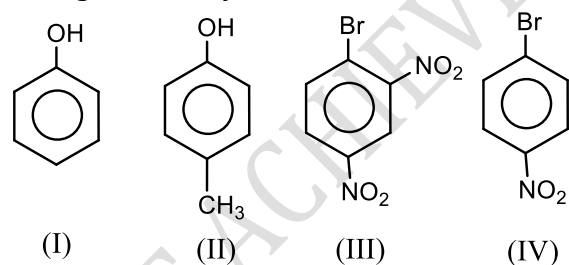
In above reactions the role of Cl_2 in step-1 and step-2 respectively is

- a) Oxidation, chlorination b) Reduction, chlorination
c) Oxidation, addition d) Reduction, substitution

443. An enzyme which brings about the conversion of starch into maltose is known as:

- a) Maltase b) Zymase c) Invertase d) Diastase

444. Strength of acidity is in order

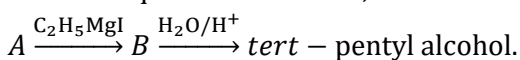


- a) II > I > III > IV b) III > IV > I > II c) I > IV > III > II d) IV > III > I > II

445. Ethyl alcohol is denatured by:

- a) Methanol and formic acid
b) KCN
c) CH_3OH and C_6H_6
d) CH_3OH and pyridine

446. For the sequence of reaction,



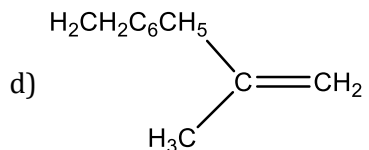
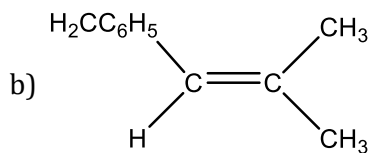
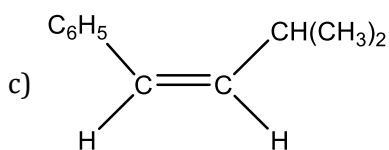
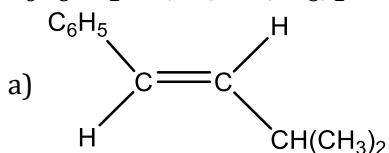
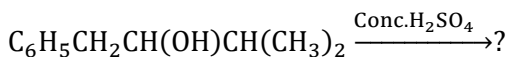
The compound A in the sequence is

- a) 2-butanone b) Acetaldehyde c) Acetone d) Propanal

447. A compound with molecular formula $C_4H_{10}O_3$ is converted by the action of acetyl chloride to a compound with molecular weight 190. The original compound has:

- a) One OH group b) Two OH groups c) Three OH groups d) No OH group

448. The main product of the following reaction is



449. Which of the following compound is oxidised to prepare methyl ethyl ketone?

- a) 2-propanol b) 1-butanol c) 2-butanol d) Ter-butyl alcohol

450. The value of C—O—C angle in ether molecule is:

- a) 180° b) 150° c) 90° d) 110°

451. What amount of bromine will be required to convert 2 g of phenol into 2, 4, 6-tribromo phenol?

- a) 4.00 b) 6.00 c) 10.22 d) 20.44

452. Chlorex which is a good solvent for aromatic impurities is:

- a) Dichloro dimethyl ether
b) Dichlorodiethyl ether
c) Mono chloro ether
d) Diethyl ether

453. The characteristic group of secondary alcohol is:

- a) —CH₂OH
b)
c)
d) —COOH

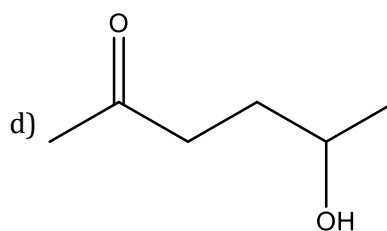
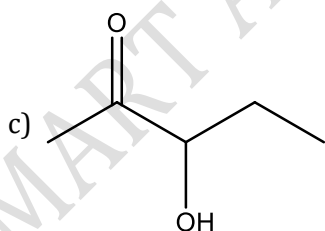
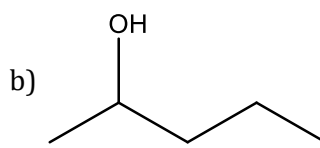
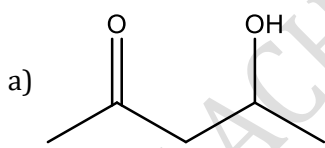
454. The compound on dehydrogenation gives a ketone. The original compound is

- a) Primary alcohol b) Secondary alcohol c) Tertiary alcohol d) Carboxylic acid

455. 1-phenyl ethanol can be prepared from benzaldehyde by the action of:

- a) CH₃Br b) CH₃Br and AlBr₃ c) CH₃I, Mg and HOH d) C₂H₅I and Mg

456. Which one of the following will most readily be dehydrated in acidic conditions?



457. On reduction with LiAlH₄, a ketone yields:

- a) Primary alcohol b) Secondary alcohol c) Tertiary alcohol d) All of these

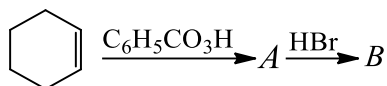
458. The decreasing order of boiling points of 1°, 2°, 3° alcohol is:

- a) 1° > 2° > 3° b) 3° > 2° > 1° c) 2° > 1° > 3° d) None of these

459. The formula for vinyl alcohol is:

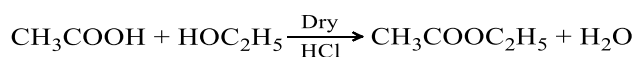
- a) CH₂=CHCH₂OH b) C₆H₅CHOHCH₃ c) CH₂=COHCH₃ d) CH₂=CHOH

460. Consider the reaction,



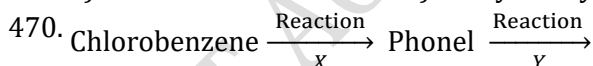
A and B respectively are

- a) 1, 2-epoxycyclohexane, *trans*-2-bromocyclohexanol
 b) 1, 2-epoxycyclohexane, *cis*-2-bromocyclohexanol
 c) *trans*-2-bromocyclohexanol 1,2-epoxyethane
 d) *cis*-2-bromocyclohexanol 1,2-epoxyethane
461. Alcoholic fermentation of sugar gives 3% glycerol. The yield can be increased to 25% if fermentation is made in presence of:
 a) Na₂SO₄ b) Na₃PO₄ c) Na₂S d) None of these
462. The reaction,



is called :

- a) Fischer-Speier esterification
 b) Clemmensen condensation
 c) Claisen condensation
 d) None of the above
463. When isopropyl alcohol vapours are passed over heated copper it gives:
 a) Acetone b) Ethyl alcohol c) Methyl alcohol d) Acetaldehyde
464. Glycol on oxidation with....gives oxalic acid.
 a) Acidic KMnO₄ b) Acidic K₂Cr₂O₇ c) Nitric acid d) HIO₄
465. When compound X is oxidised by acidified potassium dichromate, compound Y is formed. Compound Y on reduction with LiAlH₄ gives X. X and Y respectively are
 a) C₂H₅OH, CH₃COOH
 b) CH₃COCH₃, CH₃COOH
 c) C₂H₅OH, CH₃COCH₃
 d) CH₃CHO, CH₃COCH₃
466. The reaction of ethanol with H₂SO₄ does not give:
 a) C₂H₄ b) C₂H₅OC₂H₅ c) C₂H₂ d) C₂H₅HSO₄
467. Lucas reagent produces cloudiness immediately with:
 a) *n*-butanol b) Isopropanol c) *n*-propanol d) Tertiary butanol
468. Primary alcohols can be obtained from the reaction of the RMgX with:
 a) HCHO b) H₂O c) CO₂ d) CH₃CHO
469. The major product obtained on interaction of phenol with sodium hydroxide and carbon dioxide is
 a) Benzoic acid b) Salicylaldehyde c) Salicylic acid d) Phthalic acid



Salicylaldehyde X and Y reactions are respectively.....

- a) Fires rearrangement and Kolbe-Schmidt b) Cumene and Reimer-Tiemann
 c) Dow and Reimer-Tiemann d) Dow and Friedel-Craft
471. Phenol $\xrightarrow{\text{NaNO}_2/\text{H}_2\text{SO}_4}$ B $\xrightarrow{\text{H}_2\text{O}}$ C $\xrightarrow{\text{NaOH}}$ D
 Name of the above reaction is
 a) Liebermann's reaction b) Phthalein fusion test
 c) Reimer-Tiemann reaction d) Schotten-Baumann reaction

472. Vinyl carbinol is:

- a) HOH₂C—CH=CH₂ b) CH₃C(OH)=CH₂ c) CH₃—CH=CH—OH d) $\begin{array}{c} \text{CH}_3-\text{C}=\text{CH}_2 \\ | \\ \text{CH}_3\text{OH} \end{array}$

473. Choose the incorrect statement

- a) Ordinary ethyl alcohol is known as rectified spirit
 b) The alcohol sold in the market for polishing etc, is known as methylated spirit

c) Absolute alcohol is 100% ethanol

d) Power alcohol is 100% ethanol

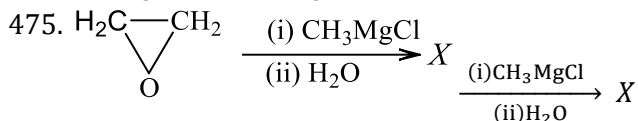
474. The reaction of ethanol with concentrated H_2SO_4 at room temperature gives

a) $\text{CH}_3\text{CH}_2\text{OH}_2^+\text{HSO}_4^-$

b) $\text{CH}_3\text{CH}_2\text{OSO}_2\text{OH}$

c) $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$

d) $\text{H}_2\text{C} = \text{CH}_2$



The product obtained in this reaction is

a) $\text{CH}_3\text{CH}_2\text{OH}$

b) $(\text{CH}_3)_2\text{CHOH}$

c) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$

d) $\text{HO} - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{OH}$

476. When ethylene glycol is heated with a mixture of concentrated HNO_3 and concentrated H_2SO_4 , it produces

COOH

CH_2ONO_2

CH_2ONO_2

a) |

b) $\text{CO}_2 + \text{H}_2$

c) |

d) |

COOH

CH_2ONO_2

CH_2OH

477. Cyclohexanol on reaction with PBr_3 in presence of pyridine gives

a) Bromocyclohexane

b) Bromocyclohexane

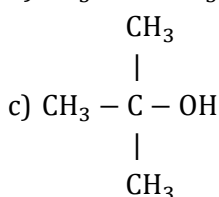
c) 1-bromocyclohexanol

d) None of these

478. On treatment with a concentrated solution of zinc chloride in concentrated HCl at room temperature, an alcohol immediately gives, an oily product. The alcohol can be

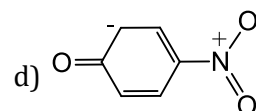
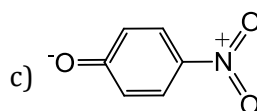
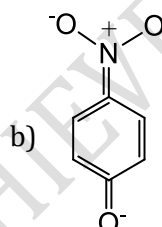
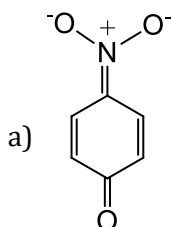
a) $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$

b) $\text{CH}_3\text{CHOHCH}_3$



d) Any of these

479. The most unlikely representation of resonance structures of *p*-nitrophenoxide ion is



480. Ethylene glycol gives oxalic acid on oxidation with

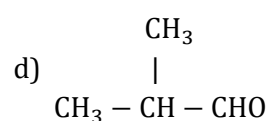
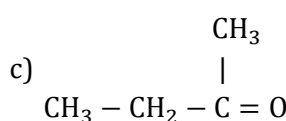
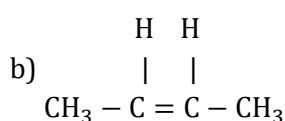
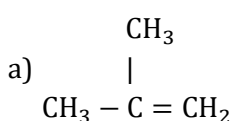
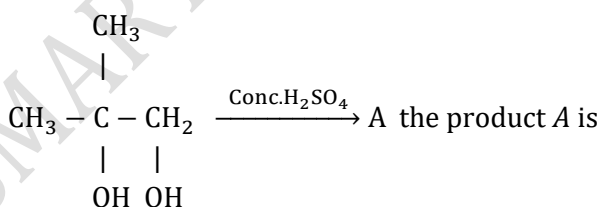
a) Acidified $\text{K}_2\text{Cr}_2\text{O}_7$

b) Acidified KMnO_4

c) Alkaline KMnO_4

d) Periodic acid

481. In the reaction,



482. Diethyl ether may be regarded as anhydride of:

a) $\text{C}_2\text{H}_5\text{COOH}$

b) $\text{C}_2\text{H}_5\text{OH}$

c) $\text{C}_2\text{H}_5\text{CHO}$

d) $\text{C}_2\text{H}_5\text{COOC}_2\text{H}_5$

483. Glycol reacts with PCl_3 and gives ethylene dichloride. What will be the product, if it reacts with $\text{P} + \text{I}_2$?

a) Ethylene iodide

b) Ethylene iodohydrin

c) Ethylene

d) None of these

484. Methyl alcohol reacts with phosphorus trichloride to form:
 a) Methane b) Methyl chloride c) Acetyl chloride d) Dimethyl ether
485. Arrange the following in order of decreasing acidic strength. *p*-nitrophenol (I), *p*-cresol (II), *m*-cresol (III), phenol (IV)
 a) I > II > III > IV b) IV > III > II > I c) I > III > II > IV d) III > II > I > IV
486. A diazonium chloride reacts with ϕOH to give an azodye. The reaction is called
 a) Diazotisation b) Condensation c) Coupling d) Reduction
487. Which alcohol is most acidic?
 a) Methanol b) Ethanol c) Isopropyl alcohol d) *t*-butyl alcohol
488. Which reagent can distinguish $\text{C}_2\text{H}_5\text{OH}$ and ϕOH ?
 a) SOCl_2 b) CH_3COCl c) $(\text{CH}_3\text{CO})_2\text{O}$ d) CH_3COOH
489. *Is*-butyl alcohol $\xrightarrow{\text{P/I}_2} \xrightarrow{\text{AgNO}_2} \xrightarrow{\text{HNO}_2} \xrightarrow{\text{NaOH}} A$
 True statement about *A* is
 a) Blue coloured solution b) Blue precipitate
 c) Red precipitate d) Red coloured solution
490. Acetone on reduction gives:
 a) CH_3COOH b) CH_3CHO c) $\text{C}_2\text{H}_5\text{OH}$ d) $(\text{CH}_3)_2\text{CHOH}$
491. Sodium ethoxide and ethyl chloride on heating will give:
 a) Ether b) Ethyl alcohol c) Acetaldehyde d) Acetic acid
492. Pinacol is
 a) 3-methylbutan-2-ol b) 2, 3-dimethyl-2, 3-butanediol
 c) 2, 3-dimethyl-2-propanone d) None of the above
493. The product in the reaction is:

$$\text{C}_2\text{H}_5\text{OH} \xrightarrow{\text{P} + \text{I}_2} A \xrightarrow[\text{Ether}]{\text{Mg}} B \xrightarrow{\text{HCHO}} C \xrightarrow{\text{H}_2\text{O}} D$$

 a) Propanal b) Butanal c) *n*-butanol d) *n*-propanol
494. In esterification of an acid, the other reagent is:
 a) Aldehyde b) Alcohol c) Amine d) Water
495. $\text{C}_2\text{H}_5\text{OH}$ and $\text{C}_2\text{H}_5\text{OH}$ can be distinguished by
 a) $\text{Br}_2 + \text{H}_2\text{O}$ b) FeCl_3 c) $\text{I}_2 + \text{NaOH}$ d) Both (b) and (c)
496. Identify (*Z*) in the series:

$$\text{CH}_2=\text{CH}_2 \xrightarrow{\text{HBr}} (X) \xrightarrow{\text{Hydrolysis}} (Y) \xrightarrow[\text{I}_2 (\text{excess})]{\text{NaOH}} (Z)$$

 a) $\text{C}_2\text{H}_5\text{I}$ b) $\text{C}_2\text{H}_5\text{OH}$ c) CHI_3 d) CH_3CHO
497. Phenol can be converted to *o*-hydroxybenzaldehyde by
 a) Kolbe's reaction b) Reimer-Tiemann reaction
 c) Wurtz reaction d) Cannizaro reaction
498. An organic compound '*X*' with molecular formula, $\text{C}_7\text{H}_8\text{O}$ is insoluble in aqueous NaHCO_3 but dissolves in NaOH . When treated with bromine water '*X*' rapidly gives '*Y*' $\text{C}_7\text{H}_5\text{OBr}_3$.
 The compounds '*X*' and '*Y*' respectively, are
 a) Benzyl alcohol and 2, 4, 6-tribromo-3-methoxy benzene
 b) Benzyl alcohol and 2, 4, 6-tribromo-3-methyl phenol
 c) *o*-cresol and 3, 4, 5-tribromo-2-methyl phenol
 d) Methoxybenzene and 2, 4, 6-tribromo-3-methoxy benzene
499. Which of the following compound would not evolve CO_2 when treated with NaHCO_3 solution?
 a) Salicylic acid b) Phenol c) Benzoic acid d) 4-nitrobenzoic acid
500. For which pair iodoform test cannot be used as distinction test?
 a) Propanol-1 and propanol-2
 b) Butanol-2 and 2-methyl propan-2-ol
 c) Butanol-1 and butanol-2
 d) Pentanol-1 and pentanol-3

501. Tonics usually contain small amount of:

- a) Formalin b) Vinegar c) Alcohol d) Ether

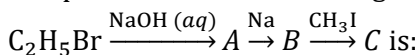
502. Primary, secondary and tertiary alcohols can be distinguished by performing

- a) Beilstein's test b) Victor Meyer's test c) Fehling's solution test d) Hofmann's test

503. Ethanol reacts with thionyl chloride to give ethyl chloride and:

- a) S, SO₂ b) SO₂, HCl c) Cl₂, SO₃ d) SO₃, HCl

504. The product C in the following sequence of reaction,

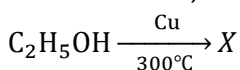


- a) Butane b) Ethane c) Methyl ethyl ether d) propane

505. Which of the following is an anaesthetic?

- a) Ether b) Thiobarbiturates c) Trichloromethane d) All of these

506. In the reaction,



(vapour)

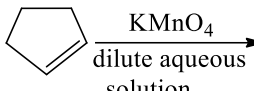
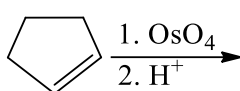
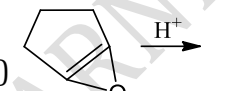
The molecular formula of X is

- a) C₄H₆O b) C₄H₁₀O c) C₂H₄O d) C₂H₆

507. In which of the following bond angles on sp³-hybridized are not contracted due to lone pair of electron?

- a) OF₂ b) H₂O c) CH₃OCH₃ d) CH₃OH

508. By which the following reactions can *trans*-cyclopentane-1, 2-diol be obtained?

- a)  b)  c)  d) None of these

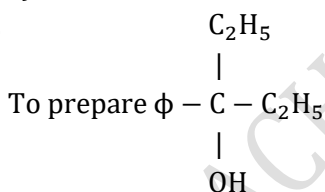
509. A compound X, when boiled with Na₂CO₃ solution gives glycol as the product. What is X ?

- a) Ethylene
b) Ethylene oxide
c) Ethyl bromide
d) Ethyl hydrogen sulphate

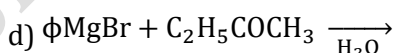
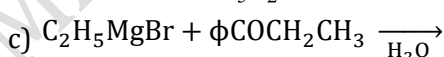
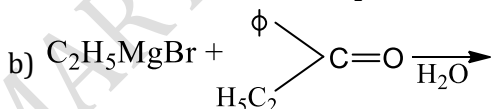
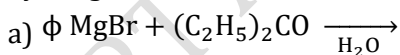
510. Glycerol is present as a triester in:

- a) Petroleum b) Kerosene oil c) Vegetable oil and fats d) Naphtha

511.

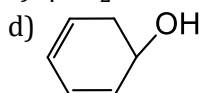


by RMgX which is the incorrect pair?

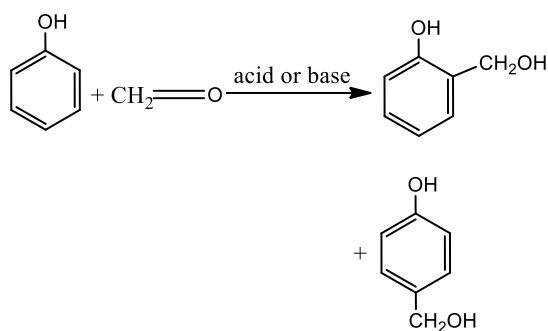


512. Which alcohol cannot be oxidized by MnO₂?

- a) CH₂ = CH - CH₂CH₂OH
b) CH₃ - CH = CH - CH₂OH
c) ϕCH_2OH



513. The reaction,



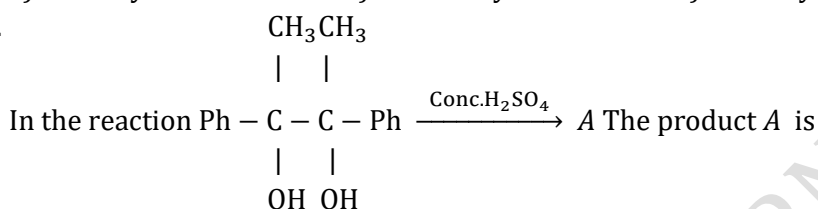
Is called

- a) Laderer Mannasse reaction b) Claisen condensation
c) Benzoin condensation d) Etard reaction

514. An alcohol is not oxidised in alkaline or neutral solution but in acidic solution it is turned first to acetone and then to acetic acid. It is a:

- a) Primary alcohol b) Secondary alcohol c) Tertiary alcohol d) None of these

515.



- a) $\text{Ph} - \begin{array}{c} \text{CH}_3 \quad \text{CH}_3 \\ | \quad | \\ \text{C} = \text{C} - \text{Ph} \end{array}$ b) $\text{Ph} - \begin{array}{c} \text{CH}_3 \quad \text{CH}_3 \\ | \quad | \\ \text{C} - \text{C} - \text{Ph} \\ \diagdown \quad \diagup \\ \text{O} \end{array}$ c) $\text{Ph} - \begin{array}{c} \text{CH}_3 \quad \text{O} \\ | \quad || \\ \text{C} - \text{C} - \text{CH}_3 \\ | \\ \text{Ph} \end{array}$ d) $\text{Ph} - \begin{array}{c} \text{CH}_3 \quad \text{O} \\ | \quad || \\ \text{C} - \text{C} - \text{Ph} \\ | \\ \text{CH}_3 \end{array}$

516. Which reagent will convert propionic acid to propanol-1?

- a) KMnO_4 b) LiAlH_4 c) Cr_2O_3 d) MnO_2

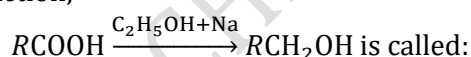
517. Which of the following is a gas?

- a) Methane thiol b) Ethane thiol c) Isobutyl thiol d) Propyl thiol

518. Alcohols may behave as:

- a) Bronsted acid b) Lewis base c) Neutral d) All of these

519. The reaction;



- a) Corey House reaction
b) Bonveault-Blanc reaction
c) Clemmensen reduction
d) None of the above

520. Absolute alcohol is prepared by

- a) Vacuum distillation b) Azeotropic distillation
c) Steam distillation d) None of the above

521. On heating glycerol with conc. H_2SO_4 , a compound is obtained which has bad odour. The compound is:

- a) Acrolein b) Formic acid c) Allyl alcohol d) Methyl isocyanide

522. Pyroligneous acid contains:

- a) CH_3COOH (10%), CH_3OH b) $\text{C}_2\text{H}_5\text{OH}$ (10%), CH_3OH c) CH_3COCH_3 (10%), $\text{C}_2\text{H}_5\text{OH}$ d) None of the above

523. Ethyl alcohol reacts with HCl but not with HCN because:

- a) $\text{C}_2\text{H}_5\text{OH}$ is weak base and HCN is weak base
b) $\text{C}_2\text{H}_5\text{OH}$ is strong acid and HCN is weak acid
c) HCl is strong acid and $\text{C}_2\text{H}_5\text{OH}$ is weak base
d) None of the above

524. When wine is put in air it becomes sour due to:

- a) Oxidation of C_2H_5OH into CH_3COOH
- b) Bacteria
- c) Virus
- d) Formic acid formation

525. Dunstan's test is used for identification of

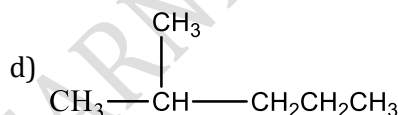
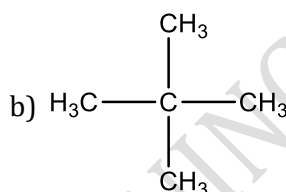
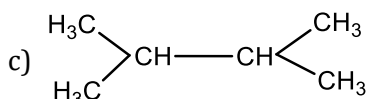
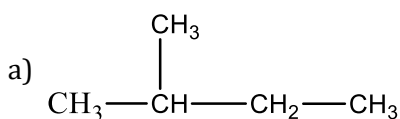
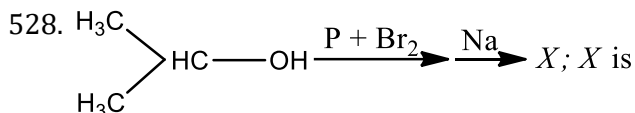
- a) Acetone
- b) Ethanol
- c) Glycerol
- d) Glycol

526. An alcohol on oxidation is found to give CH_3COOH and CH_3CH_2COOH . The alcohol is:

- a) $CH_3CH_2CH_2OH$
- b) $(CH_3)_2C(OH)CH_2CH_3$
- c) $CH_3(CH_2)_2CHOH$
- d) $CH_3CH(OH)CH_2CH_2CH_3$

527. The enzymes which are used to convert starch into ethyl alcohol are

- a) Maltase, diastase
- b) Diastase, maltase, zymase
- c) Invertase, zymase
- d) Invertase, diastase, maltase



529. Ethyl alcohol can be prepared from Grignard reagent by the reaction of

- a) $HCHO$
- b) R_2CO
- c) RCN
- d) $RCOCl$

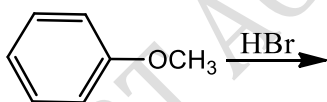
530. The correct order of the solubility of different alcohols in water is

- a) Ethanol > *n*-propanol > *n*-butyl alcohol
- b) *n*-propyl alcohol > ethyl alcohol > *n*-butyl alcohol
- c) ethyl alcohol > *n*-butyl alcohol > *n*-propyl alcohol
- d) *n*-butyl alcohol > *n*-propyl alcohol > ethyl alcohol

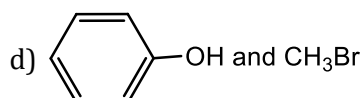
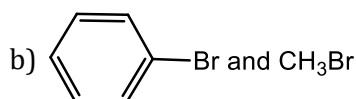
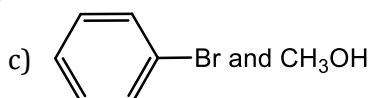
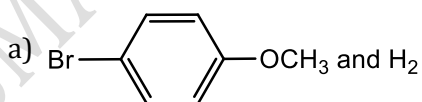
531. Germinated Barley (an enzyme) is a source of enzyme:

- a) Zymase
- b) Diastase
- c) Maltase
- d) Invertase

532. In the reaction,

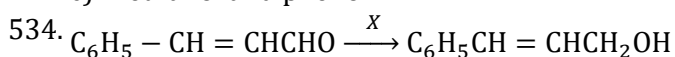


The products are



533. Methylphenyl ether can be obtained by reacting

- a) Phenolate ions and methyl iodide
- b) Methoxide ions and bromobenzene
- c) Methanol and phenol
- d) Bromobenzene and methyl bromide



In the above sequence X can be

- a) H_2/Ni
- b) $NaBH_4$
- c) $K_2Cr_2O_7/H^+$
- d) Both (a) and (b)

535. To distinguish between salicylic acid and phenol one can use

- a) $NaHCO_3$ solution
- b) 5% $NaOH$ solution
- c) Neutral $FeCl_3$
- d) Bromine water

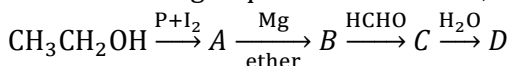
536. Diethyl ether finds its use in medicine as:

- a) Pain killer
- b) Hypnotic
- c) Antiseptic
- d) Anaesthetic

537. Ethyl chloride reacts with sodium ethoxide to form a compound A . Which of the following reactions also yields A ?

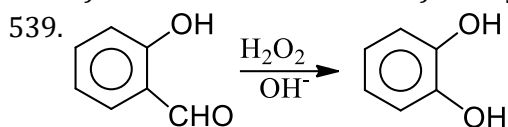
- a) C_2H_5Cl, KOH (alc.), Δ
- b) $2C_2H_5OH, \text{conc. } H_2SO_4, 140^\circ C$
- c) C_2H_5Cl, Mg (dry ether)
- d) $C_2H_2, \text{dil } H_2SO_4, HgSO_4$

538. In the following sequence of reactions,



The compound ' D ' is

- a) Butanal
- b) n -butyl alcohol
- c) n -propyl alcohol
- d) Propanal



This reaction is called

- a) Reimer-Tiemann reaction
- b) Liebermann's nitroso reaction
- c) Dakin reaction
- d) Lederer -Manasse reaction

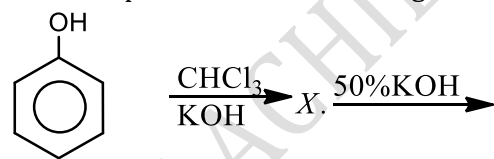
540. Carbocation is not the intermediate in

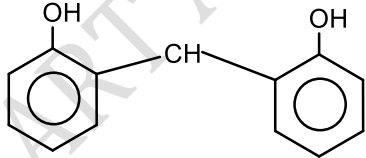
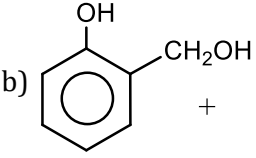
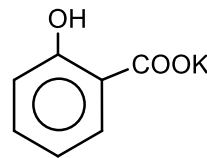
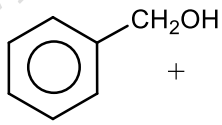
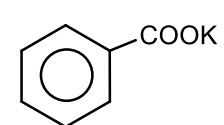
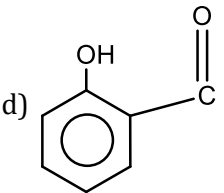
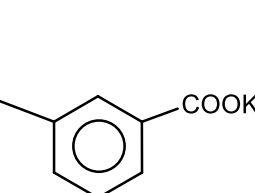
- a) Hydroboration-oxidation of an alkene
- b) Oxymercuration-demercuration of an alkene
- c) Reaction of HCl with CH_3CH_2OH
- d) All of the above

541. The number of isomeric alcohols of formula $C_4H_{10}O$ is:

- a) 2
- b) 4
- c) 7
- d) 8

542. The final product of the following reaction is/are



- a) 
- b)  + 
- c)  + 
- d)  + 

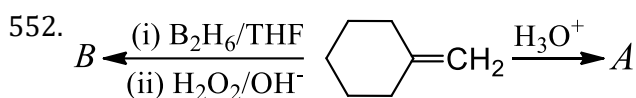
543. Anisole is the product obtained from phenol by the reaction known as

- a) Coupling
- b) Etherification
- c) Oxidation
- d) Esterification

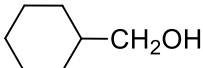
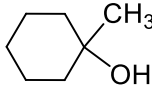
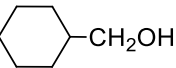
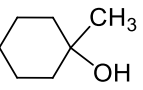
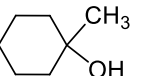
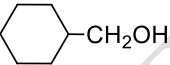
544. Propan-1-ol can be prepared from propane by

- a) H_2O/H_2SO_4
- b) $Hg(OAc)_2/H_2O$ followed by $NaBH_4$
- c) B_2H_6 followed by H_2O_2
- d) CH_3CO_2H/H_2SO_4

545. Lubricant used in watch is:
 a) Coconut oil b) Pine oil c) Animal oil d) Glycerol
546. Methyl alcohol on oxidation with acidified $K_2Cr_2O_7$ gives:
 a) CH_3COCH_3 b) CH_3CHO c) $HCOOH$ d) CH_3COOH
547. Lucas reagent is a mixture of:
 a) Conc. HCl + anhydrous $ZnCl_2$
 b) Conc. HCl + hydrous $ZnCl_2$
 c) Conc. HNO_3 + hydrous $ZnCl_2$
 d) Conc. HNO_3 + anhydrous $ZnCl_2$
548. If methanol vapour is passed over heated copper at $300^\circ C$, it forms formaldehyde by:
 a) Hydrogenation b) Dehydrogenation c) Dehydration d) Oxidation
549. Terylene is formed by the reaction of one of the following alcohols:
 a) 2-chloroethanol b) 1,2,3-propanetriol c) Ethanediol d) Phenol
550. Alcoholic fermentation by starch or sugar is brought about by:
 a) CO_2 b) Sodium bicarbonate c) Yeast d) phosphates
551. General formula for alcohols is:
 a) >COH b) >CHOH c) $-CH_2OH$ d) All of these

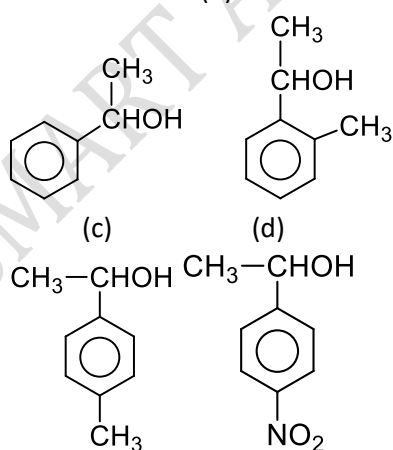


A and B respectively are

- a) Both 
- b) Both 
- c)  , 
- d)  , 

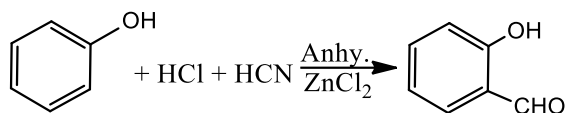
553. When phenol reacts with phthalic anhydride in presence of H_2SO_4 and heated and hot reaction mixture is poured in $NaOH$ solution, then product formed is
 a) Alizarin b) Methyl orange c) Fluorescein d) Phenolphthalein

554. Correct order of dehydration of IX.



- a) $A > B > C > D$ b) $B > C > A > D$ c) $D > A > C > A$ d) $D > A > B > C$

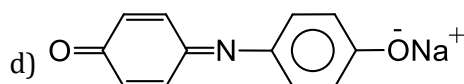
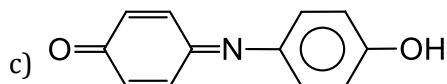
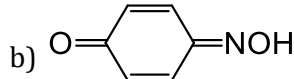
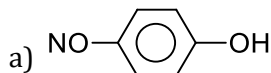
555. The following reaction is known as



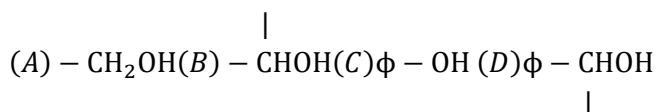
- a) Perkin reaction
c) Kolbe reaction

- b) Gattermann reaction
d) Gattermann-aldehyde reaction

556. In the Liebermann test for phenols, the blue or green colour produced is due to the formation of



557. Four hydroxy compounds have functional groups as shown



The purple colour with FeCl_3 will be given by

- a) A only b) A and B c) C only d) A, B, C and D

558. Ether in contact with air for a long time form peroxides. The presence of peroxide in ether can be tested by adding Fe^{2+} ion and then adding

- a) KCN b) SnCl_2 c) HgCl_2 d) KCNS

559. Fermentation is:

- a) Exothermic b) Endothermic c) Reversible d) None of these

560. Which could not be obtained from wood?

- a) CH_3OH b) $\text{C}_2\text{H}_5\text{OH}$ c) Wood tar d) Wood charcoal

561. Methanol and ethanol can be distinguished by the following:

- a) By reaction with metallic sodium
b) By reaction with caustic soda
c) By heating with iodine and washing soda
d) By heating with zinc and inorganic mineral acid

562. Acetic anhydride reacts with diethyl ether in the presence of anhydrous AlCl_3 to give

- a) $\text{CH}_3\text{CH}_2\text{COOH}$ b) $\text{CH}_3\text{CH}_2\text{COOCH}_2\text{CH}_3$ c) $\text{CH}_3\text{COOCH}_3$ d) $\text{CH}_3\text{COOC}_2\text{H}_5$

563. Which of the following is insoluble in alcohol?

- a) Resins and varnishes b) Soaps and varnishes c) Rubbers and plastics d) Dyes and drugs

564. 1-propanol and 2-propanol can be distinguished by

- a) Oxidation with alkaline KMnO_4 followed by reaction with Fehling solution
b) Oxidation with acidic dichromate followed by reaction with Fehling solution
c) Oxidation by heating with copper followed by reaction with Fehling solution
d) Oxidation with concentrated H_2SO_4 followed by reaction with Fehling solution

565. Which of the following does not react with sodium metal?

- a) $(\text{CH}_3)_2\text{O}$ b) $\text{CH}_3\text{CH}_2\text{OH}$ c) CH_3COOH d) $\text{C}_6\text{H}_5\text{OH}$

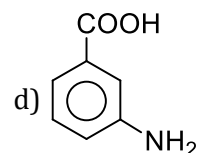
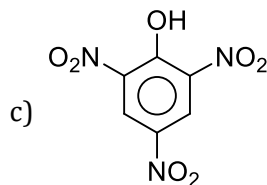
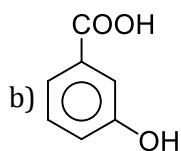
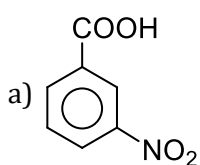
566. Purity of ether before using it as anaesthetic agent is tested by:

- a) KI + starch b) CuSO_4 c) H_2SO_4 d) None of these

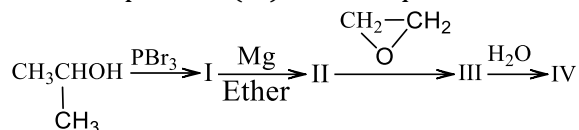
567. Alcoholic beverages contain

- a) Isopropyl alcohol b) *n*-propyl alcohol c) Ethyl alcohol d) Methyl alcohol

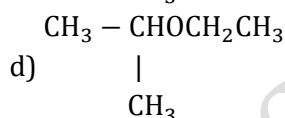
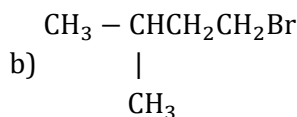
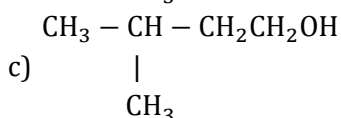
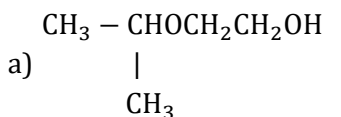
568. Picric acid is



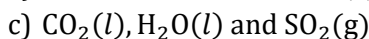
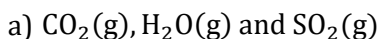
569. The final product (IV) in the sequence of reactions



is



570. The products of combustion of an aliphatic thiol (*RSH*) at 298 K are



571. During alcoholic fermentation inorganic salts like ammonium sulphate or ammonium phosphate are added:

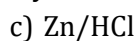
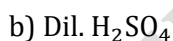
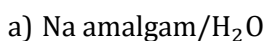
a) To decrease the freezing point of solution

b) Which act as food for ferment cells

c) Which prevent the growth of undesirable bacteria

d) Which produce desirable enzymes

572. To obtain unsaturated alcohols from unsaturated aldehydes the following reagent is used for reduction:



573. Hydroboration oxidation of 4-methyl octene would give

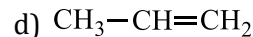
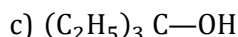
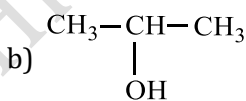
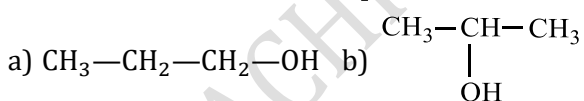
a) 4-methyl octanol

b) 2-methyl decane

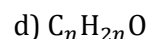
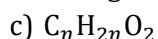
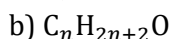
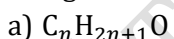
c) 4-methyl heptanol

d) 4-methyl-2-octanone

574. $Z \xrightarrow{\text{PCl}_5} X \xrightarrow{\text{Alc. KOH}} Y \xrightarrow[2. \text{H}_2\text{O; boil}]{1. \text{Conc. H}_2\text{SO}_4} Z$ is :



575. The general molecular formula, which represents the homologous series of alkanols is:



576. On reacting with neutral ferric chloride, phenol gives

a) Red colour

b) Blue colour

c) Violet colour

d) Green colour

577. There are four alcohols *P*, *Q*, *R* and *S* which have 3, 2, 1 and zero alpha hydrogen atom(s). Which one of the following will not respond to Victor-Meyer's test?

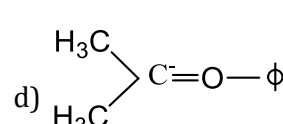
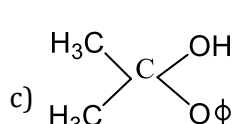
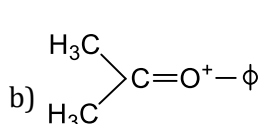
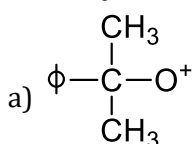
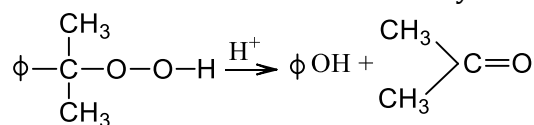
a) *P*

b) *Q*

c) *R*

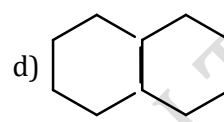
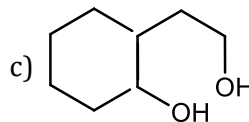
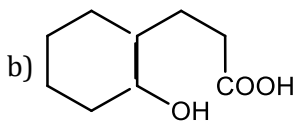
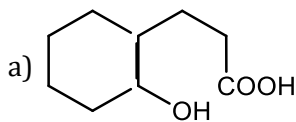
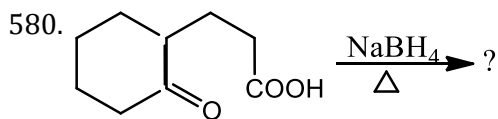
d) *S*

578. Which doesn't form in the acid catalysed rearrangement of cumene hydroperoxide?



579. Ethanol is more soluble in water but ether is less soluble because:

- a) Ethanol forms strong hydrogen bonds in water whereas ether forms weaker hydrogen bonding
- b) Ether is more volatile than ethanol
- c) The molecular weight of ether is more than that of ethanol
- d) None of the above



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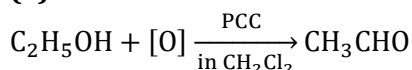
: ANSWER KEY :

1)	a	2)	c	3)	b	4)	d	193)	b	194)	d	195)	d	196)	c
5)	b	6)	c	7)	a	8)	b	197)	d	198)	d	199)	d	200)	a
9)	a	10)	b	11)	d	12)	d	201)	d	202)	c	203)	c	204)	c
13)	c	14)	d	15)	a	16)	c	205)	b	206)	c	207)	b	208)	a
17)	c	18)	d	19)	b	20)	c	209)	a	210)	d	211)	c	212)	d
21)	b	22)	a	23)	b	24)	a	213)	c	214)	a	215)	c	216)	c
25)	a	26)	b	27)	c	28)	c	217)	b	218)	a	219)	b	220)	a
29)	b	30)	b	31)	a	32)	d	221)	a	222)	a	223)	c	224)	a
33)	a	34)	b	35)	b	36)	c	225)	d	226)	a	227)	c	228)	b
37)	b	38)	b	39)	b	40)	d	229)	d	230)	c	231)	b	232)	b
41)	d	42)	a	43)	c	44)	b	233)	a	234)	c	235)	c	236)	a
45)	a	46)	b	47)	d	48)	b	237)	d	238)	b	239)	c	240)	d
49)	b	50)	c	51)	b	52)	b	241)	d	242)	d	243)	a	244)	a
53)	d	54)	c	55)	b	56)	a	245)	b	246)	a	247)	a	248)	d
57)	d	58)	b	59)	d	60)	a	249)	d	250)	c	251)	c	252)	b
61)	c	62)	d	63)	d	64)	b	253)	b	254)	c	255)	b	256)	b
65)	a	66)	a	67)	d	68)	d	257)	d	258)	a	259)	a	260)	b
69)	a	70)	a	71)	c	72)	a	261)	b	262)	c	263)	b	264)	a
73)	d	74)	d	75)	b	76)	c	265)	a	266)	b	267)	a	268)	c
77)	c	78)	d	79)	a	80)	c	269)	b	270)	c	271)	c	272)	d
81)	c	82)	b	83)	d	84)	a	273)	c	274)	b	275)	d	276)	c
85)	a	86)	c	87)	d	88)	d	277)	c	278)	c	279)	c	280)	a
89)	c	90)	c	91)	b	92)	b	281)	a	282)	d	283)	c	284)	a
93)	b	94)	c	95)	d	96)	c	285)	a	286)	c	287)	c	288)	d
97)	d	98)	a	99)	d	100)	c	289)	b	290)	c	291)	d	292)	c
101)	a	102)	b	103)	d	104)	c	293)	d	294)	d	295)	d	296)	b
105)	a	106)	c	107)	d	108)	c	297)	b	298)	b	299)	a	300)	c
109)	c	110)	b	111)	a	112)	a	301)	c	302)	d	303)	a	304)	d
113)	c	114)	d	115)	a	116)	d	305)	d	306)	c	307)	c	308)	d
117)	d	118)	c	119)	c	120)	c	309)	b	310)	d	311)	a	312)	c
121)	a	122)	a	123)	c	124)	b	313)	c	314)	c	315)	a	316)	b
125)	a	126)	c	127)	b	128)	d	317)	a	318)	c	319)	a	320)	b
129)	c	130)	a	131)	c	132)	a	321)	b	322)	c	323)	b	324)	b
133)	a	134)	a	135)	d	136)	d	325)	d	326)	b	327)	c	328)	b
137)	b	138)	c	139)	a	140)	d	329)	c	330)	a	331)	d	332)	d
141)	b	142)	d	143)	d	144)	b	333)	d	334)	c	335)	c	336)	d
145)	b	146)	a	147)	c	148)	b	337)	c	338)	b	339)	a	340)	a
149)	b	150)	b	151)	c	152)	d	341)	b	342)	c	343)	c	344)	d
153)	a	154)	d	155)	a	156)	c	345)	a	346)	a	347)	b	348)	a
157)	c	158)	b	159)	a	160)	d	349)	d	350)	a	351)	b	352)	b
161)	c	162)	b	163)	c	164)	a	353)	a	354)	d	355)	b	356)	c
165)	c	166)	a	167)	d	168)	c	357)	d	358)	c	359)	c	360)	d
169)	c	170)	a	171)	d	172)	d	361)	c	362)	c	363)	c	364)	a
173)	d	174)	a	175)	d	176)	d	365)	b	366)	d	367)	c	368)	d
177)	c	178)	a	179)	c	180)	d	369)	a	370)	b	371)	d	372)	d
181)	b	182)	d	183)	d	184)	b	373)	c	374)	c	375)	a	376)	a
185)	a	186)	c	187)	d	188)	b	377)	b	378)	b	379)	b	380)	b
189)	c	190)	b	191)	d	192)	c	381)	b	382)	a	383)	a	384)	a

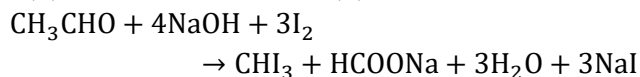
385)	d	386)	b	387)	b	388)	b
389)	c	390)	b	391)	c	392)	b
393)	d	394)	b	395)	a	396)	b
397)	c	398)	c	399)	c	400)	b
401)	a	402)	a	403)	a	404)	b
405)	c	406)	b	407)	d	408)	a
409)	c	410)	d	411)	a	412)	a
413)	d	414)	a	415)	b	416)	b
417)	d	418)	c	419)	c	420)	a
421)	d	422)	d	423)	d	424)	a
425)	d	426)	c	427)	b	428)	c
429)	a	430)	b	431)	a	432)	a
433)	c	434)	a	435)	b	436)	b
437)	a	438)	d	439)	c	440)	b
441)	c	442)	a	443)	d	444)	b
445)	d	446)	c	447)	b	448)	a
449)	c	450)	d	451)	c	452)	b
453)	b	454)	b	455)	c	456)	a
457)	b	458)	a	459)	d	460)	a
461)	c	462)	a	463)	a	464)	c
465)	a	466)	c	467)	d	468)	a
469)	c	470)	c	471)	a	472)	a
473)	d	474)	b	475)	c	476)	c
477)	a	478)	c	479)	c	480)	c
481)	d	482)	b	483)	c	484)	b
485)	a	486)	c	487)	a	488)	a
489)	a	490)	d	491)	a	492)	b
493)	a	494)	b	495)	d	496)	c
497)	b	498)	c	499)	b	500)	d
501)	c	502)	b	503)	b	504)	c
505)	d	506)	c	507)	c	508)	c
509)	b	510)	c	511)	d	512)	a
513)	a	514)	c	515)	c	516)	b
517)	a	518)	d	519)	b	520)	b
521)	a	522)	a	523)	c	524)	a
525)	c	526)	d	527)	b	528)	c
529)	a	530)	a	531)	b	532)	d
533)	a	534)	b	535)	a	536)	d
537)	b	538)	c	539)	c	540)	d
541)	b	542)	b	543)	b	544)	c
545)	d	546)	c	547)	a	548)	b
549)	c	550)	c	551)	d	552)	d
553)	d	554)	b	555)	d	556)	d
557)	c	558)	d	559)	a	560)	b
561)	c	562)	d	563)	c	564)	c
565)	a	566)	a	567)	c	568)	c
569)	c	570)	b	571)	b	572)	d
573)	a	574)	b	575)	b	576)	c
577)	d	578)	d	579)	a	580)	a

: HINTS AND SOLUTIONS :

1 (a)



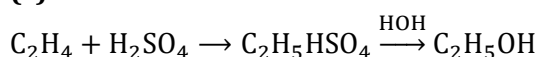
(X) (Y)



(Y)

(yellow ppt
tri-iodomethane)

2 (c)

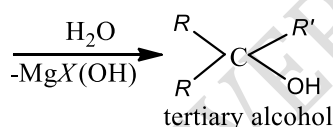
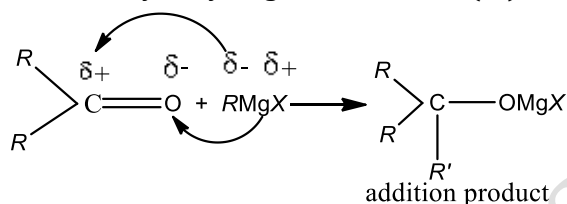


5 (b)

Tertiary alcohols show replacement of —OH gp. more readily.

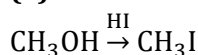
6 (c)

Ketones give an addition product having more number of carbon atoms with Grignard reagent, which on hydrolysis gives an alcohol (3°).



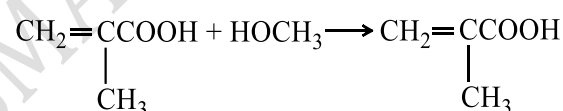
Formaldehyde gives primary alcohol with Grignard reagent while any other aldehyde except formaldehyde give secondary alcohol.

7 (a)



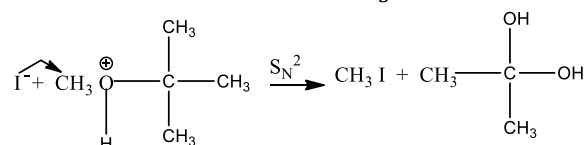
8 (b)

Perspex rubber is polymethyl methyl acrylate (PMMA) is obtained by methyl acrylate obtained as:

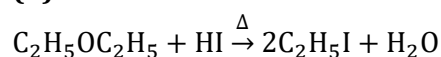


10 (b)

Here, ether is the solvent. Being less polar, it favours $\text{S}_{\text{N}}2$ reaction and the nucleophile I^- attacks the 1° carbon of CH_3 .



11 (d)



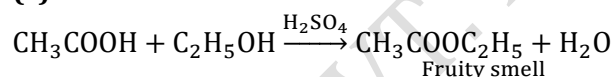
14 (d)

Due to more sites available for H-bonding.

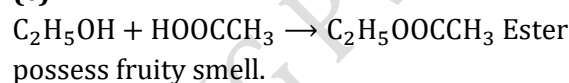
15 (a)

The fermented liquid is technically called wash containing 6-10% ethanol, 3-5% glycerol, higher alcohols (fusel oils), acetaldehyde, etc.

16 (c)



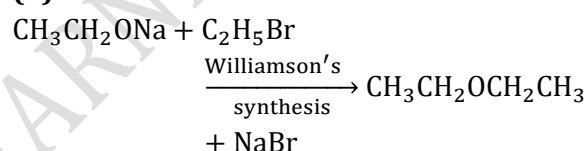
17 (c)



18 (d)

Phenol ($\text{C}_6\text{H}_5\text{OH}$) is carboic acid.

21 (b)

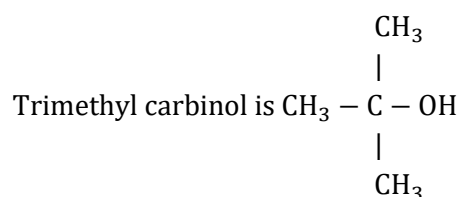


Sodiummethoxide bromo
ethane

ethoxyethane

22 (a)

Reactivity order of alcohols towards ZnCl_2 and conc. HCl is *ter.* alcohol > *sec* alcohol > *pri* alcohol



It is tertiary alcohol.

23 (b)

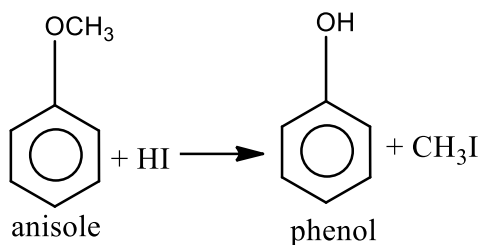
Peroxides are decomposed on heating with H_2SO_4

24 (a)

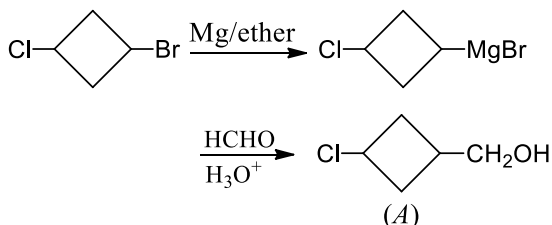
Glycerol is not reduced because of extensive H-bonding.

25 (a)

When an alkyl aryl ether is heated with HI, halogen goes with alkyl group. Therefore, heating anisole (methyl phenyl ether) with HI phenol and methyl iodide are obtained.

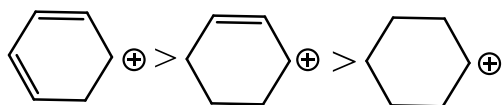


- 26 (b) C – Br bond is weaker as compared to C – Cl bond

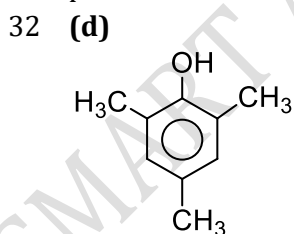


- 29 (b) Higher concentration of substrate less easily undergoes fermentation; (a), (c), (d) favours fermentation.

- 30 (b) The correct order of stability of carbocation is as follows

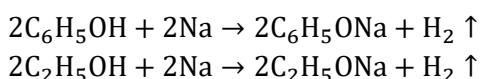


- 31 (a) Alcohols with same molecular weight are expected to have almost same boiling point however two more factors other than molecular weight are important, they are namely H-bonding and surface area of molecule. Both these factors are least in 3° alcohols and maximum in 1° alcohols. Hence, 3° alcohols have least boiling point while 1° alcohols have maximum boiling point.



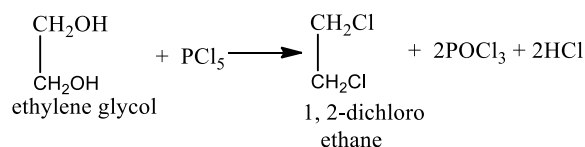
will not react with ϕNNCl to give dye

- 33 (a) Phenol cannot be distinguished from ethanol by sodium because both evolve hydrogen with sodium.



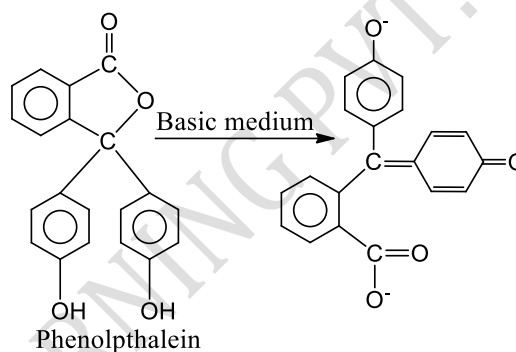
- 34 (b) Ethers do not contain acidic H-atom.

- 35 (b) Ethylene glycol reacts with excess of PCl_5 to give ethylene chloride.

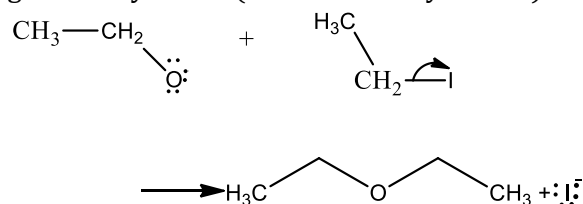


- 36 (c) Due to low f.p. and mobile nature.

- 37 (b) Structure of phenolphthalein in basic medium is as follows.

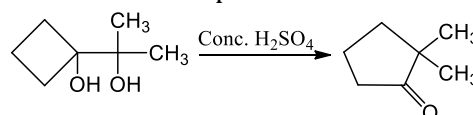


- 38 (b) $\text{C}_2\text{H}_5\text{O}^-$ will attract the proton from phenol converting the latter into phenoxide ion. This would then make nucleophilic attack on the methylene carbon of alkyl iodide, but $\text{C}_2\text{H}_5\text{O}^-$ is better nucleophile than $\text{C}_6\text{H}_5\text{O}^-$ (phenoxide) ion since while in the former the negative charge is localised over oxygen and in the later it is delocalised over the whole molecular frame work. So, it is $\text{C}_2\text{H}_5\text{O}^-$ ion that would make nucleophilic attack at ethyl iodide to give diethyl ether (Williamson's synthesis).

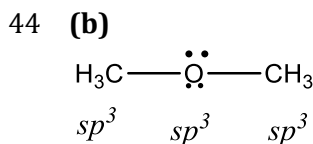


- 40 (d) –OH gp. directly attached to benzene nucleus represents for phenolic gp.

- 41 (d) The pinacol-pinacolone rearrangement involves dehydration of diols through the formation of carbocation intermediate which rearranges to more stable compound.

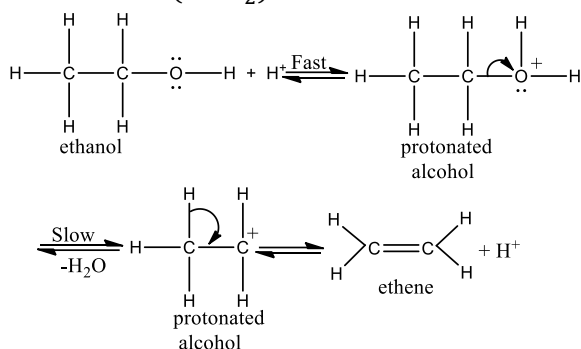


42 (a) Oxidation of glycerol by KMnO_4 is violent.



sp^3 and sp^3 -hybridisations of carbon and oxygen in electronic structure of ether.

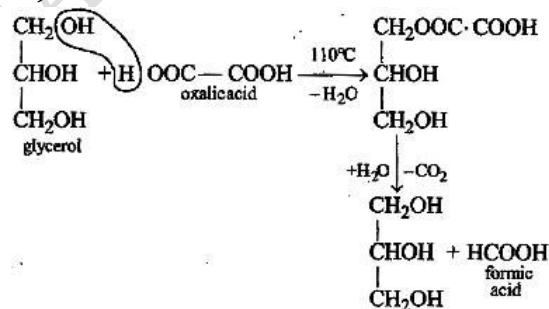
45 (a) Protonation of $-\text{OH}$ is first step. Conversion of poor leaving group ($-\text{OH}$) into good leaving group ($-\text{OH}_2^+$).



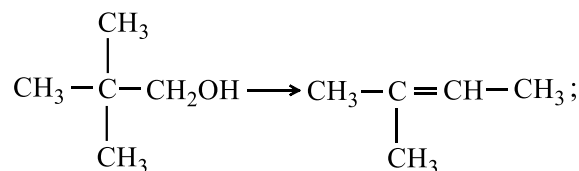
46 (b) It contains $(R)_3\text{COH}$.

48 (b) When an electron attracting group (like $-\text{NO}_2$, $-\text{Cl}$) is attached to the phenol ring, it stabilises the negative charge on the oxygen of phenoxide ion. Due to this reason acidic character of phenol increases. But when an electron donating group (like $-\text{CH}_3$) is attached to the phenol ring, it destabilises the ring and hence, acidic character of phenol decreases. Thus, the correct order of acidic character is p -nitrophenol $>$ p -chlorophenol $>$ phenol $>$ o -cresol.

49 (b) Glycerol react with oxalic acid at 110°C temperature, it gives methanoic acid (formic acid).

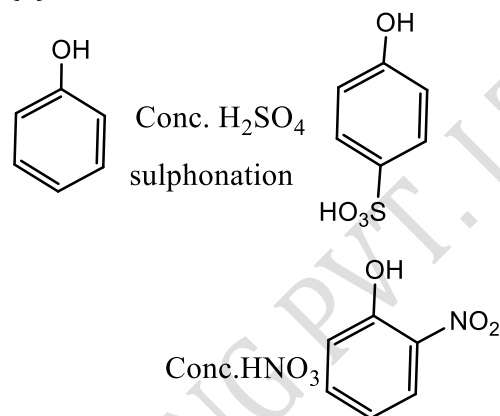


50 (c)



due to rearrangement of carbocation following alkyl shift.

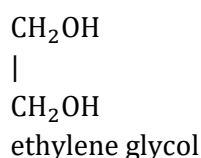
51 (b)



First sulphonation is the means to block *para* position and to reduce the reactivity of phenolic ring against strong oxidising agent HNO_3 . (The use of conc. HNO_3 over phenol cause the oxidation of ring mainly). The strong acidic medium in second step cause desulphonation (ipso mechanism) also.

52 (b)

Glycols are dihydric alcohols (having two hydroxyl groups). Ethylene glycol is the first member of this series.

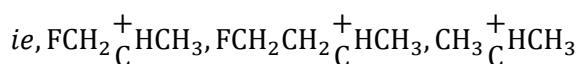


53 (d)

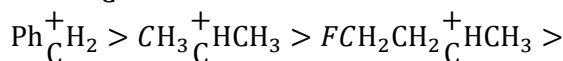
Absolute alcohol is 100% alcohol.

54 (c)

The order of reactivity depends upon the stability of the carbocation formed



and PhC^+H_2 . The stability order of carbocations is



$\text{FCH}_2\text{C}^+\text{HCH}_3$. Thus, the order of reactivity follows the order $\text{IV} > \text{III} > \text{II} > \text{I}$

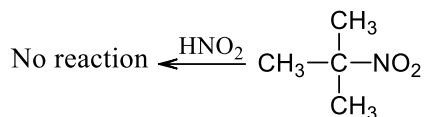
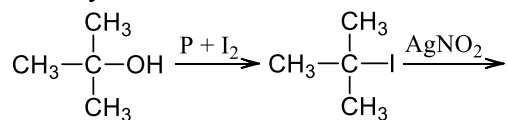
55 (b)

Glycerol trinitrate adsorbed on Kieselguhr is called dynamite; an explosive.

57 (d)

4 alcohols (butan-1-ol; butan-2-ol; 2-methyl

In the given sequence of reaction, the alcohol is tertiary.



77 (c)

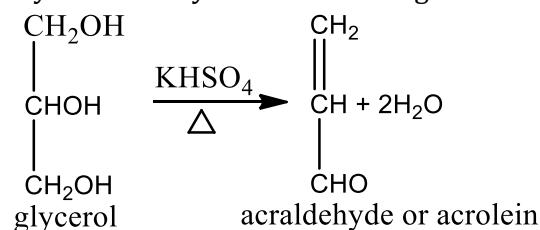
It is better to call nitroglycerine as glycerol trinitrate an inorganic ester of HNO_3 and glycerol.

78 (d)

Br is replaced by OH gp.

80 (c)

Glycerol is dehydrated on heating with KHSO_4 .



81 (c)

1° alkyl halides on treatment with an alkoxide ion tend to undergo substitution to form ethers. So sodium tert butoxide and ethyl bromide reagent is used

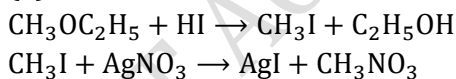
82 (b)

A mixture of $\text{H}_2\text{O}_2 + \text{FeSO}_4$ is called Fenton's reagent used as oxidant.

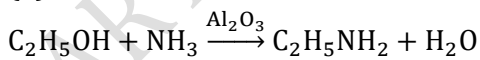
83 (d)

A simple ether is one which possesses same alkyl groups on O atom, .e., ROR.

84 (a)



85 (a)

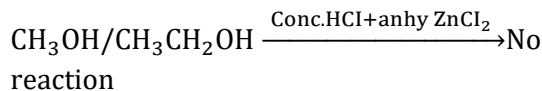


86 (c)

Presence of two or more OHgp. on a carbon atom makes it unstable and compound loses H_2O molecule.

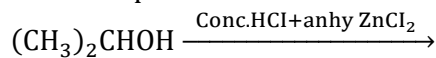
87 (d)

A mixture of conc. $\text{HCl} + \text{anhy ZnCl}_2$ is called Lucas reagent. In Lucas test tertiary alcohols immediately give turbidity while secondary alcohols give turbidity after 5 min. Primary alcohols give no reaction with Lucas reagent at room temperature.



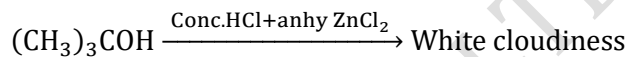
Primary alcohol

and hence, no white cloudiness or turbidity at room temperature.



Secondary alcohol

White cloudiness or turbidity appears within about 5 min.



Tertiary alcohol

Or turbidity appears immediately.

88 (d)

To have tertiary alkyl-alkyl ether one needs sod. Tertiary alkoxide and alkyl halide.

89 (c)

Due to H-bonding.

90 (c)

Glyoxal is a trivial name for ethane-1-2-dial.

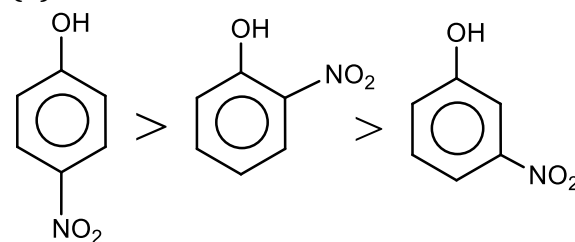
91 (b)

Ethyl alcohol is mixed with methyl alcohol to denaturate it in order to prevent its use for drinking purposes.

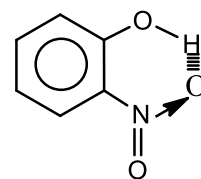
93 (b)

The density of glycerol is higher than propanol due to extensive intermolecular hydrogen bonding. Glycerol contains three -OH groups while propanol contains only one -OH group.

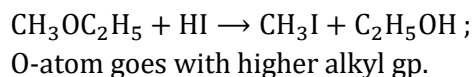
95 (d)



Due to -I and -R influence, NO_2 in *ortho*-position should have raised the acidity to the maximum extent. But it is due to intramolecular H-bonding, *ortho*-nitrophenol is less acidic than *para*-nitrophenol.



96 (c)



97 (d)

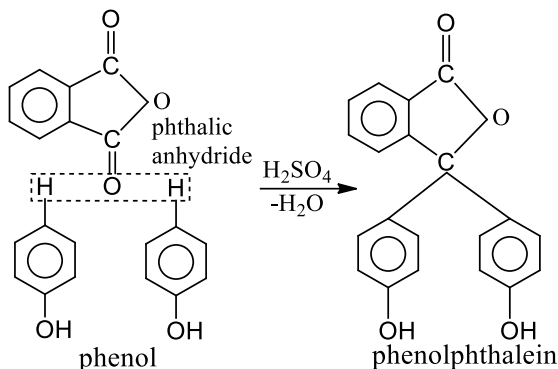
Glycerol is $\text{CH}_2\text{OHCHOHCH}_2\text{OH}$

98 (a)

Due to intermolecular hydrogen bonding, alcohols are less volatile than ether

99 (d)

In the presence of conc. H_2SO_4 , two molecules of phenol condense with phthalic anhydride to form phenolphthalein



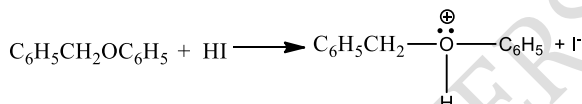
100 (c)

The mixture shows positive deviations from Raoult's law; *i.e.*, $\Delta H_{\text{mix}} > 0$, $\Delta V_{\text{mix}} > 0$.

101 (a)

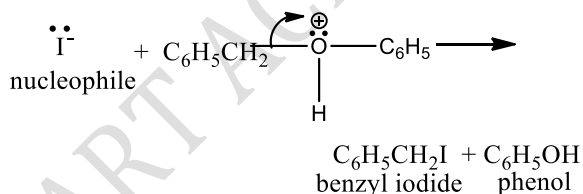
Benzyl phenyl ether is an unsymmetrical ether so halide ion of HI attached to the simple alkyl group and reaction takes place by following mechanism.

1. Protonation of ether

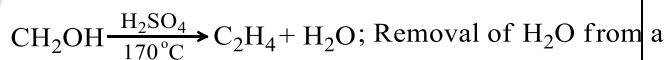


Benzyl phenyl ether

2. Nucleophilic attack



102 (b)



substrate molecule is called dehydration.

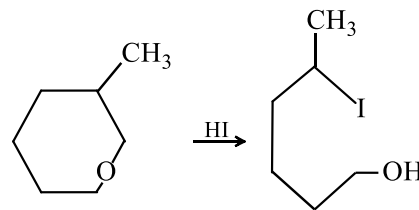
It is classified as elimination reaction.

104 (c)

The acid H_2SO_4 is added to adjust pH in between 4 to 4.5 which is favourable for the growth of yeast and unfavourable for the growth of

undesired bacteria.

105 (a)



This is acid catalysed cleavage of cyclic ether where nucleophile attacks the more substituted carbon.

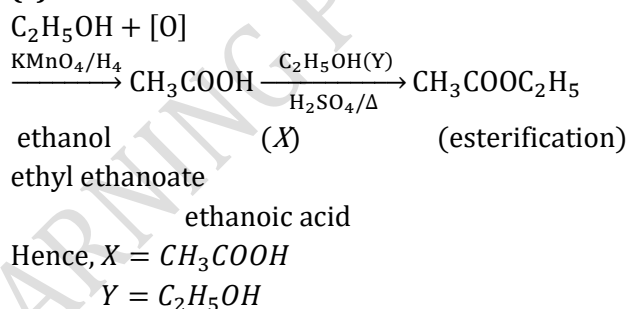
106 (c)

$\text{R}-\text{S}-\text{R}$ or $\text{R}-\text{SR}'$ are thioethers.

107 (d)

All are dehydrating agents.

108 (c)



109 (c)

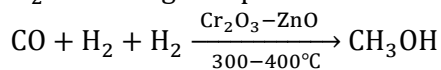
In case of 3° alcohols (tertiary alcohols) turbidity appears immediately at room temperature.

110 (b)

$\text{C}_2\text{H}_5\text{OH}$ (Ethanol) is a very weak acid, hence it does not react with NaOH. However, it reacts with metallic sodium.

111 (a)

Methyl alcohol (CH_3OH) is prepared by passing H_2 in water gas in presence of catalyst.



Water gas methyl alcohol

112 (a)

The $-\text{OH}$ group of alcohol or the $-\text{COOH}$ group of a carboxylic acid is replaced by $-\text{Cl}$ using phosphorus pentachloride (*i.e.*, PCl_5)



alcohol



acid

113 (c)

Methanol cannot be dried with anhydrous CaCl_2 because it forms a solid $\text{CaCl}_2 \cdot 4\text{CH}_3\text{OH}$ (addition compound).

115 (a)



116 (d)

Lucas test is used to distinguish primary, secondary and tertiary alcohols.

118 (c)

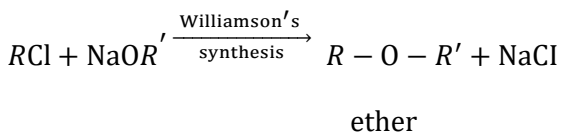
Mol. wt. of thioethers are more than ether.

120 (c)

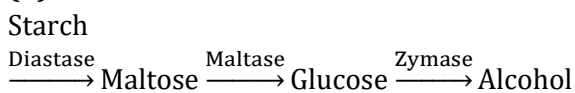
Methanol possesses maximum toxicity order; Ethanol has minimum.

123 (c)

Williamson's synthesis is used for the preparation of ethers.



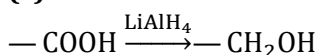
124 (b)



125 (a)

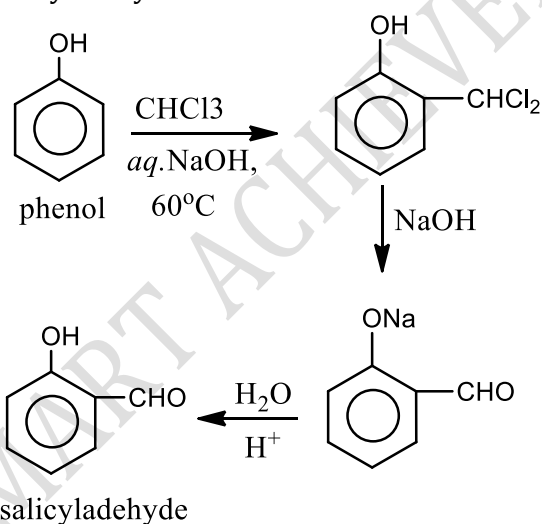
Destructive distillation of wood gives Pyroigneous acid from which CH_3OH is obtained by fractional distillation.

126 (c)



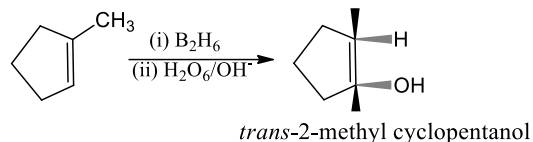
127 (b)

Reimer-Tiemann Reaction In this reaction phenol reacts with chloroform and alkali to form salicylaldehyde.



128 (d)

During hydroboration-oxidation, addition of H_2O across the double bond occurs anti to Markownikoff's rule and since the stereochemistry of addition *cis*, therefore *trans*-2-methylcyclopentanol is formed



129 (c)

CH_3OH is carbinol; $\text{CH}_3\text{CH}_2\text{OH}$ is methyl carbinol and so on.

131 (c)

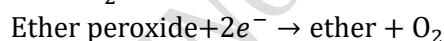
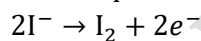
Both possess antiseptic nature.

132 (a)

The percentage of alcohol is expressed as proof spirit for tax lavy. It contains 57.1 % (by vol.) or 48% (by wt.) of alcohol.

133 (a)

Ether peroxide oxidises KI into I_2 and itself gets reduced to ether. Therefore, KI is added to remove peroxides from ethers.



134 (a)

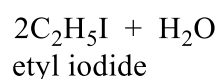
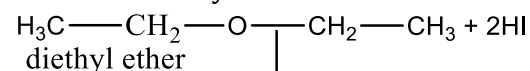


135 (d)

Lower members are soluble in water due to H-bonding and solubility decreases with increasing hydrophobic character.

138 (c)

Ether on reaction with excess of HI produce two molecules of alkyl halide.



Ethyl iodide

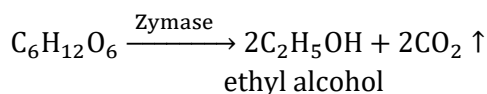
When equimolar quantities of ether and HI are present, then one molecule of alkyl halide and one molecule of alcohol are formed.

139 (a)

It is a substitute of petrol.

141 (b)

Zymase enzyme act on glucose and give ethyl alcohol and carbon dioxide.



142 (d)

Only CH_2OH group is oxidized to $-\text{COOH}$; Double bond is not affected.

143 (d)

Both Zn-Hg/HCl and $\text{NH}_2\text{NH}_2, \text{OH}^-$ reduce CO to CH_2 , but acid sensitive reagents are not reduced

by Zn-Hg/HCl.

144 (b)

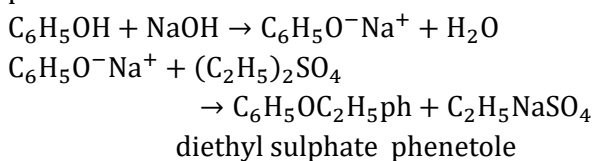
Glycerol has 3 —OH groups and thus shows extensive H-bonding.

145 (b)

The best method to prepare cyclohexene from cyclohexanol is by conc. H_3PO_4 because in given options dehydrating agent is conc. H_3PO_4 .

146 (a)

Diethyl sulphate in the presence of NaOH acts as alkylating agent, it causes alkylation of phenol to give ethyl phenyl ether which is also called phenetole.



147 (c)

Tertiary alcohols are dehydrated on passing over heated Cu; Primary and secondary are dehydrogenated.

148 (b)

The process is called hydroboration.

149 (b)

Secondary alcohols give turbidity within 5 min with Lucas reagent

151 (c)

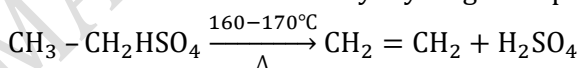
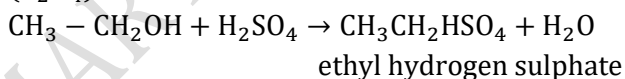
Diethyl ether itself being a Lewis base is not attacked by nucleophiles, *ie*, OH^- ion. All others contain an electrophilic carbon and are readily attacked by nucleophile

152 (d)

Ethers acts as Lewis base only towards strong acids.

154 (d)

When ethyl alcohol is heated with conc. H_2SO_4 at $160^\circ - 170^\circ\text{C}$, the product obtained is ethylene (C_2H_4).

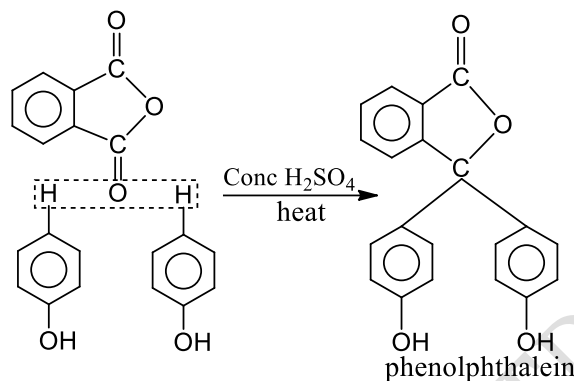


ethylene

But at lower temperature ether is formed.

155 (a)

Phenol is heated with phthalic anhydride in presence of conc H_2SO_4 to given phenolphthalein which gives pink colour with alkali



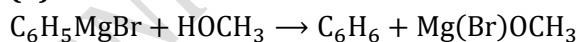
156 (c)

Large is H—X bond length, more is acidic nature of halogen acid.

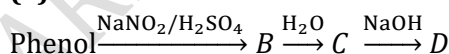
157 (c)

Rectified spirit is $\text{C}_2\text{H}_5\text{OH} +$ water mixture obtained after distillation of fermented liquid. On further careful fractional distillation (rectification) gives II fraction as 93 to 95% ethyl alcohol (rectified spirit).

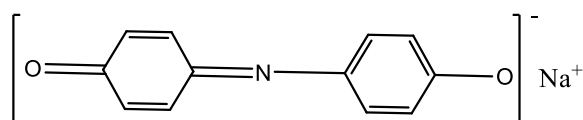
158 (b)



159 (a)



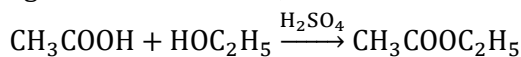
This is Liebermann's nitroso reaction of phenol. When phenol is warmed with sodium nitrite and 1 cc. conc. H_2SO_4 , blue colour is obtained which on adding water, becomes red. This again turns to blue on adding NaOH. Deep blue colour is due to the formation of sodium salt of indophenol.



sodium salt of indophenol (deep blue)

160 (d)

H_2SO_4 acts as catalyst as well as dehydrating agent for the reaction,



161 (c)

Dynamite is known as nobel's oil.

162 (b)

The order of increasing acidic strength is p -methyl phenol < phenol < m -nitrophenol < p -nitrophenol

164 (a)

$\text{C}_6\text{H}_5\text{O}^-$ is a weaker nucleophile than $\text{C}_2\text{H}_5\text{O}^-$. Therefore, the better nucleophile, *ie*, $\text{C}_2\text{H}_5\text{O}^-$ will attack $\text{C}_6\text{H}_5\text{I}$ to form diethyl ether.

186 (c) Chloral hydrate $[\text{CCl}_3\text{CH}(\text{OH})_2]$ is stable due to H-bonding

188 (b)
$$\text{ROH} + \text{Na} \rightarrow \text{RONa} + \frac{1}{2}\text{H}_2$$

189 (c) Grignard reagent (RMgX) reacts with only those compounds which contains acidic hydrogen or which contains carbonyl group. Dimethyl ether (CH_3OCH_3) due to absence of both acidic hydrogen and carbonyl group does not react with Grignard reagent.

190 (b)
$$\text{CH}_3\text{—O—CH}(\text{CH}_3)_2 + \text{HI} \rightarrow \text{CH}_3\text{I} + (\text{CH}_3)_2\text{CHOH}$$
 Halogen goes with simpler alkyl gp.

191 (d)
$$\text{C}_2\text{H}_5\text{ONa} + \text{C}_2\text{H}_5\text{X} \rightarrow \text{C}_2\text{H}_5\text{OC}_2\text{H}_5$$

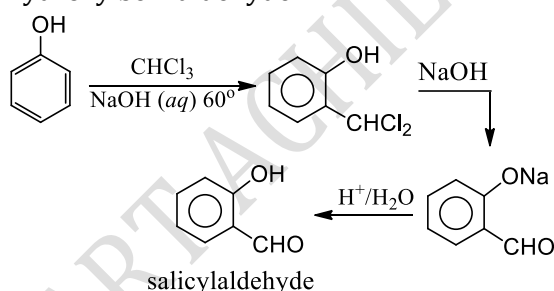
193 (b) (A) CH_3CN ; (B) CH_3COOH ; (C) $\text{C}_2\text{H}_5\text{OH}$.

194 (d) Ester + NaOH \rightarrow Sodium salt of acid + Alcohol.

195 (d) All are dehydrating agents.

197 (d) Alcohol $\xrightarrow{[O]}$ Aldehyde or ketones with same carbon atoms.

198 (d) Phenol, on refluxing with chloroform and sodium hydroxide followed by hydrolysis yields *o*-hydroxy benzaldehyde



199 (d) Molecular formula $\text{C}_3\text{H}_8\text{O}(\text{C}_n\text{H}_{2n+2}\text{O})$ suggests that the organic compound is either alcohol or ether.

Since, the compound on reaction with HI gives two different compounds, It must be an unsymmetrical ether, and its formula must be $\text{CH}_3\text{OC}_2\text{H}_5$ (methoxyethane).

$$\text{CH}_3\text{OC}_2\text{H}_5 + 2\text{HI} \rightarrow \text{CH}_3\text{I} + \text{C}_2\text{H}_5\text{OH}$$

Methoxyethane X Y

$$\text{C}_2\text{H}_5\text{OH} + 6\text{NaOH} + 4\text{I}_2 \rightarrow \text{CHI}_3 + \text{HCOONa} + 5\text{H}_2\text{O} + 5\text{NaI}$$

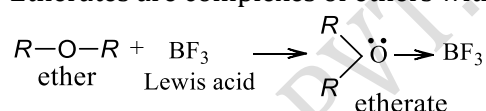
Aqueous iodoform

200 (a) Glycerol is generally used as an antifreeze reagent for making explosives.

201 (d) Follow IUPAC rules.

203 (c) Alcohol forms a azeotropic mixture with water and absolute alcohol is obtained by this mixture (rectified spirit) by adding benzene and then carrying out fractional distillation.

204 (c) Etherates are complexes of ethers with Lewis acid



205 (b) Glycerol has no use in match boxes.

207 (b) Alkoxide has metal-oxygen bond.

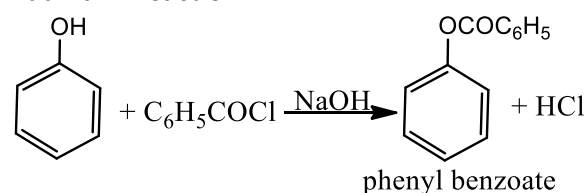
208 (a) Alcohols are more acidic than alkynes but less acidic than water thus, the correct order of acidity is $\text{H}_2\text{O} > 1^\circ > 2^\circ > 3^\circ > \text{RC} \equiv \text{CH}$

209 (a)
$$\text{C}_{12}\text{H}_{22}\text{O}_{11} \xrightarrow[\text{Maltose}]{\text{Maltase}} \text{C}_6\text{H}_{12}\text{O}_6 \xrightarrow{\text{Zymase}} \text{C}_2\text{H}_5\text{OH}$$

210 (d) Ethers are relatively less active due to the absence of functional group.

211 (c) During germination of grape juice, a brown crust is formed at the top which is called argol. This contains potassium hydrogen tartrate and is used for preparation of tartaric acid and Rochelle salt.

212 (d) The process of benzoylation of compounds containing active hydrogen such as phenol, aniline, alcohol etc, with benzoyl chloride in the presence of aqueous NaOH is called Schotten-Baumann reaction.



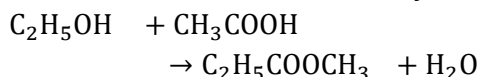
213 (c) Gashol or power alcohol (ethanol + petrol) a fuel for generating power.

215 (c)

Alcohol + Acid \rightleftharpoons Ester (fruity smelling)



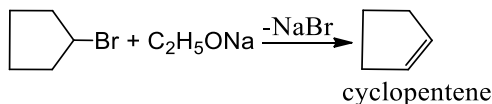
Alcohol (C_2H_5OH) when react with acid they produce ester and esters have fruity smell.



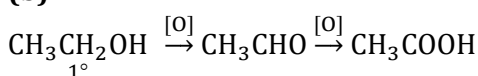
ethyl alcohol acetic acid fruity smell of ester

216 (c)

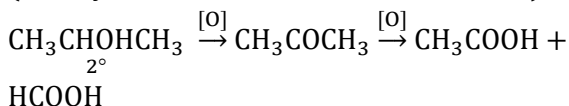
2° alkyl halides tend to undergo elimination. Thus bromocyclopentane on treatment with sodium ethoxide gives cyclopentene rather than cyclophenyl ethyl ether



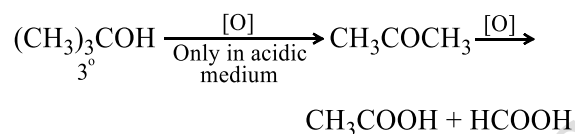
217 (b)



(Aldehyde and acid of same carbon atoms)



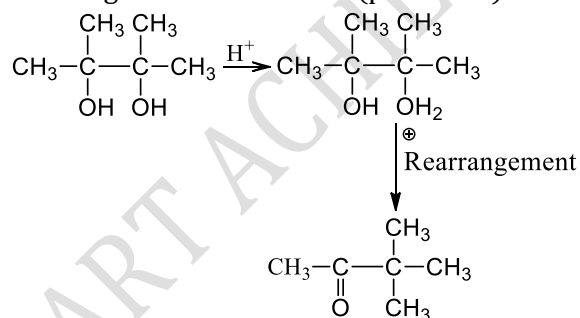
(Acid of less carbon atom)



(Both of less carbon atoms)

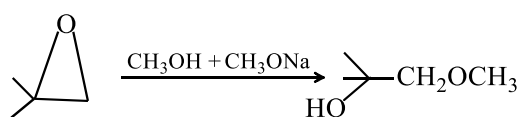
218 (a)

Pinacol ($(CH_3)_2C(OH)C(OH)(CH_3)_2$) with dil H_2SO_4 or HCl undergoes dehydration and rearranges to form ketones (pinacolone)



219 (b)

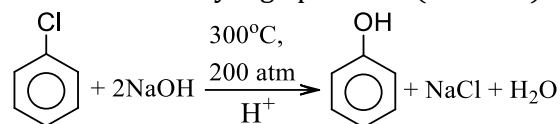
This is base catalysed cleavage of cyclic ethers where nucleophile attacks least substituted carbon.



221 (a)

By Dow process large quantities of phenol are formed by heating chlorobenzene with a 10% solution of caustic soda or sodium carbonate at

$300^\circ C$ under very high pressure (200 atm)

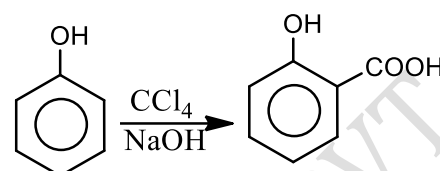


222 (a)

Tincture of iodine is a solution of I_2 in alcohol.

223 (c)

Phenol on heating with CCl_4 and aqueous KOH gives salicylic acid. This reaction is Reimer-Tiemann reaction.



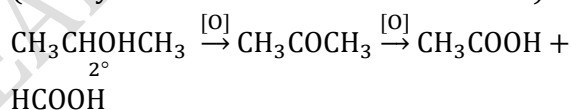
224 (a)

Cl_2 in absence of moisture has no action over CH_3OH . In presence of moisture it oxidizes CH_3OH to HCHO.

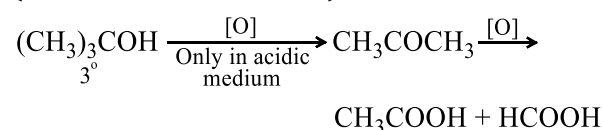
226 (a)



(Aldehyde and acid of same carbon atoms)

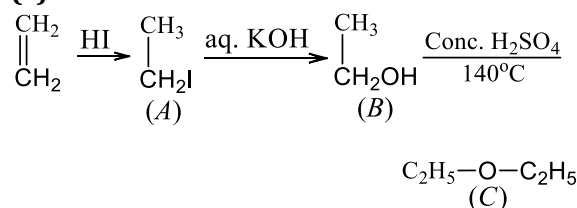


(Acid of less carbon atom)



(Both of less carbon atoms)

227 (c)



Note: Ethers are functional isomers of alcohols

228 (b)

The reaction of alcohol with conc. HCl and anhydrous $ZnCl_2$ following S_N1 pathway, so greater the stability of carbocation formed, faster is the reaction.

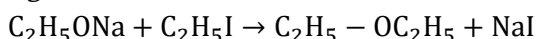
2-methyl propan-2-ol gives 3° carbocation. Hence, it reacts rapidly with conc. HCl and anhydrous $ZnCl_2$ (Lucas reagent).

229 (d)

Solubility of alcohols decreases with increasing mol. wt. because of increasing hydrophobic nature of alkyl gp.

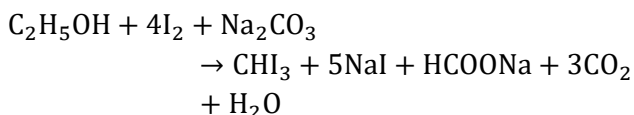
251 (c)

Williamson's synthesis It involves the heating of alkyl halide with sodium or potassium alkoxides. This reaction is used for the preparation of ethers *e.g.*,



252 (b)

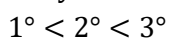
CH_3OH and C_2H_5OH can be differentiated by using Na_2CO_3 and I_2 . C_2H_5OH gives yellow precipitate of CHI_3 whereas CH_3OH does not react with it.



(iodoform
Yellow ppt)

254 (c)

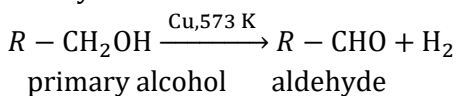
Dehydration of alcohol is in order



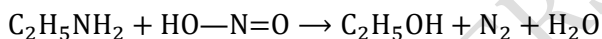
Thus, (C), a 3° alcohol is dehydrated very easily.

255 (b)

Primary alcohols get dehydrogenated with reduced copper at 573 K, to give corresponding aldehydes.



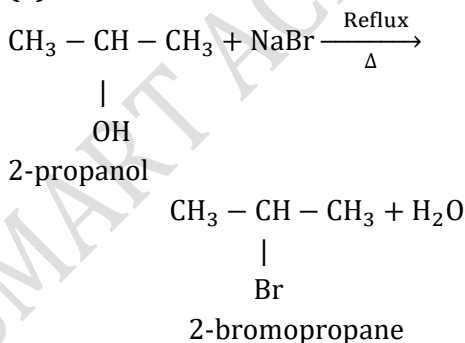
256 (b)



257 (d)

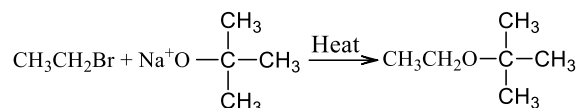
Proton donors are acids. Among given choices C_2H_5OH can give proton (H^+) most easily. $\therefore C_2H_5OH$ is most acidic among C_2H_6 , CH_4 , $CH \equiv CH$ and C_2H_5OH

258 (a)



259 (a)

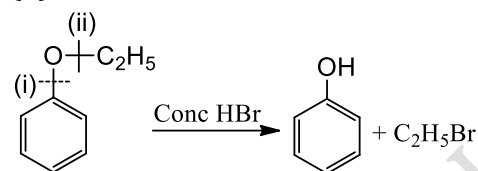
The reactivity of primary halides is in the order, $CH_3 > CH_3CH_2 > CH_3CH_2CH_2$ and the tendency of alkyl halides to undergo elimination is $3^\circ > 2^\circ > 1^\circ$. Hence, for better yield, the alkyl halide should be primary and alkoxide should be secondary or tertiary.



260 (b)

Alcohols are alkyl derivative of neutral H_2O ;
Thiols are derivative of weak acidic H_2S .

261 (b)



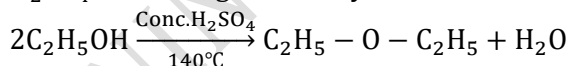
Breaking bond (i) is difficult as this bond has a partial double bond character due to resonance

263 (b)

A is $CH_3CH_2CH_2Cl$; B is $CH_3 \cdot CH=CH_2$

264 (a)

Ethanol on dehydration in presence of conc. H_2SO_4 at $140^\circ C$, gives diethyl ether.

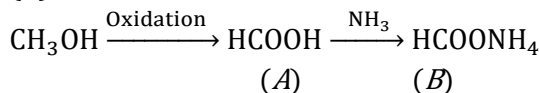


Diethyl ether

265 (a)

o-cresol contains phenolic group, thus it gives violet colouration with $FeCl_3$ where as benzyl alcohol donot contains phenolic group, hence no colouration with $FeCl_3$. Hence, identifiable.

266 (b)



267 (a)

Pyroligneous acid obtained during destructive distillation of wood contains mainly acetic acid (9-10%) methyl alcohol (2-2.5%) and acetone about 0.5%; the other distillation products are wood gas, wood charcoal, wood tar.

268 (c)

Enzymes are highly specific in catalysing action.

269 (b)

(A) CH_3CH_2OH ; (B) CH_3CH_2ONa ; (C) CH_3CH_2

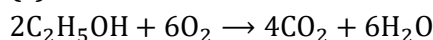
270 (c)

I^- attacks on lower alkyl gp. due to steric hindrance on larger gp.

272 (d)

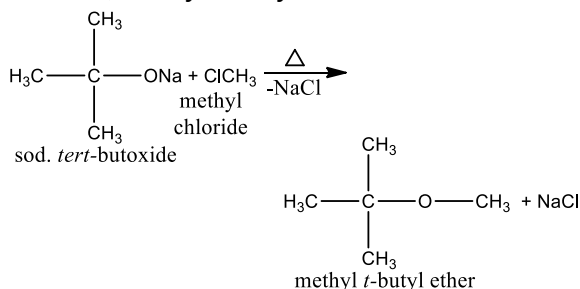
(X) is $CH_3CH=CH_2$; (Y) is $CH_3CHBrCH_2Br$; (Z) is alkyne.

273 (c)



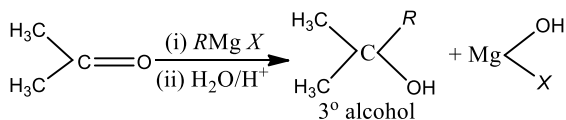
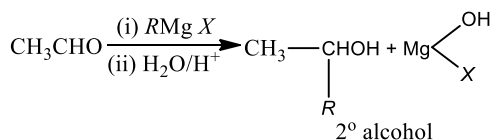
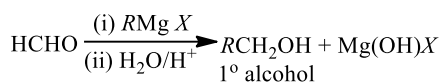
274 (b)

When, sod. *tert*-butoxide is reacted with methyl chloride, methyl *t*-butyl ether is formed.



275 (d)

Aldehydes and ketones on reaction with RMgX followed by subsequent hydrolysis in acidic gives alcohol. *e.g.*:



276 (c)

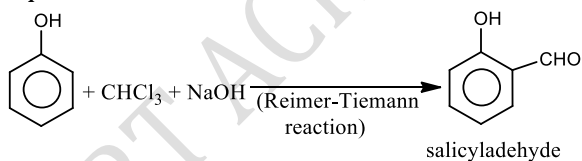
Alcohol can be directly converted to chloral, chloroform or ethanol.

278 (c)

Soluble in strong acids ethers are Lewis base.

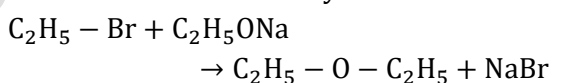
279 (c)

In Reimer-Tiemann reaction Salicylaldehyde is obtained when phenol is heated with CHCl_3 and aq NaOH.

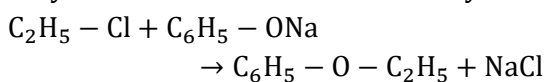


281 (a)

Williamson's synthesis It is the best method for the laboratory preparation of both simple and mixed ethers and involves the action of sodium alkoxide on a suitable alkyl halide.



Ethyl bromide diethyl ether



Ethyl phenyl ether

282 (d)

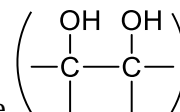
Bulkier the alkyl groups in the ether, greater is the

C – O – C bond angle due to steric factor

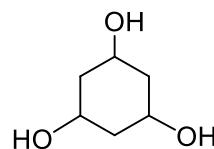
283 (c)

Ethers are Lewis base and forms complex compounds with Lewis acids.

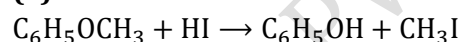
284 (a)



All those compounds which have groups are oxidised by periodic acid (HIO_4). Thus is not oxidised.

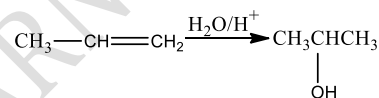
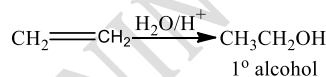


285 (a)

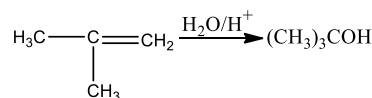


Phenol shows stabilization due to resonance.

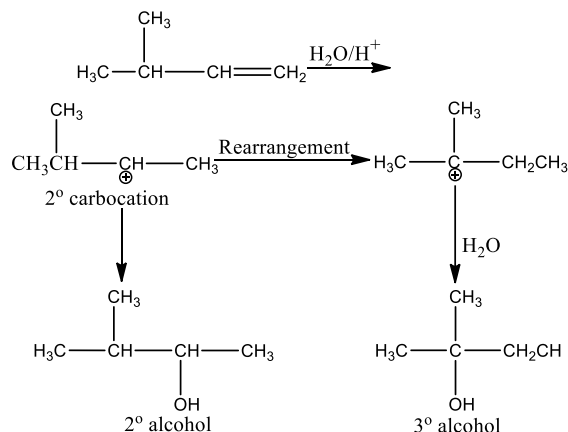
286 (c)



2° alcohol through 2° carbocation ($\text{CH}_3\overset{\oplus}{\text{C}}\text{HCH}_3$)



3° alcohol through 3° carbocation [$(\text{CH}_3)_3\text{C}^\oplus$]



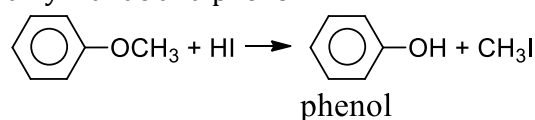
Thus, best alternate is (c)

287 (c)

Diethyl ether when heated with CO at 150°C and 500 atm pressure in presence of BF_3 forms ethyl propionate.

289 (b)

When phenolic ether is heated with HI, it gives alkyl halide and phenol

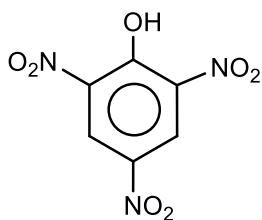


290 (c)

The red colour is due to anion of nitrolic acid.

291 (d)

Picric acid is 2, 4, 6-trinitrophenol. It is due to presence of three $-NO_2$ groups, is more acidic than acetic acid and benzoic acid.

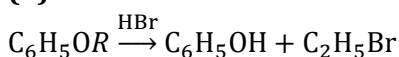


2,4,6-trinitrophenol
(picric acid)

292 (c)

CH_3OH does not contain $CH_3-CHOH-$ unit.

293 (d)



294 (d)



295 (d)

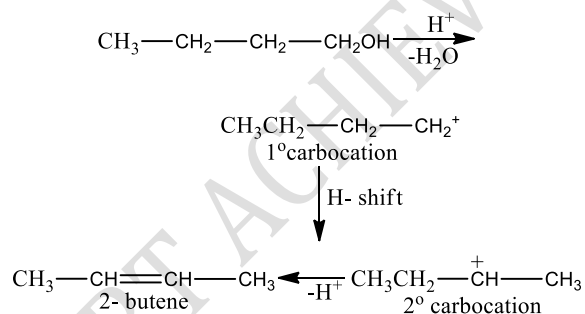
Ethers are supposed to have no functional group.

296 (b)

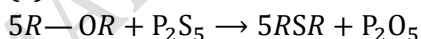
More is the branching in molecule, lesser is surface area and weaker are intermolecular forces.

298 (b)

The dehydration of 1-butanol gives 2-butene as the main product because 2-carbocation is stabler than 1° .



300 (c)



301 (c)

Longer the bond length, lesser will be dissociation energy and hence, more reactivity.

Among halogen acids bond length increases from HCl to HI.

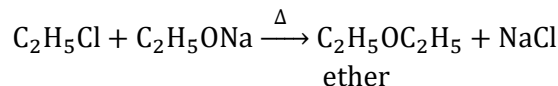
\therefore Order of reactivity of halogen acids towards alcohol is



302 (d)

Alkyl halides react with sodium alkoxide to give

ether. This is called Williamson's synthesis of ether.



303 (a)

Alcohols although possess low mol. wt. than thiol but they show H-bonding.

306 (c)

Alcohols are neutral and do not influence pH.

307 (c)

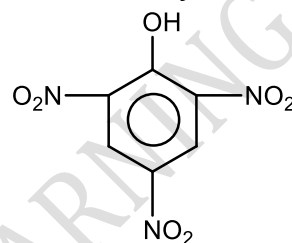
Enzymes are protinous molecules derived from living organisms.

308 (d)

Both ether and chloroform are anaesthetic agents.

309 (b)

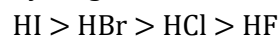
Picric acid is *sym*-trinitrophenol.



2,4,6-triniphenol

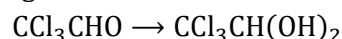
310 (d)

Among hydrogen halides, as the size of halide ion increases, its reactivity towards ethyl alcohol also increases. Thus, the order of reactivity of hydrogen halide is



312 (c)

Chloral forms chloral hydrate with water due to H-bonding.



314 (c)

Primary, secondary and tertiary alcohols are distinguished by Lucas test. A mixture of anhydrous $ZnCl_2$ + conc HCl is called Lucas reagent.

316 (b)

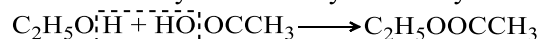
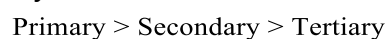
Sodium alkoxide is $R-O^-Na^+$.

317 (a)

Due to the formation of stable tertiary carbon atom as an intermediate.

319 (a)

Reactivity order for H-atom of alcohol is,



320 (b)

Phenol condenses with aliphatic and aromatic aldehydes in the *o*- and *p*-positions, the most

336 (d)

It oxidises only C—OH gp. to C=O and not to C=C.

337 (c)

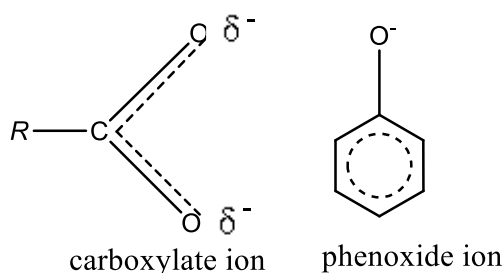
One mole of CH_3COCl reacts at one —OH gp. replacing H by CH_3CO gp.

338 (b)

Reactivity order of OH towards Lucas reagent is Tertiary > Secondary > Primary alcohol.

339 (a)

Phenol are less acidic than carboxylic acid, because carboxylate ion is relatively more stable as compared to phenoxide ion.



340 (a)

$\text{CH}_3 \cdot \text{CH}_2\text{OH} \rightarrow \text{CH}_3\text{COOH}$; secondary and tertiary alcohols give acids of less carbon atoms.

342 (c)

This is industrial method of preparation of glycol.

343 (c)

Buchner studied fermentation.

344 (d)

$\text{C}_2\text{H}_5\text{OH}$ is obtained from grains, used as wine and called methyl carbinol.

345 (a)

Boiling point of alcohols are more than alkane; also more is the surface area, more is b.p. of alcohol.

346 (a)

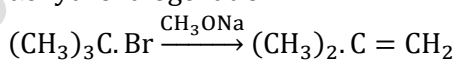
Reactivity order for H-atom of alcohol is,

Primary > Secondary > Tertiary



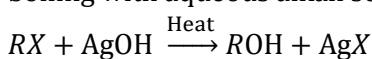
347 (b)

Williamson's synthesis for mixed ethers cannot be used to prepare ditertiary ethers, because tertiary alkyl halides on heating with sod. alkoxide gives dehydrohalogenation.



349 (d)

Alkyl halides are hydrolysed to corresponding alcohols by moist silver oxide (AgOH) or by boiling with aqueous alkali solution

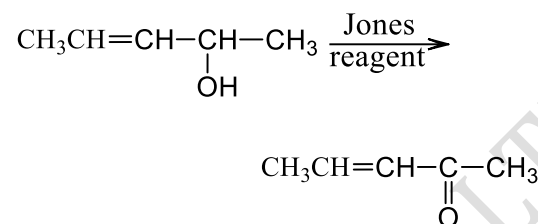


350 (a)

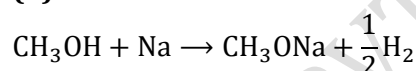
Due to strong H-bonding and weaker hydrophobic character.

351 (b)

Jones reagent oxidises 1° alcohols to aldehydes and 2° alcohols to ketones without affecting C = C doubled bond.

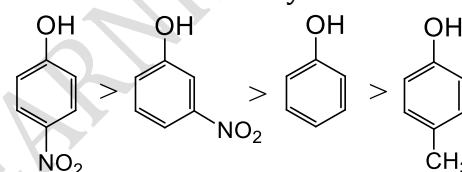


352 (b)



354 (d)

+R group present in phenol decreases the acidity while -R group presents at *ortho* or at *para* position increases the acidity of phenols. Thus, the correct order of acidity is



355 (b)

Due to the presence of two lone pair of electrons on oxygen atom.

356 (c)

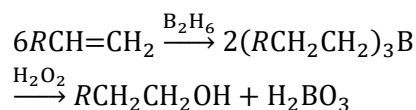
___do___

357 (d)

The enzyme catalysed conversion of starch into sugar.

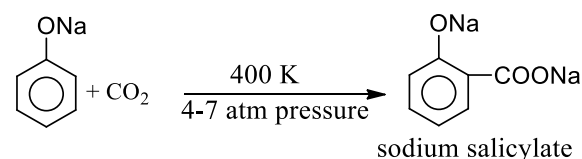
358 (c)

The process is called hydroboration and is used to convert terminal alkenes to 1-ol.



359 (c)

Sodium phenoxide reacts with CO_2 at 400 K and 4 – 7 atm pressure to give sodium salicylate. This is called Kolbe's reaction

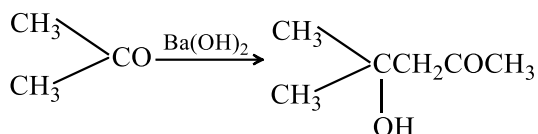


361 (c)

$2\text{HCHO} \xrightarrow{\text{KOH}} \text{CH}_3\text{OH} + \text{HCOOK}$; Cannizzaro's reaction

362 (c)

It is aldol condensation.



363 (c)

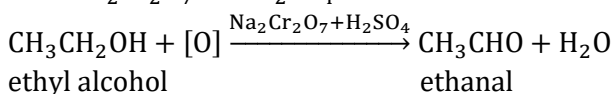
Ethers have two alkyl groups on oxygen atom.

364 (a)

Pepsin hydrolyses —CONH— (peptide bonds) to —COOH and —NH₂.

365 (b)

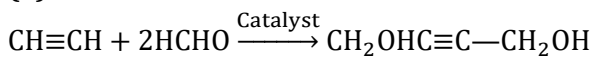
1° alcohol are converted into aldehyde by reaction with Na₂Cr₂O₇ and H₂SO₄.



368 (d)

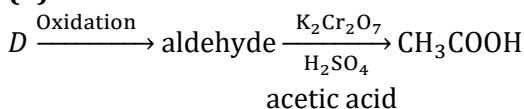
H-bonding in molecule gives rise to higher b.p.

369 (a)



This reaction is ethinylation. The catalyst used are copper acetylide or sod. alkoxide.

370 (b)



1° alcohol on oxidation gives aldehyde having same number of carbon and aldehyde on oxidation gives acid having same number of carbon atoms.

It means, *D* will be alcohol having two carbon atoms that is C₂H₅OH (ethyl alcohol) and the alcohol on oxidation will give CH₃CHO (acetaldehyde)



372 (d)

Alcohols (—OH) react with sodium and carbonyl

compounds $\left(\begin{array}{c} \diagdown \\ \text{C}=\text{O} \\ \diagup \end{array} \right)$ give precipitate with semicarbazide.

Since, the compound with molecular formula, C₃H₆O does not give precipitate with semicarbazide and does not react with sodium, it is neither a carbonyl compound nor an alcohol. Hence, it must be an ether, *i.e.*, CH₂ = CHOCH₃

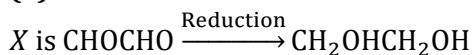
373 (c)

Williamson's synthesis is used for the preparation of ethers, specially mixed ethers.

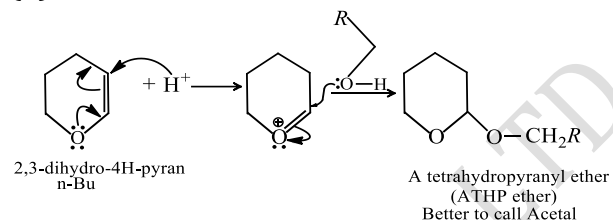
374 (c)

An increase in hydrophobic character decreases H-bonding.

375 (a)



377 (b)



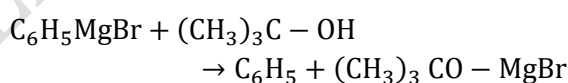
Note : Because of its special structure, there are two ether oxygen attached to same carbon, making it acetal.

378 (b)

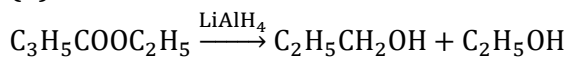
CH₃OH is toxic and injurious to health and therefore also used for denaturation of alcohol.

384 (a)

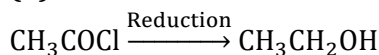
Phenyl magnesium bromide reacts with *t*-butanol to produce benzene because phenyl group (electronegative group) is associated with active hydrogen of alcohol, *i.e.*, —H of —OH group of alcohol.



386 (b)



387 (b)



388 (b)

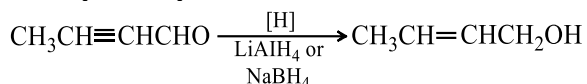
Phenols are acidic in nature due to resonance stabilisation of phenoxide ion. Presence of electrons releasing groups such as —CH₃ destabilises ion and decreases the acidic nature of phenols. On the other hand presence of electron withdrawing group in the ring stabilise phenoxide ion and increases the acidic nature of phenols. Further more *meta*-isomer is less acidic. Then *para* because it is stabilised by inductive effect only. Thus, correct order is IV > III > I > II

389 (c)

Also known as glyptal resin; A class of synthetic resin obtained by the reaction of polyhydric alcohol with poly basic organic acids or anhydrides, *e.g.*, Glycerol and phthalic anhydride, generally used for surface coating.

390 (b)

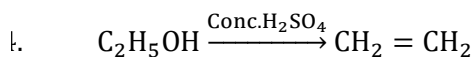
NaBH_4 , LiAlH_4 has no action on $\text{C}=\text{C}$.



391 (c)

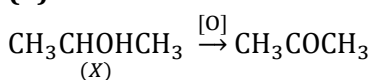
The organic liquid A is $\text{C}_2\text{H}_5\text{OH}$

i. Ethyl alcohol is a colourless liquid with a characteristic pleasant smell, having boiling point 78.1°C .



(which decolourises Br_2 water and alk. KMnO_4)

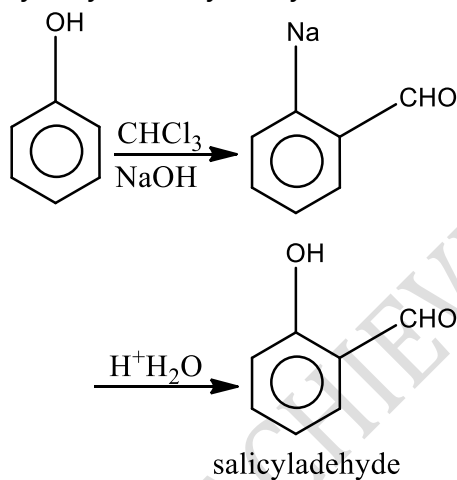
392 (b)



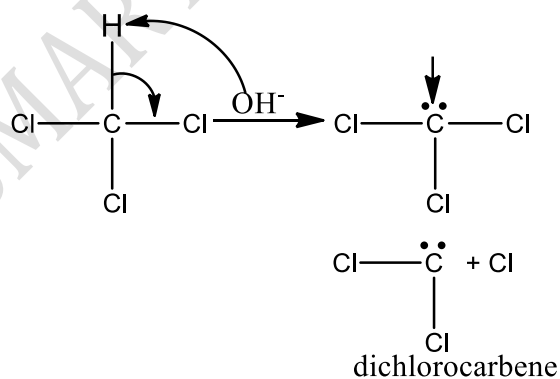
Which gives iodoform test.

393 (d)

Reimer-Tiemann reaction this involves the treatment of phenol with chloroform in aqueous sodium hydroxide solution followed by acid hydrolysis. Salicylaldehyde is formed.



In the above reaction, chloroform first reacts with sodium hydroxide to produce dichloro carbene which is the intermediate in this reaction.



394 (b)

Reactions involving H-atom of alcohol show the order $1^\circ > 2^\circ > 3^\circ$.

395 (a)

A characteristic test for alcoholic gp.

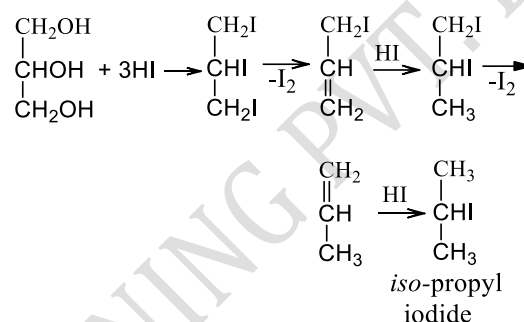
397 (c)

The boiling point of alcohols is higher than the boiling points of corresponding alkanes and aldehydes due to H-bonding. As the molecule mass increases, boiling point increases.

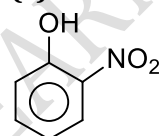
Thus, $\text{C}_2\text{H}_5\text{OH}$ has the higher boiling point among the given.

398 (c)

When glycerol reacts with HI, *iso*-propyl iodide is obtained



399 (c)



is not soluble in NaHCO_3

400 (b)

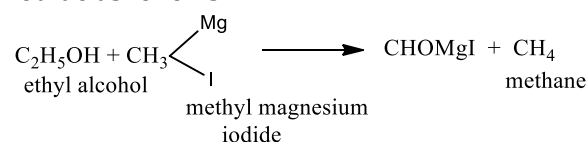
Pyroligneous acid is used for the preparation of acetic acid. It contains about 10% acetic acid, and was originally treated by neutralising with lime and then distilling off the volatile compounds like methanol and acetone

401 (a)

Power alcohol is used to generate power.

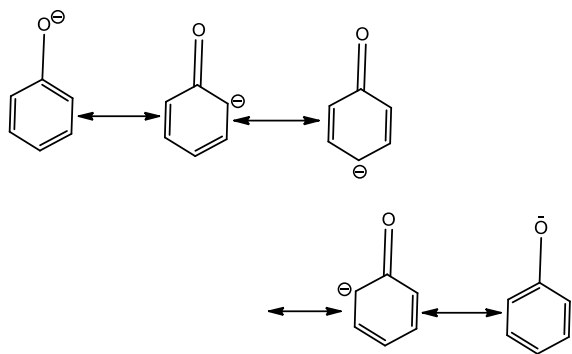
403 (a)

Ethyl alcohol reacts with methyl magnesium iodide as follows



405 (c)

Due to resonance the phenoxide ion is more stable whereas resonance is not possible in alkoxide ion.

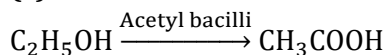


$R - O^{\ominus}$ no resonance is possible, Since, phenoxide ion is better stabilized by resonance, the phenol has more tendency to form phenoxide ion by releasing H^+ ion. So, phenols are acidic in nature.

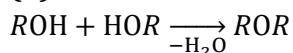
407 (d)

Molecular weight of diethyl ether is more than ethanol. Therefore, it should have higher boiling point than ethanol. But it is not so. It is due to intermolecular hydrogen bonding. Ethyl alcohol has intermolecular hydrogen bonding but diethyl ether has no hydrogen bonding. The compounds shows intermolecular hydrogen bonding has higher m.p. and b.p. than compounds having no hydrogen bonding. Therefore, the boiling point of diethyl ether will be less than ethanol ($78^{\circ}C$).

409 (c)

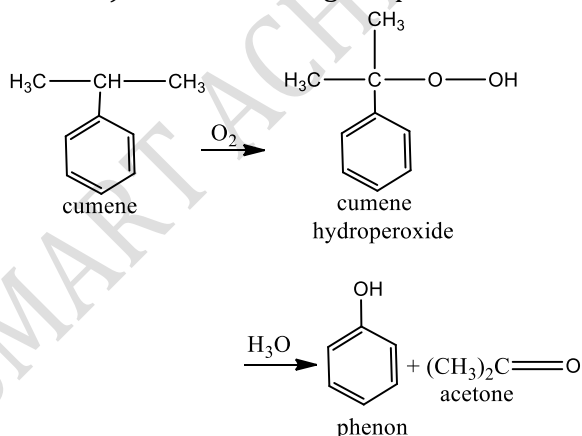


410 (d)



412 (a)

Cumene is isopropyl benzene (1-methyl ethyl benzene). It on oxidation gives phenol.

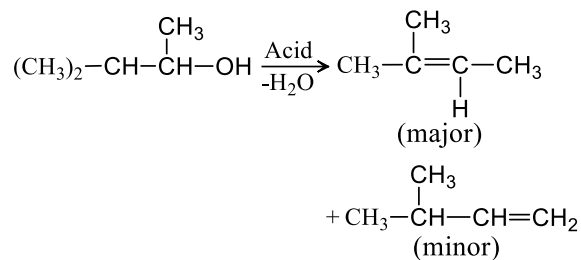


414 (a)

Due to H-bonding.

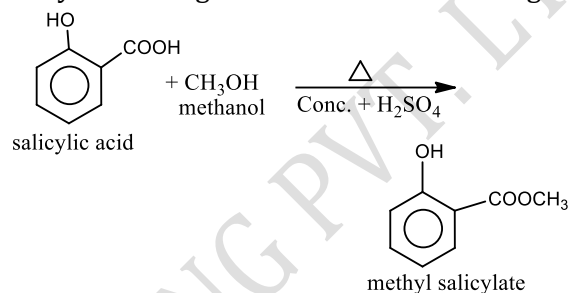
415 (b)

Many a time unexpected products result during dehydration of alcohols.



417 (d)

Methanol reacts with salicylic acid in the presence of a few drops of conc H_2SO_4 to give methyl salicylate having the smell of oil of winter green.



418 (c)

Ethers are $R-O-R'$ or $R-O-R$.

419 (c)

Phenol gives characteristic colouration (violet) with aqueous $FeCl_3$ solution.

420 (a)

Reactivity of $-OH$ gp. of alcohols (due to +ve IE of alkyl group).

421 (d)

Remember these.

422 (d)

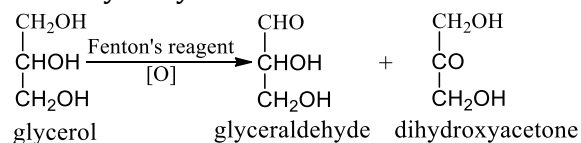
In presence of air and light, ether form peroxides which cause explosion during distillation

423 (d)

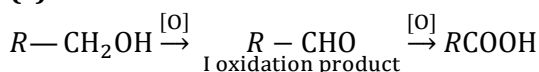
All the reaction proceed by stable ions. After the lose of H^+ ion, phenol forms phenoxide ion. The phenoxide ion is resonance stabilized, thus makes the phenol more acidic.

426 (c)

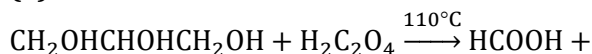
With mild oxidising agent like bromine water or H_2O_2 in the presence of $FeSO_4$ (Fenton's reagent), glycerol is oxidised to a mixture of glyceraldehyde and dihydroxy acetone



428 (c)



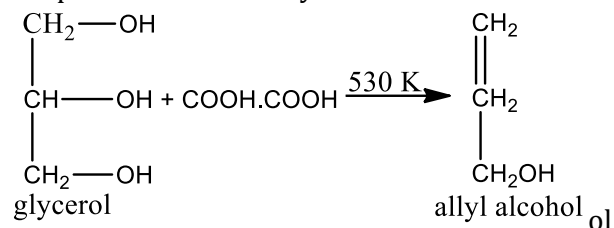
431 (a)



CO₂ + glycerol

432 (a)

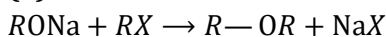
Oxalic acid on reaction with glycerol at 530K temperature furnish allyl alcohol.



433 (c)

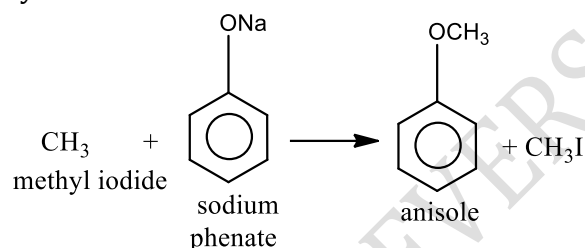
Alcohol forms a azeotropic mixture with water and absolute alcohol is obtained by this mixture (rectified spirit) by adding benzene and then carrying out fractional distillation.

434 (a)



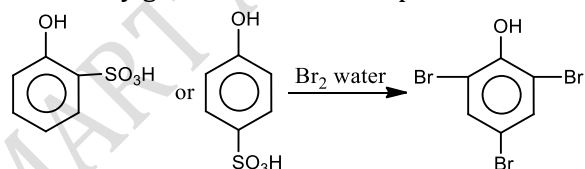
435 (b)

The reaction of alkyl halide with sodium alkoxide to give ether (alkoxy alkane) is known as Williamson's synthesis. In this reaction an ether (anisole) is prepared by the action of alkyl halide (methyl iodide) on sodium alkoxide (sodium phenate), so it is an example of Williamson's synthesis.



436 (b)

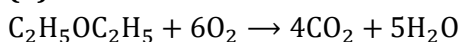
Like nitration, bromination of *o*- or *p*-phenolsulphonic acid occurs with simultaneous replacement of SO₃H group by Br atom to ultimately give 2, 4, 6-tribromophenol.



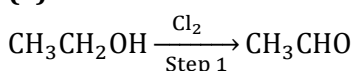
438 (d)

Boiling point of ethyl alcohol is 78°C.

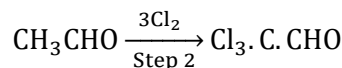
440 (b)



442 (a)

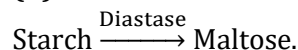


The above reaction is an example of oxidation. Due to oxidation -CH₂OH group is oxidised to -CHO group.



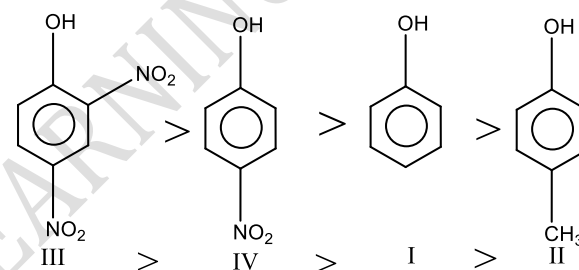
In the second step chlorination takes place. In chlorination hydrogen atom changes by chlorine.

443 (d)



444 (b)

Proton donors are acids. The acidity of phenol increases by presence of electron withdrawing groups (*e.g.*, -NO₂ group) because these groups weaken the O - H bond and stabilise the phenoxide by resonance. More the number of electron withdrawing group in compound more will be acidity. On the other hand electron donating group (*e.g.*, CH₃) decrease the acidity of phenol because they strengthen the O - H bond. Therefore, correct order of acidity is



445 (d)

Denaturation is made by addition of pyridine, CH₃OH or naphtha.

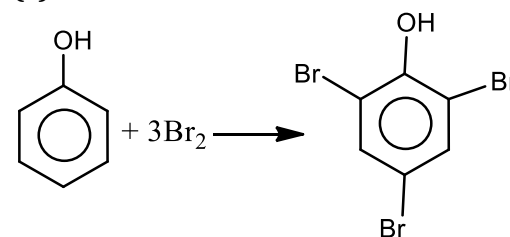
447 (b)

Mol. wt. Of C₄H₁₀O₃=106; on reaction with CH₃COCl; H-atom of OH gp. is replaced by COCH₃ gp. and thus showing an increase in mol. wt by 42 unit. Thus, if mol. wt. becomes 190, it means molecule has two—OH groups.

450 (d)

Bond angle is 110° due to steric hindrance of bulky alkyl gps.

451 (c)



Molecular weight of phenol= 12 × 6 + 1 × 6 + 16 = 94

Molecular weight. Of Br₂ = 3 × 160 = 480

∴ 94 g of phenol requires=480g of Br₂

∴ 2 g phenol requires= $\frac{480}{94} \times 2 = 10.22$ g

452 (b)

Chlorex is industrial name for dichlorodiethyl ether, *i. e.*, $\text{CH}_3\text{CHClOCHClCH}_3$

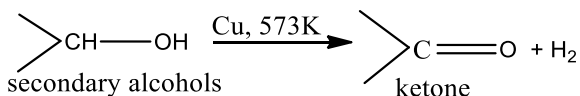
453 (b)

General formula for alcohols is $\text{C}_n\text{H}_{2n+1}\text{OH}$.
Primary alcohols have $-\text{CH}_2\text{OH}$ gp. Secondary alcohols have $>\text{CHOH}$ gp. and

tertiary alcohols have $>>\text{COH}$ gp.

454 (b)

Secondary alcohols on dehydrogenation with Cu at 573 K give ketones.



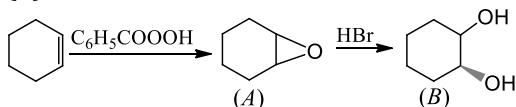
458 (a)

Branching give rise to decreases in surface area and thus intermolecular forces are lowered.

459 (d)

$-\text{OH}$ gp. is on vinyl gp. ($\text{CH}_2=\text{CH}-$)

460 (a)



A = 1,2-epoxycyclohexane

B = *trans*-2-bromocyclohexanol

461 (c)

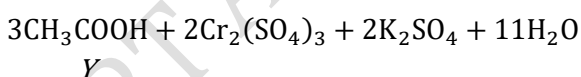
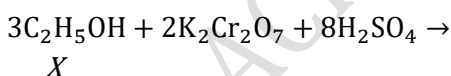
An experimental fact.

462 (a)

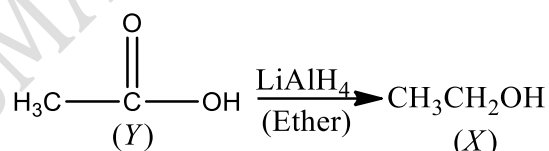
The reaction is called Fischer-Speier esterification.

465 (a)

When ethyl alcohol is oxidised by acidified potassium dichromate, CH_3COOH (Y) is obtained as



Carboxylic acid undergoes reduction with LiAlH_4 to give primary alcohol as



467 (d)

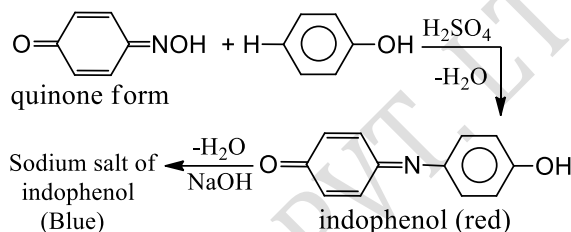
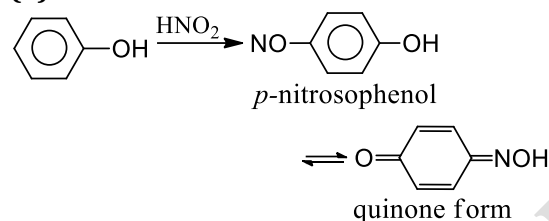
Reactivity order of OH towards Lucas reagent is, Tertiary > Secondary > Primary alcohol.

470 (c)

Chloro benzene $\xrightarrow{\text{Dow's process}}$ Phenol

Reimer-Tiemann reaction \rightarrow Salicylaldehyde

471 (a)



This reaction is an example of coupling reaction

472 (a)

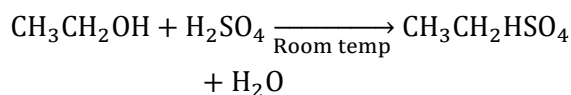
H of CH_3OH (carbinol) is replaced by vinyl gp.

473 (d)

Alcohols which are used for generating power is called power alcohol. A mixture of 20% ethanol and 80% gasoline is used in internal combustion engines to derive power

474 (b)

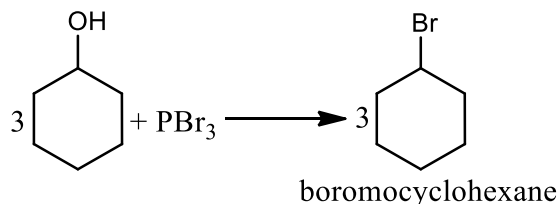
When one H_2SO_4 reacts with ethyl alcohol at room temperature, ethyl hydrogen sulphate is formed



Ethyl hydrogen sulphate

477 (a)

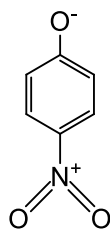
Cyclohexanol on reaction with PBr_3 in presence of pyridine gives bromocyclohexane.



478 (c)

In Lucas test, when alcohol is mixed with conc HCl and anhydrous ZnCl_2 at room temperature, if oily product is formed immediately, the alcohol can be tertiary

479 (c)

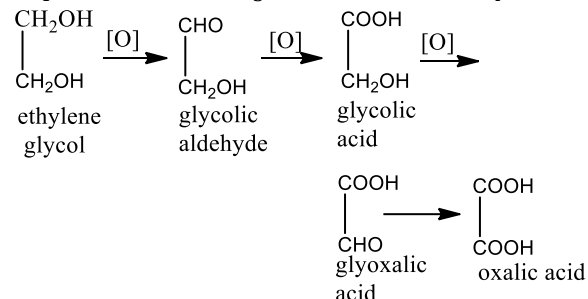


is not a resonating structure of *p*-nitrophenoxide

Since, N being an element of second period can't contain more than 10 electrons in its valence shell

480 (c)

In presence of HNO_3 or alkaline KMnO_4



484 (b)

PCl_5 replaces $-\text{OH}$ group by $-\text{Cl}$.

486 (c)

Phenol forms azo dye, with benzene diazonium chloride. This reaction is called coupling reaction

487 (a)

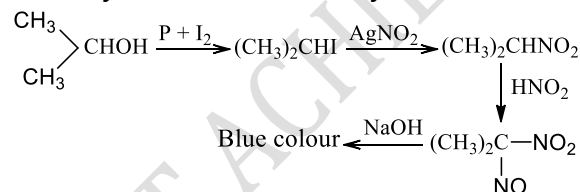
Reactivity of H-atom of alcohol, (due to + IE of alkyl gp.)

Primary > Secondary > Tertiary.

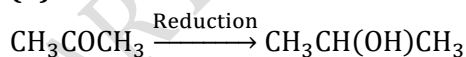
Also CH_3OH is more acidic than $\text{C}_2\text{H}_5\text{OH}$ due to more +IE of $-\text{C}_2\text{H}_5$ gp.

489 (a)

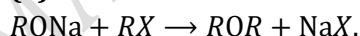
Iso-butyl alcohol is secondary alcohol



490 (d)

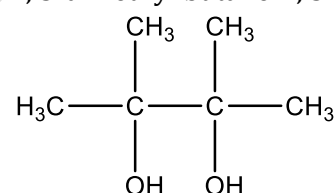


491 (a)

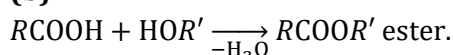


492 (b)

2, 3-dimethyl butane-2, 3-diol is known as pinacol



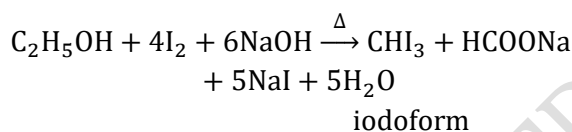
494 (b)



495 (d)

$\text{C}_2\text{H}_5\text{OH}$ and $\text{C}_6\text{H}_5\text{OH}$ can be distinguished by neutral FeCl_3 solution or $\text{I}_2 + \text{NaOH}$ solution.

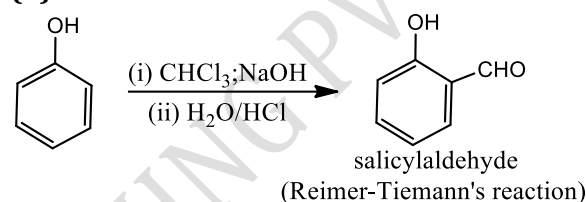
$\text{C}_2\text{H}_5\text{OH}$ gives iodoform test with $\text{I}_2 + \text{NaOH}$ solution while phenol does not give yellow ppt. of iodoform.



$\text{C}_6\text{H}_5\text{OH} + \text{I}_2 + \text{NaOH} \rightarrow$ No reaction

$\text{C}_6\text{H}_5\text{OH}$ reacts with neutral FeCl_3 solution to give purple colour while $\text{C}_2\text{H}_5\text{OH}$ doesn't give any colour with neutral FeCl_3 solution.

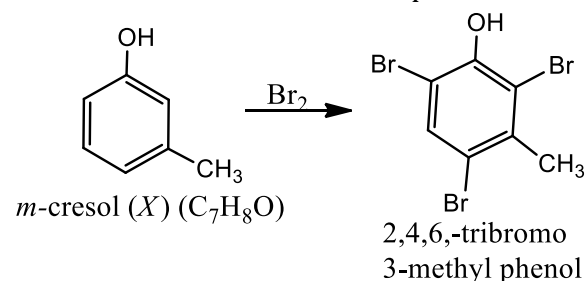
497 (b)



(Reimer-Tiemann's reaction)

498 (c)

Compound 'X' ($\text{C}_7\text{H}_8\text{O}$) is insoluble in aqueous NaHCO_3 but soluble in NaOH , so it is a phenol. Since, the number of carbon atoms remains the same after bromination, the compound must be *meta* *cresol* and reactions takes place as follows



499 (b)

Phenol doesn't decompose sodium carbonate or sodium bicarbonate, *i.e.*, CO_2 is not evolved because phenol is a weaker acid than carbonic acid.

500 (d)

The molecule should contain $\text{CH}_3-\text{C}(=\text{O})-$ or $\text{CH}_3-\text{CH}(\text{OH})-$

Unit attached to C or H in it to shown iodoform reaction.

501 (c)

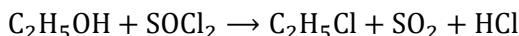
Alcohol is used as solvent for many drugs.

502 (b)

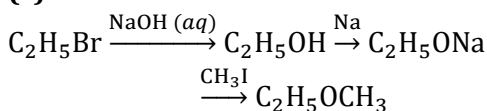
In Victor's Meyer's test, 1° -alcohol gives red colour, 2° -alcohol gives blue colour while 3° -

alcohol gives no colour.

503 (b)



504 (c)

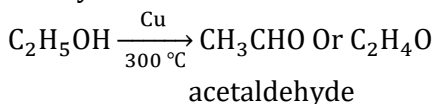


505 (d)

All are anaesthetic agents.

506 (c)

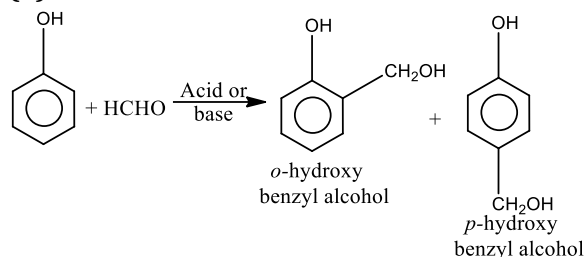
Alcohols are oxidised by not copper to give aldehydes.



507 (c)

Bond angle is 110° due to steric hindrance of bulky alkyl groups.

513 (a)



This reaction is called Laderer Mannasse reaction.

514 (c)

___do___

517 (a)

CH_3SH is gas with foul smell and thus, mixed with LPG to detect its leakage.

518 (d)

Alcohols are neutral as they do not influence the pH. Due to O—H bond, they possess Bronsted acid nature showing cleavage of O—H bond. Also due to the presence of lone pair of electron on oxygen atom, they act as Lewis base. The reactivity order is based on +IE of alkyl groups.

Lewis base order : $3^\circ > 2^\circ > 1^\circ$

Bronsted acid order : $1^\circ > 2^\circ > 3^\circ$

519 (b)

Reduction of acid and acid derivatives producing alcohol by $\text{C}_2\text{H}_5\text{OH} + \text{Na}$ is called Bonveault-Blanc reaction.

520 (b)

Absolute alcohol is 100% pure ethanol. The fractional distillation of aqueous solution of ethanol gives a constant boiling azeotropic mixture which contains 95% ethanol. To get 100% ethanol, a small amount of benzene is

added with azeotropic mixture and then distilled. It is called azeotropic distillation.

522 (a)

Pyroigneous acid obtained during destructive distillation of wood contains mainly acetic acid (9-10%), methyl alcohol (2-2.5%) and acetone about 0.5%; the other distillation products are wood gas, wood charcoal, wood tar.

523 (c)

Weak base reacts with strong acid.

525 (c)

Dunstan's test is used for identification of glycerol

529 (a)

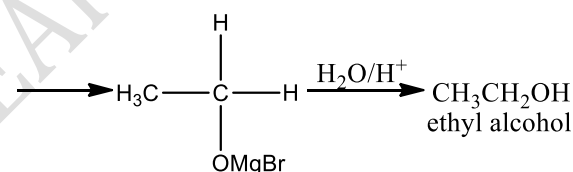
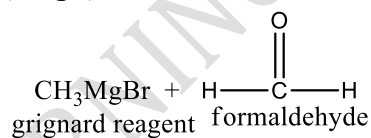
$(\text{RMgX}) + \text{HCHO} \rightarrow 1^\circ \text{alcohol}$

Grignard

reagent

$(\text{RMgX}) + \text{RCHO} \rightarrow 2^\circ \text{alcohol}$

$(\text{RMgX}) + \text{RCOR} \rightarrow 3^\circ \text{alcohol}$



530 (a)

Solubility of alcohols in water decreases as the size of alkyl group increases because tendency to form hydrogen bonding decreases. So, the order of solubility is as

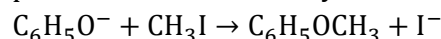
Ethanol > *n*-propanol > *n*-butyl alcohol

531 (b)

Germinated barley called malt contains diastase enzyme.

533 (a)

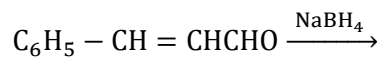
Methyl phenyl ether is obtained by the reaction of phenolate ions and methyl iodine.



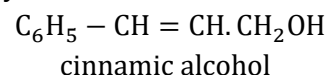
Methyl phenyl ether

534 (b)

NaBH_4 and LiAlH_4 attacks only carbonyl group and reduce it into alcohol group. They do not attack on double bond.



cinnamic aldehyde



535 (a)

Salicylic acid + NaHCO₃ → effervescence of CO₂

Phenol + NaHCO₃ → No reaction

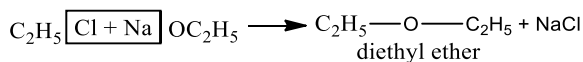
∴ NaHCO₃ is used to distinguish between phenol and salicylic acid.

536 (d)

Both ether and chloroform are anaesthetic agents.

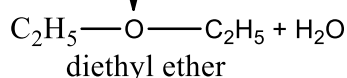
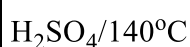
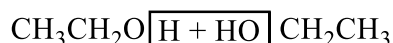
537 (b)

Ethyl chloride reacts with sodium ethoxide to form diethyl ether as



diethyl ether

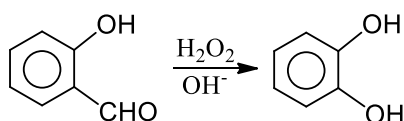
Diethyl ether is also obtained by reaction of ethyl alcohol with conc. H₂SO₄ at 140°C.



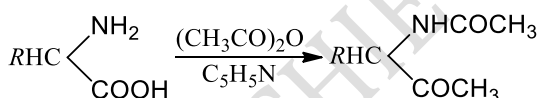
diethyl ether

539 (c)

Conversion of -CHO group present in phenol ring into -OH in the presence of H₂O₂ is called Darkin reaction.



Conversion of amino acids into methyl α-acetamide ketones, when heated with acetic anhydride in pyridine solution is often referred to as the Darkin west reaction.



540 (d)

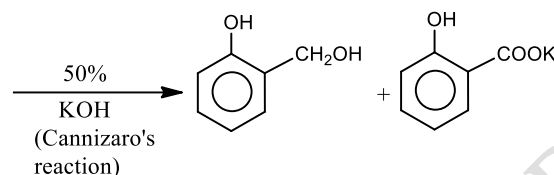
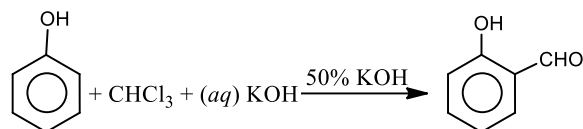
No one of the given reactions involve of formation of carbocation intermediate

541 (b)

Butanol-1, butanol-2, 2-methylpropanol-1, 2-methylpropanol-2.

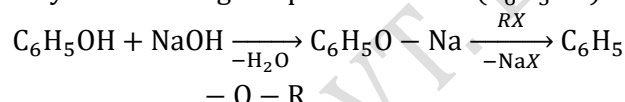
542 (b)

Phenol on reaction with chloroform and KOH gives salicylaldehyde, which with 50% KOH solution undergoes Cannizzaro's reaction.

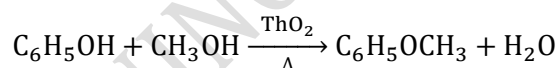


543 (b)

In presence of NaOH or KOH, phenol reacts with alkyl halide and gives phenolic ether (C₆H₅OR).



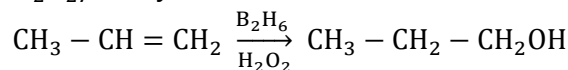
Vapours of C₆H₅OH and CH₃OH, with red hot ThO₂ (thoria) give anisole (phenolic ether).



anisole

544 (c)

Alkenes undergo addition reaction with diborane. The addition compounds on hydrolysis with H₂O₂/OH⁻ yield alcohols



545 (d)

Glycerol is used as lubricant in watches.

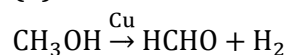
546 (c)



547 (a)

Lucas reagent is anhyd. ZnCl₂ + HCl (conc.) used to distinguish *p*, *s* and *t* alcohols.

548 (b)



549 (c)

Terylene is formed by the action of glycol (CH₂OHCH₂OH) on dimethyl terephthalate. It is also called dacron.

550 (c)

Yeast contains maltase, invertase, zymase enzymes.

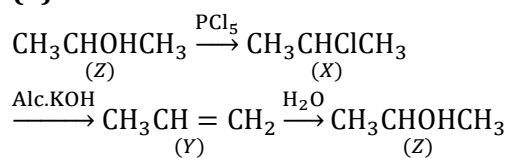
551 (d)

General formula for alcohols is C_nH_{2n+1}OH.

Primary alcohols have -CH₂OH gp. Secondary

alcohols have >CHOH gp. and tertiary alcohols have >>COH

574 (b)

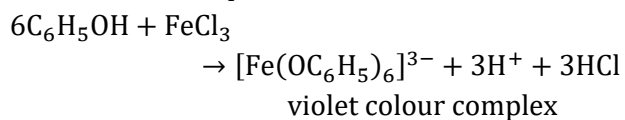


575 (b)

$C_nH_{2n+1}OH$ or $C_nH_{2n+2}O$ is general formula for alcohols.

576 (c)

Phenol reacts with neutral FeCl_3 solution to give violet colour complex which is soluble in water.

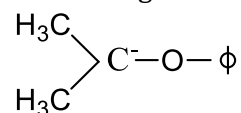


577 (d)

Tertiary alcohols do not give Viktor Meyer's test.

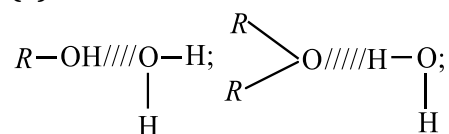
578 (d)

In rearrangement of cumene hydroperoxide



is not formed

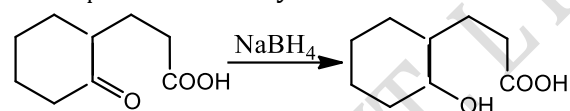
579 (a)



Both shows H-bonding, however the increase in hydrophobic character (due to two alkyl groups in ether), the H-bonding weakens.

580 (a)

NaBH_4 reduces aldehyde to 1° alcohol.



ALCOHOLS, PHENOLS AND ETHERS

CHEMISTRY

Assertion - Reasoning Type

This section contain(s) 0 questions numbered 1 to 0. Each question contains STATEMENT 1(Assertion) and STATEMENT 2(Reason). Each question has the 4 choices (a), (b), (c) and (d) out of which **ONLY ONE** is correct.

- a) Statement 1 is True, Statement 2 is True; Statement 2 **is** correct explanation for Statement 1
- b) Statement 1 is True, Statement 2 is True; Statement 2 **is not** correct explanation for Statement 1
- c) Statement 1 is True, Statement 2 is False
- d) Statement 1 is False, Statement 2 is True

1

Statement 1: Benzoic acid is stronger acid than phenol

Statement 2: Resonating structures of phenoxide ion has negative charge on less electronegative carbon atom

2

Statement 1:

Dehydration of $\text{CH}_3\text{CH}_2\overset{\text{OH}}{\text{CH}}\text{CH}_3$ gives $\text{CH}_3\text{CH}_2\text{CH}=\text{CH}_2$ as the minor product and $\text{CH}_3\text{CH}=\text{CHCH}_3$ as the major product

Statement 2:

$\text{CH}_2=\text{CH}-\overset{\text{OH}}{\text{CH}}-\text{CH}_3$ can be dehydrated more readily than $\text{CH}_3\text{CH}_2\overset{\text{OH}}{\text{CH}}\text{CH}_3$

3

Statement 1: When glycerol is heated with hydrogen iodide, only allyl iodide is formed

Statement 2: With hydrogen iodide, glycerol forms three different compounds like propene, isopropyl iodide and allyl iodide

4

Statement 1: Ether have low dipole moments and sp^3 hybridised oxygen atom

Statement 2: Ethers behaves as Lewis base

5

Statement 1: Alcohols have higher boiling points than alkanes

Statement 2: O – H bond of alcohol is highly polarized

ALCOHOLS, PHENOLS AND ETHERS

CHEMISTRY

: ANSWER KEY :

- | | | | | | | | |
|----|---|----|---|----|---|----|---|
| 1) | a | 2) | b | 3) | d | 4) | b |
| 5) | a | | | | | | |

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ALCOHOLS, PHENOLS AND ETHERS

CHEMISTRY

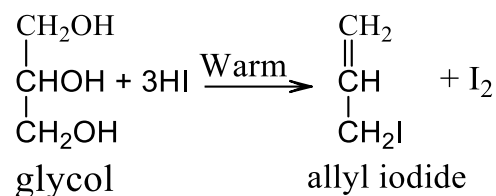
: HINTS AND SOLUTIONS :

1 (a)

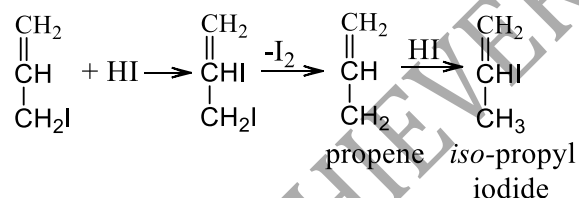
In phenoxide ion all the resonating structures except one have negative charge on less electronegative carbon atom while in benzoate ion, both the resonating forms have negative charge on more electronegative oxygen atom

3 (d)

When glycerol is heated with a small amount of HI, allyl iodide is formed



When glycerol is heated with a large amount of HI, the allyl iodide first formed is reduced to propene, which in presence of excess of HI forms isopropyl iodide



4 (b)

Due to the presence of lone pairs of electrons on the oxygen atom, ethers behave as Lewis bases. They dissolve in acids like conc H_2SO_4 and conc HCl to form oxonium salts



5 (a)

The high polarisation of O – H bond in alcohols gives rise to intramolecular hydrogen bonding, *ie*, molecules are brought nearer to each other and held together by attractive forces. No such hydrogen bonding exists in alkanes

ALCOHOLS, PHENOLS AND ETHERS

CHEMISTRY

Matrix-Match Type

This section contain(s) 0 question(s). Each question contains Statements given in 2 columns which have to be matched. Statements (A, B, C, D) in **columns I** have to be matched with Statements (p, q, r, s) in **columns II**.

1. Match the list given below

Column-I	Column-II
(A) Phenolic esters on heating in presence of AlCl_3	(p) Claisen rearrangement
(B) Ary-allyl ethers are heated	(q) Houben-Hoesch reaction
(C) Polyhydroxy phenol undergo acylation with $\text{RNC} + \text{HCl}$	(r) Fries rearrangement

CODES :

	A	B	C	D
a)	a	b	c	
b)	c	b	a	
c)	b	c	a	
d)	c	a	b	

: ANSWER KEY :

- 1) d
2)

: HINTS AND SOLUTIONS :

- 1 (d)
In Fries rearrangement phenolic esters are heating in presence of AlCl_3
Claisen rearrangement-Ary-allyl ethers are heated.
Houben-Hoesch reaction- Polyhydroxy phenol undergo acylation with $\text{RNC} + \text{HCl}$