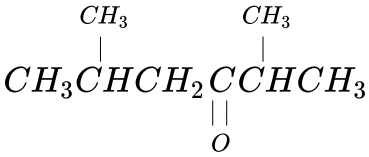
CHEMISTRY

BOOKS - R SHARMA CHEMISTRY (HINGLISH)

ALCOHOL, PHENOL AND ETHERS

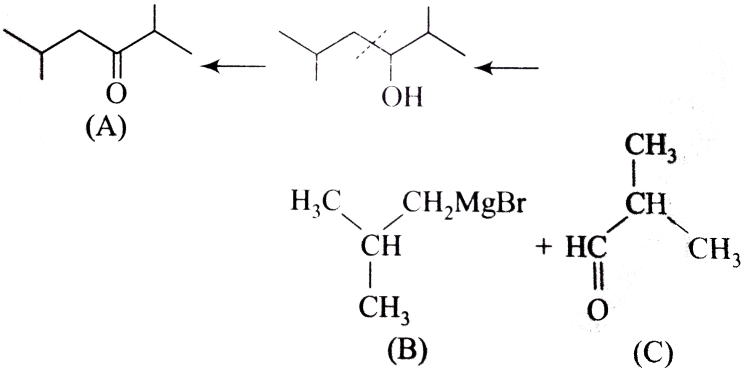
Example

1. Using an alochol of no more than four carbon atoms as the only starting material , outline a synthesis of A.



Strategy : Construct the carbon skelton from two four - carbon compounds using a Grignard reaction. Oxidize the alcohol produced

to yield the desire ketone:



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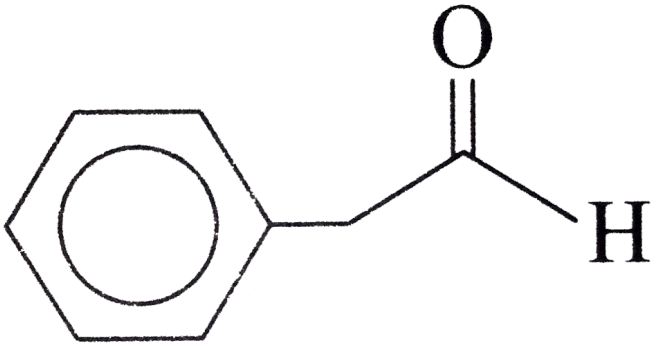
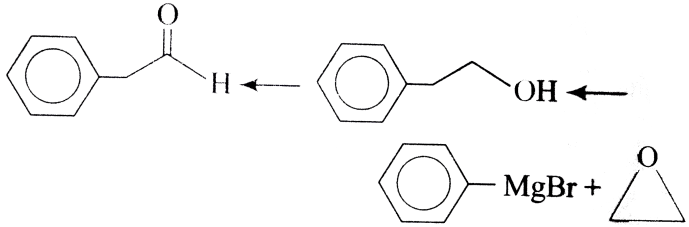
2. Stating with bromobenzene and any other needed reagents , outline a synthesis of the following aldehyde.



Strategy : Working backward , synthesize the target aldehyde from

the corresponding alcohol by oxidation with $P\mathbb{C}$. Make the alcohol by treating magnesium bromide with oxirane. Notice that adding oxirane to a $-CH_2CH_2OH$ unit to an organic group. Make phenyl magnesium bromide by treating bromobenzene with magnesium in an ether solvent.



Synthesis:

$$C_6H_5Br \xrightarrow[Et_2O]{Mg} C_6H_5MgBr \xrightarrow[(2)\ H_3O^+]{(1)\ \triangle O} C_6H_5CH_2CH_2OH \xrightarrow[CH_2Cl_2]{PCC} C_6H_5CH_2CHO$$

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Archives

1. Phenols are more acidic than alcohols because

A. phenoxide ion is stabilized by resonance

B. phenols are more soluble in polar solvents

C. phenoxide ions do not exhibit resonance

D. alcohols do not lose H atoms at all

Answer: A

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2. Propan$1-ol$ may be prepared by reaction of propene with

A. $CH_3\overset{O}{\overset{||}{C}}-O-OH$

B. H_3BO_3

C. $B_2H_6/NaOH.\ H_2O_2$

D. H_2SO_4/H_2O

Answer: C

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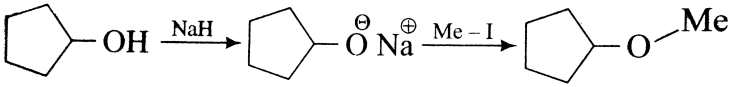
3. The reaction



can be classified as:

A. Williamson alcohol synthesis reaction

B. Williamson ether synthesis reaction

C. Alcohol formation reaction

D. Dehydration reaction

Answer: B

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4. Which of the following reagents would distinguish ciscyclopenta $-1,2-$ diol from the trans-isomer?

A. Aluminium isopropoxide

B. Acetone

C. Ozone

D. MnO_2

Answer: B

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5. Reaction of phenol with chloroform in presence of dilute sodium hydroxide finally introduce which one of the following fuctional group?

A. $-CHCl_2$

B. $-CHO$

C. $-CH_2Cl$

D. $-COOH$

Answer: B

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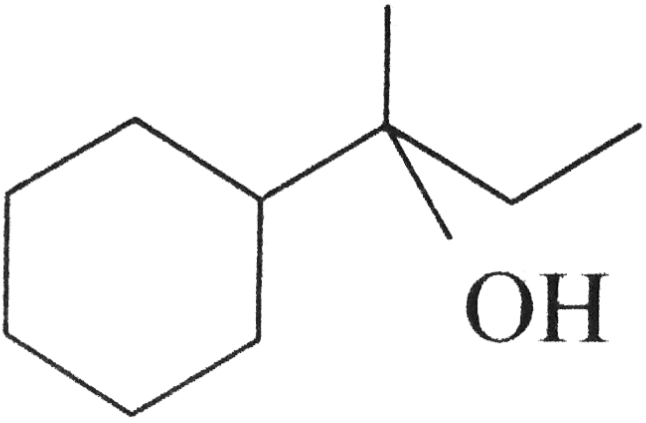
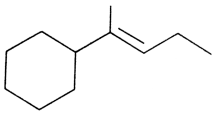
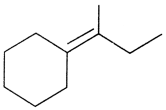
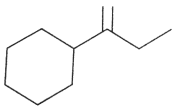
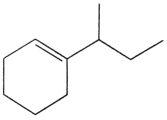
6. Which of the following is not the product of dehydration of



A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: D

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7. Which of the following reaction(s) can be used for the preparation of alkyl halides?

(I) $CH_3CH_2OH + HCl \xrightarrow{anhy.\,ZnCl_2}$

(II) $CH_3CH_2OH + HCl \rightarrow$

(III) $(CH_3)_3COH + HCl \rightarrow$

(IV) $(CH_3)_2CHOH + HCl \xrightarrow{anhy.\,ZnCl_2}$

A. (IV) only

B. (III) and (IV) only

C. (I), (II) and (IV) only

D. (I) and (II) only

Answer: C

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8. The reaction

$$CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - ONa + CH_3CH_2Cl \rightarrow CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - O - CH_2 - CH_3$$

is called

A. Gatterman - Koch reaction

B. Williamson synthesis

C. Williamson continuous etherification

D. Etard reaction

Answer: B

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9. Among the following sets of reactants which one produces anisole?

A. $CH_3CHO, RMgX$

B. $C_6H_5OH, NaOH, CH_3I$

C. $C_6H_5CH_3$,neutral $FeCl_3$

D. $C_6H_5CH_3, CH_3COCl, AlCl_3$

Answer: B

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10. Which of the following will not be soluble in sodium hydrogen carbonate?

A. $2, 4, 6 -$ Trinitrophenol

B. benzoic acid

C. $p -$ Nitrophenol

D. Benzenesulphonic acid

Answer: C

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11. Among the follwing ethers, which one will produce methyl alcohol on treatment with hot concentrated HI?

A. $CH_3 - CH_2 - \underset{\underset{CH_3}{|}}{CH} - O - CH_3$

B. $CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - O - CH_3$

C. $CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_2 - O - CH_3$

D. $CH_3 - CH_2 - CH_2 - CH_2 - O - CH_3$

Answer: B

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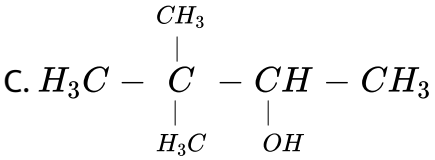
12. In the following reaction:

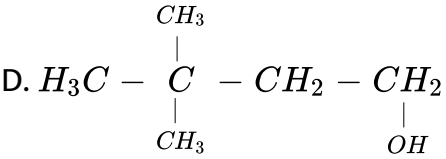
$$H_3C - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH = CH_2 \xrightarrow{H_2O\,/\,H6\,(+)} \underset{\text{Major product}}{A} + \underset{\text{Minor Product}}{B}$$

The major product is

A. $H_3C - \underset{\underset{OH}{|}}{\overset{\overset{CH_3}{|}}{C}} - \underset{\underset{CH_3}{|}}{CH} - CH_3$

B. $\underset{\underset{OH}{|}}{CH_2} - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_2 - CH_3$

C. 

D. 

Answer: A

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13. Which of the following compounds can be used as antifreeze in automobile radiators?

A. Ethyl alcohol

B. Methyl alcohol

C. Glycol

D. Nitrophenol

Answer: C

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14. In the follwing reactions,

(a) $H_3C-\overset{CH_3}{\overset{|}{C}}H-\underset{OH}{\overset{|}{C}}H-CH_3 \xrightarrow{H^+/heat} \underset{\text{Major product}}{A} + \underset{\text{Minor product}}{B}$

(b) $A \xrightarrow[\text{in absence of peroxide}]{HBr, dark} \underset{\text{Major product}}{C} + \underset{\text{Minor product}}{D}$

The major products (A) and (C) are respectively:

A. $CH_2=\overset{CH_3}{\overset{|}{C}}-CH_2-CH_3 \text{and} CH_2=\underset{Br}{\overset{CH_3}{\overset{|}{\underset{|}{C}}}}-CH_2-CH_3$

B. $CH_2=\overset{CH_3}{\overset{|}{C}}-CH_2-CH_3 \text{and} \underset{Br}{\overset{|}{C}}H_2=\overset{CH_3}{\overset{|}{C}}-CH_2-CH_3$

C. $CH_3-\overset{CH_3}{\overset{|}{C}}=CH-CH_3 \text{and} CH_3=\underset{Br}{\overset{CH_3}{\overset{|}{\underset{|}{C}}}}-CH_2-CH_3$

D. $CH_3-\overset{CH_3}{\overset{|}{C}}=CH-CH_3 \text{and} CH_3-\overset{CH_3}{\overset{|}{C}}H-\underset{Br}{\overset{|}{C}}H-CH_3$

Answer: C

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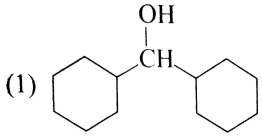
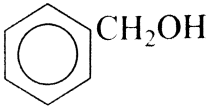
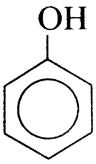
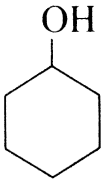
15. Which one of the following compounds has the most acidic nature?

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: C

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16. Given are cyclohexanol (I), acetic acid (II), $2, 4, 6 -$ trinitrophenol (III) and phenol (IV). In these the order of decreasing acidic character will be:

A. $III > IV > II > I$

B. $III > II > IV > I$

C. $II > III > I > IV$

D. $II > III > IV > I$

Answer: B

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17. Among the following four compounds

A. $d > c > a > b$

B. $c > d > a > b$

C. $a > d > c > b$

D. $b > a > c > d$

Answer: A

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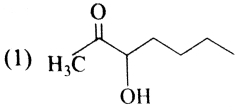
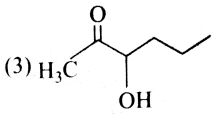
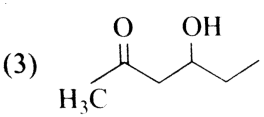
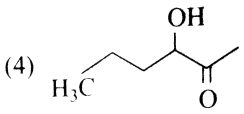
18. Which one of the following compounds will be most readily dehydrated?

A. 

B. 

C. 

D. (4) 

Answer: C

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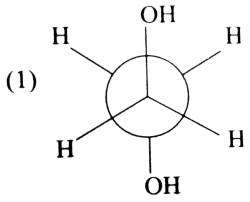
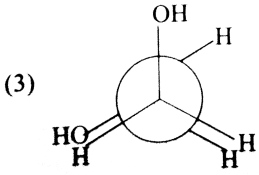
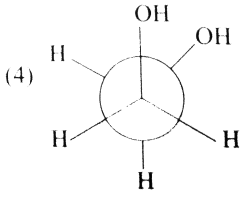
19. Which of the following conformers for ethylene glycol is most stable?

A. (1) 

B. 

C. (3) 

D.



Answer: D

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20. Following compounds are given

(a) CH_3CH_2OH , (b) CH_3COCH_3

(C)$CH_3CH(OH)CH_3$, (d) CH_3OH

Which of the above compound (s), on being warmed with iodine soluton and $NaOH$, will give iodoform?

A. a, c and d

B. only b

C. a, b and c

D. a and b

Answer: C

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21. Glycerol on being heated with an excess of HI produces

A. $2-$ iodopropane

B. allyl iodide

C. propene

D. glycerol triiodide

Answer: A

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22. Consider the following reaction

ethanol $\xrightarrow{PBr_3} X \xrightarrow{alc.KOH} Y \xrightarrow[(ii)\,H_2O,heat]{(i)\,H_2SO_4,\text{room temp.}} Z$ the product Z is

A. $CH_3CH_2OCH_2CH_3$

B. $CH_3CH_2OSO_3H$

C. CH_3CH_2OH

D. $CH_2 = CH_2$

Answer: C

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23. Consider the following reaction

Phenol $\xrightarrow[\text{dust}]{Zn} X \xrightarrow[\underset{AlCl_3}{\text{Anhydrous}}]{CH_3CI} Y \xrightarrow[KMnO_4]{\text{Alkaline}} Z$

The product Z is

A. Benzaldehyde

B. Benzoic acid

C. Benzene

D. Toluene

Answer: B

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24. CH_2OHCH_2OH on heating with periodic acid gives

A. $2HCOOH$

B. $\begin{matrix} CHO \\ | \\ CHO \end{matrix}$

C. $2CH_2O$

D. $2CO_2$

Answer: C

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25. In the reaction

$$CH_3\overset{CH_3}{\underset{|}{C}}H - CH_2 - O - CH_2CH_3 + Hi \xrightarrow{Heated}$$

Which of the following compounds will be formed?

A. $CH_3 - \overset{CH_3}{\underset{|}{C}}H - CH_2 - OH + CH_3CH_3$

B. $CH_3 - \overset{CH_3}{\underset{|}{C}}H - CH_2 - OH + CH_3CH_3 - I$

C. $CH_3 - \overset{CH_3}{\underset{|}{C}}H - CH_2 - I + CH_3CH_2 - OH$

D. $CH_3 - \overset{CH_3}{\underset{|}{C}}H - CH_3 + CH_3CH_2OH$

Answer: B

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26. The major organic product in the reaction

$CH_3 - O - CH(CH_3)_2 + Hi \rightarrow$ product is

A. $CH_3O\overset{I}{\overset{|}{C}}(CH_3)_2$

B. $CH_3I + (CH_3)_2CHOH$

C. $CH_3I + (CH_3)_2CHI$

D. $ICH_2OCH(CH_3)_2$

Answer: B

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

A. $C_nH_{2n+1}O$

B. $C_nH_{2n+2}O$

C. $C_nH_{2n}O$

D. $C_nH_{2n}O_2$

Answer: B

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28. Ethylene oxide when treated with Grignard reagent yields

A. cyclopropyl alcohol

B. primary alcohol

C. secondary alcohol

D. tertiary alcohol

Answer: B

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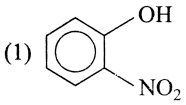
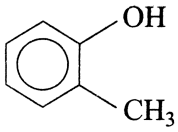
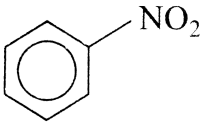
29. Which one of the following compounds is most acidic

A. (1) 

B. (2) 

C. (3) 

D. $CICH_2CH_2OH$

Answer: A

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30. The enzyme which hydrolyses triglycerides to fatty acid and glycerol is called:

A. maltase

B. lipase

C. zymase

D. pepsin

Answer: B

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

A. $CH_3CH(OH)CH_3$

B. $CH_3CH_2CH(OH)CH_3$

C. CH_3OH

D. CH_3CH_2OH

Answer: C

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32. The $-OH$ group of an alcohol or of the $-COOH$ group of a carbocylic acid can be replaced by $-Cl$ using

A. phosphorus pentachloride

B. hypochlorous acid

C. chlorine

D. hydrochloric acid

Answer: D

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33. Which of the following orders of acid strength is correct?

A. $RCOOH > ROH > HOH > HC \equiv CH$

B. $RCOOH > HOH > ROH > HC \equiv CH$

C. $RCOOH > HOH > HC > \equiv CH > ROH$

D. $RCOOH > HC \equiv CH > HOH > ROH$

Answer: B

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34. When phenol is treated with $CHCl_3$ and $NaOH$, the product fromed is

A. benzaldehyde

B. salicyladehyde

C. salicylic acid

D. benzoic acid

Answer: B

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35. $n-$ propyl alcohol can be chemical distinguished by which reagent

A. PCl_5

B. reduction

C. oxidation with potassium dichromate

D. ozonolysis

Answer: C

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36. In preparation of alkene from alcohol using Al_2O_3, which is the effective factor:

A. Porosity of Al_2O_3

B. Temperature

C. Concentration

D. surface area of Al_2O_3

Answer: B

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37. Which one of the following is correct?

A. Reduction of any aldehyde gives secondary alcohol

B. Reaction of vegetable oil with H_2SO_4 gives glycerine

C. Alcoholic iodine with $NaOH$ gives iodoform

D. Sucrose on reaction with $NaCl$ gives invert sugar

Answer: C

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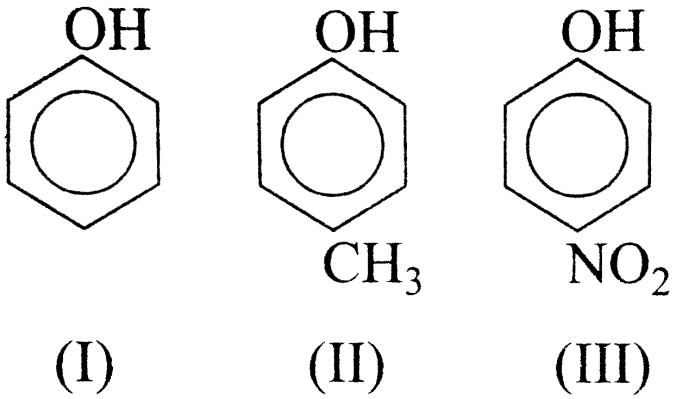
38. The correct acidic order of the following



(I) (II) (III)

is

A. $I > II > III$

B. $III > I > II$

C. $II > III > I$

D. $I > III > II$

Answer: B

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Follow -Up Test -1

1. Alcohols are compounds which have the

A. $-OH$ group

B. $-OH$ group bonded to a saturated carbon

C. $-OH$ group bonded to a saturated carbon

D. $-OH$ group bonded to an unsaturated carbon atom

Answer: C

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2. Open-chain saturated monochydric alcohols have the general formula

A. $C_nH_{2n+1}O$

B. $C_nH_{2n+2}O$

C. $C_nH_{2n}O_2$

D. $C_nH_{2n}O_2$

Answer: B

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3. Which of the following is a secondary alcohol ?

A. Neopentyl alcohol

B. Isobutyl alcohol

C. Isopetyl alcohol

D. Isopropyl alcohol

Answer: D

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4. The $IUPAC$ name of neohexyl alcohol is

A. $3, 3 -$ dimethylbutan$-1 -$ ol

B. $3, 3 -$ dimethylbutan$-2 -$ ol

C. $1, 1 -$ dimethylbutan$-1 -$ ol

D. $2, 2 -$ dimethylbutan$-1 -$ ol

Answer: A

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5. Glycerol possesses

A. one primary and two secondary alcoholic groups

B. three secondary alcoholic groups

C. two primary and one secondary alcoholic groups

D. three primary alcoholic groups

Answer: C

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6. The smallest alcohol that shows optical activity is

A. t-butyl alcohol

B. isopentyl alcohol

C. isobutyl alcohol

D. sec-butyl alcohol

Answer: D

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7. A compound $C_6H_{14}O_2$ has two tertiary groups. The $IUPAC$ name of the compound is

A. 2, 3-dimethylbutane -1, 2-diol

B. 2, 3-dimethylbutane -2, 3-diol

C. 3, 3-dimethylbutane-1, 2-diol

D. 2-methylpantene-2, 3-diol

Answer: B

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8. A tetrahydric alcohol with the formula $C_5H_{12}O_4$ has all of its alcoholic functions primary. The $IUPAC$ name of the alcohol is

A. 2, 2-bis(hydroxmethyl) propane -1, 3-diol

B. 1, 2, 3, 4, 5-pentaneterol

C. 2-methyl-1, 2, 3, 4-butanetetraol

D. 1, 2, 3, 4-pentanetraol

Answer: A

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9. The total number of alcohols (including stereoisomers) possible with the formula $C_5H_{12}O$ is

A. 8

B. 10

C. 11

D. 9

Answer: C

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10. The number of stereoisomers of butane -2, 3-diol is

A. five

B. four

C. two

D. three

Answer: D

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Follow -Up Test -2

1. Which of the following alkenes on hydrogen in the presence of an acid will give a primary alcohol ?

A. But -2-ene

B. But-1-ene

C. Ethene

D. Propene

Answer: C

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2. In the acid -catalysed hydration of an alkene , the intermediate formed is

A. a carbene

B. an alkyl cation

C. an alkyl radical

D. an alkanide ion

Answer: B

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3. In the following hydration

$$CH_3 - \overset{CH_3}{\overset{|}{C}}H - CH = CH_2 \xrightarrow{H_3O^+}$$

the major product formed is

A. $(CH_3)_2 \overset{OH}{\overset{|}{C}} CH_2CH_3$

B. $(CH_3)_2CHCH(OH)CH_3$

C. $(CH_3)_2CHCH_2CH_2OH$

D. $HOCH_2\overset{\overset{CH_3}{|}}{C}HCH_2CH_3$

Answer: A

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4. Which of the following alkenes on acid-catalysed hydration gives a tertiary alcohol ?

A. But -2-ene

B. Propene

C. But-1-ene

D. 2-Methylpropene

Answer: D

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5. The product formed in the reaction

$$PhCH = CH_2 \xrightarrow[H_2O_2 / OH^-]{B_2H_6} is$$

A. $PhCH_2CHO$

B. $PhCH_2CH_2OH$

C. $PhCHOHCH_3$

D. $PhCOCH_3$

Answer: B

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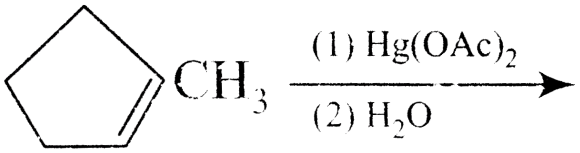
6. The product formed in the reaction



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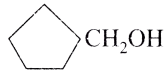
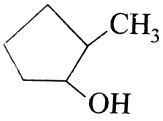
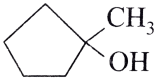
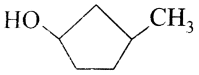
A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: C

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7. If one industrial synthesis , ethene is first dissolved in 95% sulphuric acid. In a second step water is added and the mixture is heated. The product is

A. CH_3CH_2OH

B. $CH_3CH_2OCH_2CH_3$

C. CH_3CHO

D. CH_3CO_2H

Answer: A

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8. The product (B) obtained in the reaction

$$CH_2 = CH_2 + CO + H_2O \xrightarrow[100^\circ C, \text{pressure}]{Co_2(CO)_s} A \xrightarrow[Ni]{H_2} B$$

is

A. CH_3CH_2CHO

B. CH_3CH_2OH

C. $CH_3CH_2CH_2OH$

D. $CH_3\overset{\overset{OH}{|}}{C}HCH_3$

Answer: A

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9. Which of the following alcohols can be synthesized from an alkene with the same number of carbon atoms by means of hydroboration - oxidation ?

(i) Butan-$2-ol$

(ii)1-Methylcyclohexanol

(iii)Isobutylbutan-$2-ol$

(iv) Cyclopentylcarbinol

(v) 2-Methylbutan-$2-ol$

A. $(i), (ii), (v)$

B. $(iii), (iv)$

C. $(ii), (iii)$

D. $(ii), (iii), (v)$

Answer: B

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Follow -Up Test -3

1. Propene is allowed to react with HBr in the presence of benzoyl peroxide and the product is subsequently heated with aqueous KOH. The final product obtained is

A. propane -1 $-$ ol

B. propane-2 $-$ ol

C. propane-1, 2-diol

D. propane-1, 3-diol

Answer: A

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2. Which of the following alkyl halides undergoes hydrolysis with aqueous KOH at the fastest rate ?

A. $CH_3\overset{Cl}{\overset{|}{C}}HCH_3$

B. $(CH_3)_2CHCH_2Cl$

C. $CH_3CH_2CH_2Cl$

D. CH_3CH_2Br

Answer: D

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3. The compound $CH_3COCH_2COOC_2H_5$ is treated with $LiAlH_4$ in dry ether. The product formed is

A. $CH_3CH_2CH_2COOC_2H_5$

B. $CH_3CHOHCH_2CO_2C_2H_5$

C. $CH_3CHOHCH_2OH$

D. $CH_3COCH_2CH_2OH$

Answer: C

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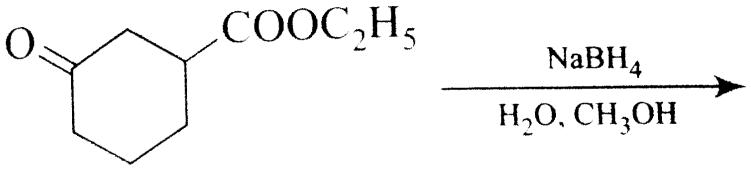
4. The product formed in the following reaction



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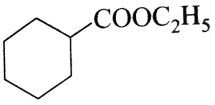
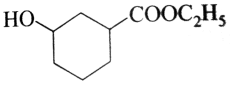
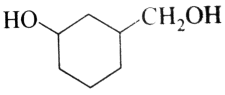
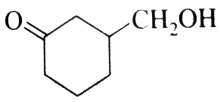
A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: B

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5. Which of the following alcohols cannot be prepared by reduction of a carbonyl compound ?

A. 2-Methylpropan-2 $-$ ol

B. Butan-2 $-$ ol

C. Butan-1 $-$ ol

D. 2-Methylpropan-1 $-$ ol

Answer: A

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6. The reducing agent used in Bouveault -Blanc reduction is

A. $NaBH_4$

B. $Zn - Cu / C_2H_5OH$

C. CH_5CHO

D. Na / C_2H_5OH

Answer: D

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7. For the preparation of 1-phenylethanol from benzaldehyde,which of the following reagents is useful ?

A. C_2H_5MgI

B. CH_3MgI

C. CH_3CHO

D. C_2H_5I

Answer: B

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8. Which of the following reagents can convert propionic acid into propan-1 $-$ ol?

A. H_2/Ni

B. Na/C_2H_5OH

C. $LiAlH_4$

D. C_2H_5I

Answer: C

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9. Which of the following sets of reactants may be used to prepare 2-methylbutan-$2-ol$?

A. Propanal and isopropylmagnesium bromide

B. Butanone and methylmagnesium iodide

C. Propanone and ethylmagnesium iodide

D. Either of the above two

Answer: D

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10. Consider the following sequence of reactions

$$C_2H_5C \equiv CH \xrightarrow{CH_3MgBr} A \xrightarrow[(2)\,H_2O^+]{(1)\,HCHO} B$$

The product (B) is

A. $C_2H_5C \equiv C - \overset{OH}{\overset{|}{C}}H - CH_3$

B. $C_2H_5C \equiv C - CH_2OH$

C. $C_2H_5\overset{CH_3}{\underset{|}{C}} = CHCH_2OH$

D. CH_3CH_2OH

Answer: B

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11. Ethyl acetate $(CH_3COOC_2H_5)$ is allowed to react with excess of CH_3MgI in dry ether and subsequently heated with water. The final product formed is

A. $CH_3COC_2H_5$

B. CH_3COCH_3

C. $(CH_3)_3C - OH$

D. $C_2H_5 - \underset{|}{\underset{OH}{C}}(CH_3)_2$

Answer: C

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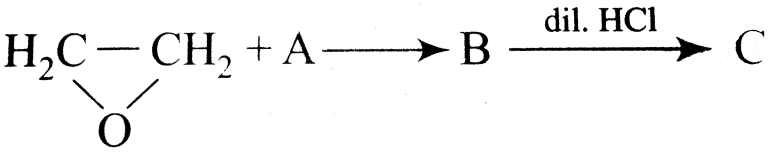
12. Consider the following reactions

$$PhBr \xrightarrow[Et_2O,\text{heat}]{Mg} A$$



The product (C) is

A. $PhCHOHCH_3$

B. $PhCH_2CH_2OH$

C. $PhCH_2CHO$

D. $PhOCH_2CH_3$

Answer: B

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13. In the following reaction sequence

$$Ph - C \equiv CH \xrightarrow[Hg^{2+}]{aq.\,H_2SO_4} A \xrightarrow[2.\,H_2O]{1.\,CH_3Mgl} B$$

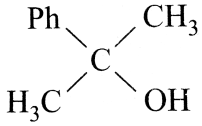
the product (B) is

A. $PhCH_2COCH_3$

B. $PhCH_2CHOHCH_3$

C. $PhCOCH_3$

D. (4)



Answer: D

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14. The major product formed in the reaction

$$CH_3CH=CH-\overset{\overset{O}{||}}{C}-CH_3 \xrightarrow[H_2O,CH_3OH]{NaBH_4}$$ is

A. $CH_3CH=CHCH(OH)CH_3$

B. $CH_3CH_2CH(OH)CH_3$

C. $CH_3CH_2\overset{\overset{OH}{|}}{C}HCOCH_3$

D. $CH_3CH_2CH_2COCH_3$

Answer: A

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15. The maximum number of moles of carbonyl compound (aldehyde or ketone) that can be reduced by one mole of $NaBH_4$ or $LiAlH_4$ is

A. three

B. one

C. four

D. two

Answer: C

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16. Reduction of an acid chloride with $LiAlH_4$ produces

A. secondary alcohol

B. primary alcohol

C. tertiary alcohol

D. a mixture of alcohols

Answer: B

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17. Which of the following is expected to produce an alcohol on reaction with $NaNO_2$ and dilute H_2SO_4 at a temperature ranging from $0^\circ C$ to $5^\circ C$?

A. Triethylamine

B. Ethylmethylamine

C. Diethylamine

D. sec-Butylamine

Answer: D

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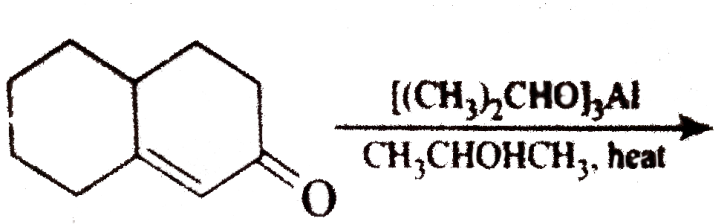
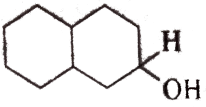
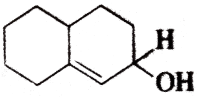
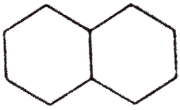
18. In the reaction

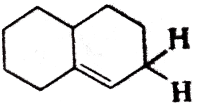


the product is

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: B

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Follow -Up Test -4

1. Ethanol has higher boiling point than ethanol because

A. ethanol is a polar compound but ethanol is not

B. ethanol forms intermolecular hydrogen bond but ethanal does not

C. ethanol has higher molecular mass than ethanol

D. ethanol forms stronger intermolecular hydrogen bonds than does ethanol

Answer: B

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2. The hydrogen bonding ability of the isomeric $1^\circ, 2^\circ$ and 3° alcohols decreases in the order

A. $3^\circ > 2^\circ > 1^\circ$

B. $1^\circ > 3^\circ > 2^\circ$

C. $2^\circ > 1^\circ > 3^\circ$

D. $1^\circ > 2^\circ > 3^\circ$

Answer: D

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3. Alcohols have lower boiling points than carboxylic acids of comparable molecular mass because

A. carboxylic acids show resonance but alcohols do not

B. carboxylic acids form intermolecular bonds but alcohols do not

C. intermolecular hydrogen bonding in carboxylic acids is stronger than that in alcohols

D. alcohols form intermolecular hydrogen bonds but carboxylic acids do not

Answer: C

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4. The compound which is added as an antifreeze to the water in automobile radiators is

A. ethyl alcohol

B. ethylene glycol

C. tetraethyl lead

D. ether

Answer: B

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5. An alcohol , $C_3H_8O_3$, which is used as a humectant (moistening agent) for domestic purposes , is

A. glycerol

B. ethylene glycol

C. trimethylene glycol

D. propylene glycol

Answer: A

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6. Which of the following is correct ?

A. Alcohols with three or fewer $c's$ are water soluble

B. Alcohols with five or more $c's$ are insoluble

C. Alcohols with four $c's$ are marginally soluble

D. All of these

Answer: D

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7. Which of the following statements is incorrect ?

A. When volumes of ethanol and water are mixed , the total volume is equal to the sum of the two individual volumes.

B. Propanol $(MW = 60u)$ has a higher boiling point than butane $(MW = 58u)$

C. Methanol and ethanol are reasonably good solvents for mainly ionic substances

D. Ethanol is a better than pentanol toward ionic compounds.

Answer: A

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8. Which of the following statements is not correct ?

A. Pentane-$1, 5$-diol is soluble while pentan -$1 - ol$only slightly soluble in water

B. Cyclohexanol is less soluble in water than henxan -$1 - ol$

C. Isomeric alcohols have different boiling points

D. None of these

Answer: B

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Follow -Up Test -5

1. Which of the following compounds on reaction with ethyl alcohol will produce ethyl acetate?

A. Acetyl chloride

B. Acetic anhydride

C. Acetic acid

D. All of these

Answer: D

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2. A compound (X) with the molecular formula C_3H_8O can be oxidized to another (Y) whose molecular formula is $C_6H_6O_2$

The compound (X) may be

A. $CH_3CHOHCH_3$

B. $CH_3CH_2CH_2OH$

C. $CH_3CH_2OCH_3$

D. CH_3CH_2CHO

Answer: B

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3. An alcohol on vigorous oxidation with $K_2Cr_2O_7$ and H_2SO_4 gives CH_3COOH and CH_3CH_2COOH. The alcohol is likely to be

A. $CH_3CHOHCH_2CH_2CH_3$

B. $(CH_3)_2C(OH)CH_2CH_3$

C. $CH_3CH_2CH_2CH_2OH$

D. $CH_3CH_2CH_2OH$

Answer: A

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4. Which of the following reagents can distinguish methanol from ethanol ?

A. CH_3CO_2H

B. PCl_5

C. I_2 and $NaOH$

D. Na

Answer: C

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5. Which of the following is the weakest acid?

A. Phenol

B. t-Butyl alcohol

C. Ethyl alcohol

D. Methyl alcohol

Answer: B

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6. Which of the following on reaction with aluminimum produces a compound that is used in Meerwein -Ponndrof-Verly reduction of

carbonyl compounds?

A. $CH_3CHOHCH_3$

B. CH_3CH_2OH

C. CH_3OH

D. $(CH_3)_3COH$

Answer: A

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7. Which of the following undergoes exterification with acetic acid at the fastest rate ?

A. $(CH_3)_2CHOH$

B. CH_3CH_2OH

C. CH_3OH

D. $(CH_3)_3COH$

Answer: C

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8. The maximum number of moles of isopropyl alcohol that can be oxidized to acetone by one mole of $K_2Cr_2O_7$ in the presence of H_2SO_4 is

A. four

B. one

C. two

D. three

Answer: D

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9. Which of the following is the most efficient in removing a proton from methanol ?

A. CH_3ONa

B. NaH

C. $NaOH$

D. H_2O

Answer: B

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10. Which of the following reactions reflects the acidic character of ethanol ?

A. $CH_3CH_2OH + Na \rightarrow$

B. $CH_3CH_2OH + NaNH_2 \rightarrow$

C. $CH_3CH_2OH + CH_3Mgl \rightarrow$

D. All of these

Answer: D

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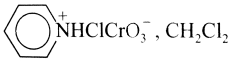
11. The reagent most suitable for converting a primary alcohol into an aldeyde is

A. HNO_3

B. $KMnO_4$ and $NaOH$

C. (3) 

D. $K_2Cr_2O_7$ and H_2SO_4

Answer: C

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12. Vapor of t-butyl alcohol is passed over copper heated to $300^{\circ} C$. The product formed is

A. $(CH_3)_2C = CH_2$

B. $(CH_3)_3C - O - O - C(CH_3)_3$

C. $(CH_3)_3COC(CH_3)_3$

D. CH_3COCH_3

Answer: A

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13. Which of the following reagent is the most suitable for converting benzyl alcohol into benzaldehyde

A. $KMnO_4, NaOH$

B. $K_2Cr_2O_7, H_2SO_4$

C. CrO_3, CH_3COOH

D. MnO_2

Answer: D

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14. Which of the following compounds can change the colour of chromic acid from orange to green ?

A. $C_2H_5OC_2H_5$

B. $(CH_3)_3C - OH$

C. $CH_3CH_2CH_2OH$

D. CH_3COCH_3

Answer: C

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Follow -Up Test -6

1. (R) -hexan -$2-ol \xrightarrow{\text{conc.HX}}$

under S_N2 conditions the product is

A. $100\ \%\ (R)$ -halide

B. $100\ \%\ (S)$-halide

C. $75\ \%\ (R)$ and $25\ \%\ (S)$

D. $75\ \%\ (S)$ and $(25\ \%\ )(R)$ halide

Answer: B

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2. The major product formed in the reaction

$$CH_3 - \underset{\underset{OH}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH = CH_2 + HBr \rightarrow$$

is

A. $CH_3 - \underset{\underset{OH}{|}}{\overset{\overset{CH_3}{|}}{C}} - \underset{\underset{Br}{|}}{CH} - CH_3$

B. $CH_3 - \underset{\underset{Br}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH = CH_2$

C. $CH_3 - \overset{\overset{CH_3}{|}}{C} = CH - CH_2Br$

D. $CH_3 - \underset{\underset{Br}{|}}{\overset{\overset{CH_3}{|}}{C}} - \underset{\underset{Br}{|}}{CH} - CH_3$

Answer: C

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3. Trityl chloride (Ph_3CCl) is allowed to react with ethyl alcohol in the presence of pyridine.The product formed is

A. $Ph_3COCH_2CH_3$

B. $Ph_3C - OH$

C. $PH_3CCH = CH_2$

D. CH_3CH_2Cl

Answer: A

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4. Lucas reagent produces cloudiness immediately with

A. 2-methylpropan$1 - ol$

B. Butan-$2 - ol$

C. 2-methylpropan-$2 - ol$

D. CH_3CH_2Cl

Answer: D

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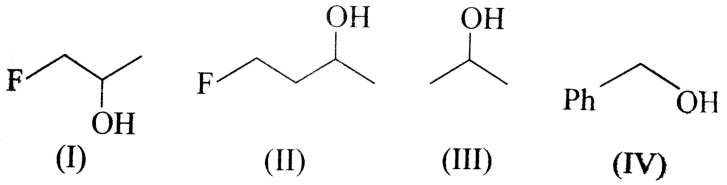
5. What will be the order of reactivity of the following alcohols towards concentrated HCl?



A. $IV > III > II > I$

B. $IV > III > I > II$

C. $I > III > II > IV$

D. $I > II > III > IV$

Answer: A

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6. By which of the following sequence of steps can the alcohol $RCH_2CH_2OH(X)$ be converted into $RCH_2CH_2COOH(Y)$?

A. $X \xrightarrow{HCN} \xrightarrow{PBr} \xrightarrow{H_2O^+} Y$

B. $X \xrightarrow{KCN} \xrightarrow{H_3O^+} Y$

C. $X \xrightarrow{PBr} \xrightarrow{KCN} \xrightarrow{H_3O^+} Y$

D. $X \xrightarrow{PBr} \xrightarrow{KCN} \xrightarrow{H_2/Pt} Y$

Answer: C

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7. Ethyl alcohol is heated with conc.H_2SO_4.The product formed is

A. C_2H_6

B. C_2H_2

C. $H_3C - \underset{\underset{O}{||}}{C} - OC_2H_5$

D. C_2H_4

Answer: D

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8. HBr reacts slowest with

A. 2-methylpropan-2 $- ol$

B. propan-1 $- ol$

C. propan-2 $- ol$

D. 2-methylpropan-1-ol

Answer: B

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9. 3-Methylbutan-2 $-$ ol on reaction with HCl gives predominantly

A. 3-methylbut-1-ene

B. 3-Methylbut-2-ene

C. 2-chloro-2-methylbutane

D. 2-chloro-3-methylbutane

Answer: C

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10. In the reaction

$$CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - \underset{\underset{OH}{|}}{CH} - CH\_(3) \xrightarrow[80^\circ C]{85\% H_3PO_4}$$

the major product is

A. $(CH_3)_3CCH = CH_20$

B. $(CH_3)_2C = C(CH_3)_2$

C. $(CH_3)_2C = C(CH_3)_2$

D. $CH_3 - \underset{CH_3}{\overset{CH_3}{\underset{|}{\overset{|}{C}}}} - \underset{OH}{\underset{|}{CH}} - CH\_(3) \xrightarrow[80^\circ C]{85\% H_3PO_4}$

Answer: B

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11. Which of the following reaction of $(S) - CH_3CHD(OH)$ proceeds with retention of configuration ?

A. Reaction with HCl

B. Reaction with $SOCl_2$ in the presence of pyridine

C. Reaction with $SOCl_2$ in a nonpolar solvent with no added base

D. both (1) and (2)

Answer: C

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12. Which of th efollowing alcohols are excepted to react with hydrogen halides by both S_N1 and S_N2 mechanisms ?

A. t-Alcohols

B. Straight -chain primary alcohols

C. Branded chain primary alcohols

D. Secondary alcohols

Answer: D

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13. Which of the following statements is not correct ?

A. 2-chloroethanol is more acidic than ethanol

B. Sodium metal may be used to remove the last traces of H_2O from benzene as well as from ethanol.

C. Pentan-$3-ol$ reacts with HBr to give a mixture of $3-$ and 2-bromopentanes. The exact composition of the mixture depends upon whether gaseous or aqueous HBr is used.

D. The same mixture of 2-chloropentane (A) and 3-Chloropentane (B) is obtained when either $2-$ or 3-chloropentane is in contact with $ZnCl_2$ dissolved in conc.HCl.

Answer: B

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14. Which of the following reagents is preferred to synthesize neopentryl halide from neopentyl alcohol ?

A. conc.HX

B. $SOCl_2$

C. PBr_3

D. Both (2) and (3)

Answer: D

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15. When but $-3-en-2-ol$ reacts with $aqHBr$, we get

A. $CH_3\underset{\underset{Br}{|}}{C}HCH=CH_2$

B. $CH_3CH=CHCH_2Br$

C. both (1) and (2)

D. $H_2C = CHCH = CH_2$

Answer: C

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16. The product of the reaction of Ph_2CHCh_2OH with HBr is

A. $Ph_2C = CH_2$

B. $PhC\underset{Ph}{\underset{|}{H}}CH_2Br$

C. $PhCHBrCH_2Ph$

D. $PhCH = CHPh$

Answer: C

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17. Place the following alcohols in decreasing order of rate of dehydration with H_2SO_4.

$$\underset{(A)}{CH_3CH_2CH(OH)CH_2CH_2CH_3}$$

$$\underset{(B)}{(CH_3)_2C(OH)CH_2CH_2CH_3}$$

$$\underset{(C)}{(CH_3)_2C(OH)CH(CH_3)_2}$$

$$\underset{(D)}{CH_3CH_2CH(OH)CH(CH_3)_2}$$

$$\underset{(E)}{CH_3CH_2CH_2CH_2CH_2CH_2OH}$$

A. $B > C > D > A > E$

B. $B > C > A > D > E$

C. $C > B > A > D > E$

D. $C > B > D > A > E$

Answer: D

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18. Place the following benzyl alcohols in decreasing order of reaction rate with HBr

$\underset{(A)}{C_6H_5CH_2OH}$, $p-\underset{(B)}{O_2NC_6H_4CH_2OH}$

$p-CH_3OC_6H_4Ch_2OH$, $p-\underset{(D)}{Cl\,C_6\ H_4CH_2OH}$

A. $C > A > D > B$

B. $A > C > D > B$

C. $C > A > B > D$

D. $A > C > B > D$

Answer: A

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Follow -Up Test -7

1. An industrial method of preparation of methanol is

A. reacting fomaldehyde with aqueous sodium hydroxide solution

B. reducing formaldehyde with $LiAlH_4$

C. reacting methane with steam at $900^\circ C$ with a Ni catalyst

D. catalytic reduction of carbon monoxide in presence of $ZnO - Cr_2O_3$

Answer: A

Watch Video Solution

2. Which of the following is present in pyroligneous acid ?

A. Methyl alcohol

B. Acetic acid

C. Acetone

D. All of these

Answer: D

Watch Video Solution

3. Consumption of which of the following even in small dose causes blindness and may prove fall ?

A. Methyl alcohol

B. Methanol

C. Carbinol

D. All of these

Answer: D

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4. The enzyme that converts cane sugar into invert sugar (a mixture of glucose and fructose) is

A. maltase

B. diastase

C. invertase

D. zymase

Answer: C

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5. Which of the following is called grain alcohol ?

A. Ethanol

B. Ethyl alcohol

C. Methyl carbinol

D. All of these

Answer: D

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6. Which of the following is conveted into ethyl alcohol by the action of the enzyme zymase (present in yeast)?

A. Glucose

B. Lactose

C. Sucrose

D. Galactose

Answer: A

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7. Fermentation alone does not produce beverages with an ethanol content greater than

A. $10\ \%$

B. $15\ \%$

C. $12\ \%$

D. $17\ \%$

Answer: B

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8. Which of the following gases is released during fermentation ?

A. O_2

B. H_2

C. CO_2

D. CO

Answer: C

Watch Video Solution

9. Which of the following is commonly employed for removing water from ethanol ?

A. Na

B. H_2SO_4

C. $CaCl_2$

D. CaO

Answer: D

Watch Video Solution

10. Absolute alcohol is obtained by distilling rectified spirit with

A. benzene

B. $CaCl_2$

C. P_4O_{10}

D. CaO

Answer: A

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Follow -Up Test -8

1. Which of the following are a general group with an OH attached to a carbocyclic aromatic ring ?

A. Alcohols

B. Enols

C. Phenols

D. Napthols

Answer: C

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2. How many tautomeric forms of molecular formula C_6H_5OH are possible ?

A. Two

B. Three

C. Four

D. Just one

Answer: B

View Text Solution

3. How many phenols of molecular formula C_7H_8O are possible ?

A. four

B. Two

C. Five

D. Three

Answer: D

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4. Hydroquinone is a .....phenol

A. monohydric

B. dihydric

C. trihydric

D. polyhdric

Answer: B

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5. Pyrogallol is

A. 1, 2, 3-trihydroxybenzene

B. 1, 2, 4-trihydroxybenzene

C. 1, 3, 5-trihydroxybenzene

D. 2, 4, 6-trihydroxybenzene

Answer: A

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6. Which of the following statements is not correct ?

A. Phenol has a higher boiling point than benzethiol

B. Hydroquinone has a higher melting point than catechol

C. o-Nitrophenol and o-hydroxybenzaldehde have the lower boiling points as compared with their $m-$ and $p-$ isomers.

D. o-Nitrophenol and o-hydroxybenzaldehyde have the higher water solubility as compared with their $m-$ and $p-$ isomers.

Answer: D

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7. Which of the following is non-volatile in steam ?

A. o-Nitrophenol

B. m-Nitrophenol

C. p-Nitrophenol

D. Both (2) and (3)

Answer: D

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8. Which of the following compounds exhibit chelation ?

(i) o-cresol

(ii) methyl salicylate(oil of wintergreen)

(iii) o-hydroxybenzonitrile

(iv) o-flurophenol

(v) o-iodophenol

A. $(ii), (iii), (iv)$

B. $(ii), (iii), (iv), (v)$

C. $(ii), (iv)$

D. $(i), (ii), (iv)$

Answer: C

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Follow -Up Test -9

1. The most important laboratory synthesis of phenols is by hydrolysis of

A. arenediazonium salts

B. aryl halides

C. Grignard reagents

D. aromatic amines

Answer: A

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2. The oldest synthetic method of phenol is the alkali fusion of

A. sodium phenoxide

B. sodium benzenesulphonate

C. sodium benzenecarboxylate

D. Phenyl sodium

Answer: B

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3. Dow process is the industrial synthesis of phenol from

A. iodobenzene

B. bromobenzene

C. chlorobenzene

D. fluorobenzene

Answer: C

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4. In cumene-phenol process ,phenol is manufactured from the hydrocarbon

A. n-propylbenzene

B. isopropylbenzene

C. ethylbenzene

D. methylbenzene

Answer: B

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5. The important by product of cumene phenol process is

A. acetone

B. acetaldehyde

C. ethanol

D. acetic acid

Answer: A

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Follow -Up Test -10

1. Which of the following is incorrect for phenol ?

A. It turns blue litmus red

B. It reacts with alkali metals

C. It reacts with alkalis

D. It gives effervescence with sodium bicarbonate

Answer: D

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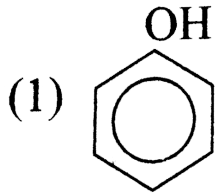
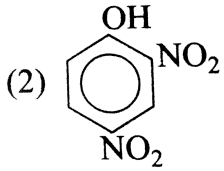
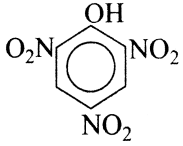
2. Which of the following is soluble in aqueous sodium bicarbonate ?

A. 

B. 

(3) 

C.

D. Both (2) and (3)

Answer: D

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3. Which of the following is the weakest acid?

A. Benzenesulphonic acid

B. Benzoic acid

C. Benzyl alcohol

D. Phenol

Answer: C

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4. Which of the following is the strongest acid ?

A. Phenol

B. p-Nitophenol

C. m-Nitrophenol

D. o-Nitophenol

Answer: B

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5. Which of the following is the weakest acid?

A. o-Cresol

B. m-Cresol

C. p-Cresol

D. Phenol

Answer: A

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6. Which of the following is the weakest acid?

A. p-Chlorophenol

B. Phenol

C. m-Chlorophenol

D. o-Chlorophenol

Answer: B

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7. Which of the following is the weakest acid?

A. o-Fluorophenol

B. o-Chlorophenol

C. o-Bromophenol

D. o-Iodophenol

Answer: A

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8. Which of the following statements is incorrect ?

A. p-Nitrophenol is a stronger than p-chlorophenol

B. $2, 4, 6$-trinitrophenol is a stronger acid than $2, 4$-dinitrophenol

C. $2, 6$-dimethylphenol is a weaker acid than 2-methylphenol

D. Ring deuteration of phenol increases the acidic strength.

Answer: D

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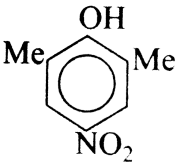
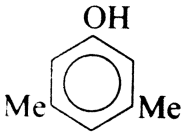
9. Arrange the following compounds in order of decreasing acidic strength.

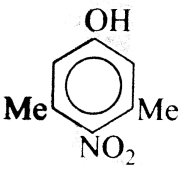
(I)



(II)



(III)



(IV)

A. $I > II > III > IV$

B. $III > I > II > IV$

C. $I > III > II > IV$

D. $II > IV > I > III$

Answer: C

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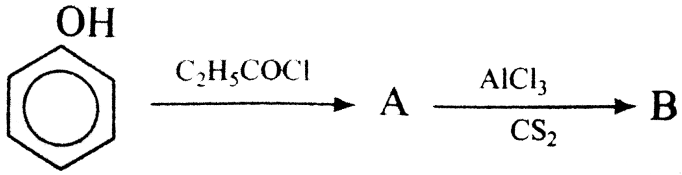
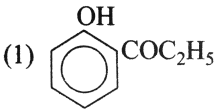
10. In the reaction

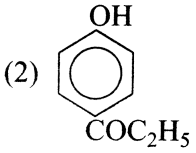


the product b is

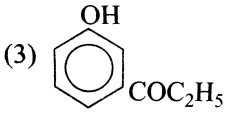
A.



B.



C.



D. A mixture of (1) and (2)

Answer: D

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11. Phenolic ethers (alkaryl ethers, $ArOR$) are prepared by

A. heating sodium phenoxide with alkyl halide in ethanol solution

B. treating an alkaline solution of a phenol with alkyl sulphate

C. Both (1) and (2)`

D. heating sodium alkoxide with aryl halide in ethanol solution

Answer: C

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12. When phenol reacts with phosphorus pentachloride, the main product is

A. C_6H_5Cl

B. $(C_6H_5)_3PO_4$

C. $(C_6H_5)_3PO_3$

D. C_6Cl_6

Answer: B

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Follow -Up Test -11

1. The OH group of phenol

A. activates ring powerfully and direacts ortho, para in nucleophilic aromatic substitution.

B. activates ring powerully and direacts ortho, para in electrophilic substitution

C. deactivates powerfully and directs ortho, para in electrophile aromatic substitution

D. deactivates powerfully and directs meta in electrophilic aromatic substitution.

Answer: B

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2. When phenol in treated with excess bromine water, it gives

A. $2, 4 -$ dibromophenol

B. $0 -$ and $p -$ bromophenol

C. $2, 4, 6 -$ tribromophenol

D. $m-$ bromophenol

Answer: C

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

A. $2,4,6-$ tribromophenol

B. $m-$ bromophenol

C. $o-$ and $p-$ bromophenol

D. $p-$ bromophenol

Answer: C

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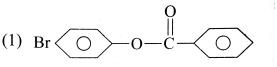
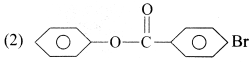
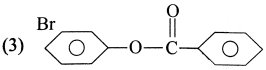
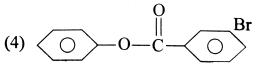
4. The product of the reaction between phenyl benxoate and one mole of bromine in the presence of iron is

A. 

B. 

C. 

D. 

Answer: A

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5. Phenol is converted by concentrated nitric acid into

A. salicaylic acid

B. citric acid

C. tartaric acid

D. picric acid

Answer: C

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6. Treatment of phenol with cold dilute nitric acid gives

A. $2, 4 -$ dinitrophenol

B. $2, 4, 6 -$ trinitrophenol

C. $o -$ and $- p -$ nitrophenol

D. $m -$ nitrophenol

Answer: C

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7. Phenol is heated with concentrated sulphuric acid at $110^{\circ}C$. The major product formed is

A. $4-$ hydroxybenzensulphonic acid

B. $3-$ hydroxybezenesulphonic acid

C. $2-$ hydroxybenzenesulphonic acid

D. a mixture of all these in equal amounts

Answer: A

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8. Phenol does not react with

A. $(i), (ii), (iii), (iv)$

B. $(i), (ii), (iii)$

C. $(ii), (iii), (iv)$

D. $(i), (ii), (iv)$

Answer: B

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9. Phenol reacts with benzoyl chloride in the presence of dilute $NaOH$ to form

A. diphenyl ether

B. acetophenone

C. $\alpha -$ hydroxybenzophenone

D. Phenyl benzoate

Answer: D

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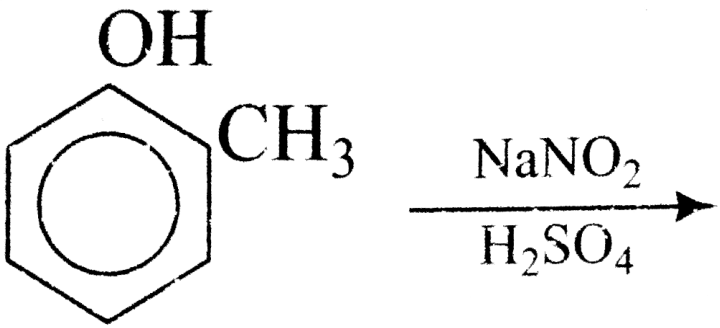
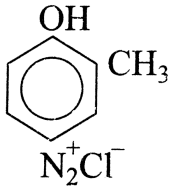
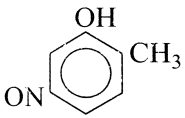
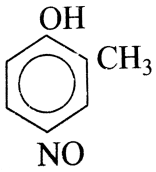


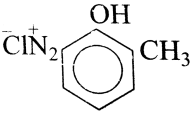
10.

The principle organic product of the reaction is

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: C

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11. Phenol couples in the $p-$ position with diazonium salts in alkaline solution to form

A. hydroxyazo compounds

B. azulene

C. azoxybenzene

D. azoles

Answer: A

Watch Video Solution

12. When sodium or potassium phenoxide is heated with carbon dioxide, followed by acidification, we get

A. salicyl alcohol

B. salicyylaldehyde

C. salicylic acid

D. both (1) and (2)

Answer: C

Watch Video Solution

13. Treatment of a phenol with -------and aqueous hydroxide introduces an aldehyde group$(-CHO)$ onto the aromatic ring, generally ortho to the $-OH$.

A. CCl_4

B. CH_2Cl_2

C. CH_3Cl

D. $CHCl_3$

Answer: D

Watch Video Solution

14. Gattermann aldehyde synthesis is carried out by treating phenol with a mixture of ----- in the presence of aluminium chloride.

A. CO and HCl

B. HCN and HCl

C. CO and H_2

D. HCN and H_2O

Answer: B

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15. In the Lederer-Manasse reaction, phenol is treated at low temperature with -----in the presence of dilue acid or alkali

A. $(CH_3)_2CO$

B. CH_3CHO

C. CH_2O

D. CH_3OH

Answer: C

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16. Which of the following reagents will reduce phenol to benzene?

A. $H_2 / Ni, 200^\circ C, 20atm$

B. Zn,heat

C. $LiAlH_4$

D. All of these

Answer: B

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17. Which of the following oxidizes phenol to $p-$ benzoquinone?

A. $Na_2Cr_2O_7 / H_2SO_4$

B. $KMnO_4$ and $NaOH$

C. CrO_2Cl_2

D. both (1) and (3)

Answer: D

Watch Video Solution

1. Which of the following pairs have the same general molecular formula $C_nH_{2n+2}O$.

A. Aldehydes and ethers

B. Carboxylic acids and ethers

C. Alcohols and ethers

D. Esters and ether

Answer: C

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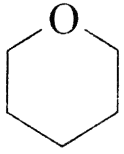
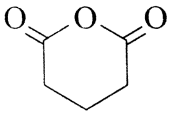
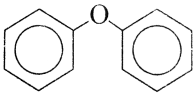
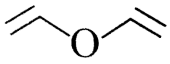
2. Among the following compounds, which one is not an ether?

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: B

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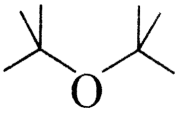
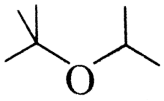
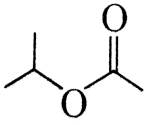
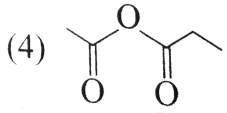
3. Which of the following is a constitutionally symmetrical ether?

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: A

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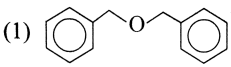
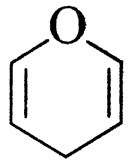
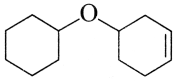
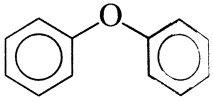
4. While of the followig should be considered as an aromatic ether?

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: D

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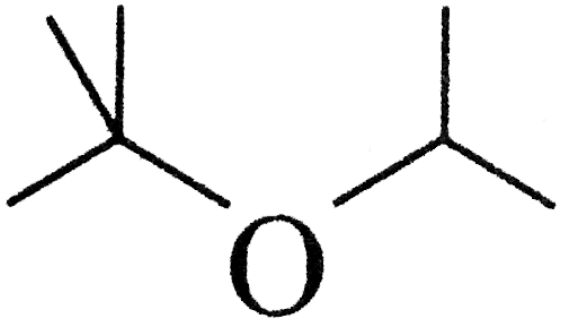
5. The $IUPAC$ name of the compound



is

A. $2-(1,1-$ dimethylethoxy) propane

B. $1-$ isoproxy$-1,1-$ dimethyletane

C. $2-$ methyl$-2-(1-$ methylethoxy) propane

D. $t-$ butyl isopropyl ether

Answer: C

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6. The number of ethers possible with the molecular formula $C_4H_{10}O$ is.

A. three

B. four

C. two

D. one

Answer: A

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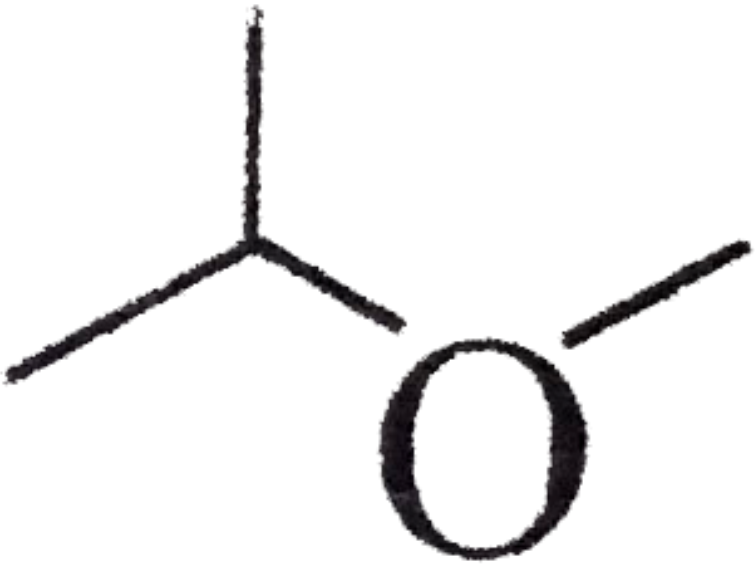
7. The two structure



represent

A. stereoisomers

B. position isomers

C. metamers

D. chain isomers

Answer: C

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8. $ThC - O$ bonds of saturated aliphatic ehters are formed by the linear orbital overlap of the type:

A. $sp^3 - sp^2$

B. $sp^3 - sp^3$

C. $sp^2 - sp^2$

D. $sp^3 - sp$

Answer: B

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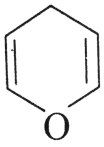
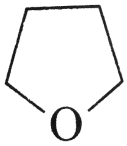
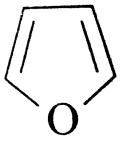
9. Which of the following is a cyclic ether possessing the characterstics of aromatic compounds?

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: D

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10. The crow ether is a heterocyclic polyether, usually with at least "_____" oxygen atoms.

A. four

B. three

C. six

D. five

Answer: A

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11. $ThC-O-O$ bond angle in the ether molecule is

A. 104.5°

B. 108.5°

C. 180°

D. 111.7°

Answer: D

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12. Ethers are

A. nonpolar

B. strongly polar

C. weakly polar

D. dipolar

Answer: C

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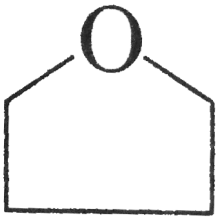
13. Which of the following is incorrect?

A. Boiling points of ethers, such as diethyl ether and structure such as $n-$ pentane are about the same.

B. Dimethyl ether $(Me_2O)$is highly soluble in water whicle diethyl ether (Et_2O) is only sparingly soluble.

C. Tetrahydrofuran



is highly soluble in water but diethyl ether $Et_2O)$ is almost insoluble

D. Tetrahydrofruan and dilhydrofuran are equally soluble in water.

Answer: D

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14. CH_3OCH_3 is a gas at room temperature while its isomer CH_3CH_2OH is a liquid of boiling point $78^\circ C$ this is due to the fact that

A. the CH_3- group has weaker $+1$effect than the $CH_3CH_2^-$ group.

B. lone pair of electrons of CH_3OCH_3 participates in resonance but that in CH_3CH_2OH does not.

C. CH_3OCH_3 cannot undergo molecular association as its hydrogens are all attached to carbon while $-OH$ of CH_3CH_2OH permits association of a alcohol molecules.

D. C_2H_5OH forms intramolecular hydrogen bonds while C_2H_5OH forms intermolecular hydrogen bonds.

Answer: C

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Follow -Up Test -13

1. Identify the final product (B) in the following sequence of reactions.

$$CH_3 - \overset{CH_3}{\overset{|}{C}} = CH_2 \xrightarrow[0^\circ C]{Conc.\,H_2SO_4} A \xrightarrow{C_2H_5OH} B$$

A. $CH_3)_2CHCH_2OC_2H_5$

B. $(CH_3)_3COC_2H_5$

C. $(CH_3)_3C - OSO_3H$

D. $C_2H_5OC_2H_5$

Answer: B

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2. Consider the following reactions

$$CH_3CH = CH_2 \xrightarrow[2.NaBH_4]{1.(CH_3COOH)_2Hg.CH_3OH}$$

A. $\begin{matrix} CH_3CH - CH \\ | \quad\quad | \\ CH_3COO \quad OCOCH_3 \end{matrix}$

B. $CH_3 - \underset{\underset{CH_3}{|}}{C}H - O - \overset{\overset{O}{||}}{C} - CH_3$

C. $\begin{matrix} CH_3\underset{\underset{CH_3}{|}}{C}H - O - CH_3 \\ CH_3CH - CH_2OCOCH_3 \\ | \\ OCH_3 \end{matrix}$

D.

Answer: C

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3. Which of the following is not expected to produce methoxybenzene?

A. $PhONa + CH_3OSO_2CH_3 \rightarrow$

B. $PhOH + (CH_3)_2SO_4 \xrightarrow{NaOH}$

C. $PhOH + CH_3I \xrightarrow{NaOH}$

D. $PhBr + CH_3Ona \rightarrow$

Answer: D

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4. Reaction of $t-$ butyl bromide with sodium methoxide produces

A. $t-$ butyl methyl ether

B. isobutylene

C. isobutane

D. Sodium $t-$ butoxide

Answer: B

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5. In the reaction

A. $CH_3CH_2OCH_2CH_3$

B. $CH_3CH_2OCH_3$

C. $CH_3CH_2OSO_2OCH_3$

D. $CH_3CH_2OSO_2OCH_2CH_3$

Answer: A

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6. Which of the following is not expected to give ether on reaction with sodium methoxide?

A. $PhCH_2Cl$

B. $CH_2 = CHCH_2Cl$

C. $CH_2 = CHCl$

D. $CH_3CH_2CH_2Cl$

Answer: C

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7. Ethyl bromide on heating with dry silver oxide gives

A. ethanol

B. ethoxyether

C. butane

D. ethene

Answer: B

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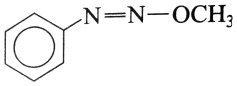
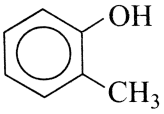
8. Phenol, C_6H_5OH is allowed to react with diazomethane, CH_2N_2.

The product formed is:

A. $C_6H_5OCH_3$

B. (2) 

C. (3) 

D. $C_6H_5CH_2OH$

Answer: A

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9. Ethyl alcohol (in excess) is heated with concentrated H_2SO_4 at $40^\circ C$. On distillation, the major product that separates out is

A. diethyl sulphate

B. ethyl hydrogen sulphate

C. ethene

D. ethoxyethane

Answer: D

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10. The reaction

$$2C_2H_5Oh \xrightarrow[140^\circ C]{Conc.\,H_2SO_4} (C_2H_5)_2O + H_2O$$

is an example of

A. an elimination reaction (E_2)

B. a nucleophiic substitution (S_Nl) reaction

C. a nucleophilic substitution (S_N2)reaction

D. an electrophilic substitution (S_E2) reaction

Answer: C

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11. $Di - t -$ butyl ether is prepared best by the reaction

A. $(CH_3)_2C = CH_2 \xrightarrow[H_2SO_4]{Conc.} \xrightarrow{(CH_3)_3COH}$

B. $\underset{(\text{Vapor})}{(CH_3)_3C - Oh} \xrightarrow[240^\circ C]{Al_2O_3}$

C. $(CH_3)_3C - OH \xrightarrow[140^\circ C]{H_2SO_4}$

D. $(CH_3)_3C - Br + (CH_3)_3COK \rightarrow$

Answer: A

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12. A mixture of CH_3OH and C_2H_5OH is heated with concentrated H_2SO_4 at $140^\circ C$. The product that may be formed is

A. $CH_3CH_2OCH_2CH_3$

B. $CH_3CH_2OCH_3$

C. CH_3OCH_3

D. all of these

Answer: D

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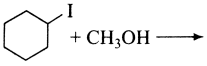
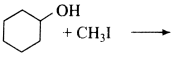
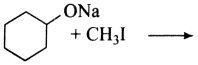
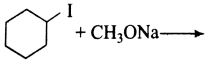
13. Which of the following reactions is the best choic for preparing methyl cycohexyl ether?

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: C

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14. Consider the following reactions

$$CH_3CH=CH_2 \xrightarrow[(C_6H_5CO)_2O_2]{HBr} A \xrightarrow{CH_3Ona} B$$

The major end product (B) is :

A. $CH_3CH_2CH_2OCH_3$

B. 

C. 

D. $CH_3\overset{\overset{Br}{|}}{C}HCH_2OCH_3$

Answer: A

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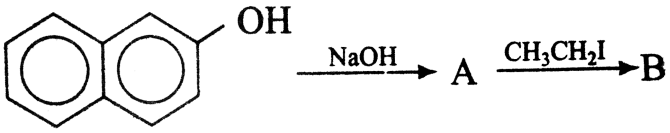
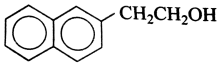
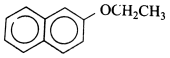
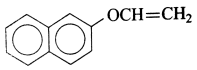
15. In the reaction sequence

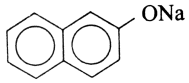


The product (B) is

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: B

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Follow -Up Test -14

1. The reaction of $C_2H_5OC_2H_5$ with BF_3 leads to the formation of

A. $(C_2H_5)_2\overset{+}{B}F_2\overline{O}F$

B. $(C_2H_5)_2\overset{+}{O}-\overline{B}F_3$

C. $(C_2H_5)_2\overline{O}-\overset{+}{B}F_3$

D. $C_2H_5PBF_2$ and C_2H_5F

Answer: B

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2. Which of the following is a very good ethylating agent for converting $R-OH$ into $R-Oet$?

A. $Et-(3)\overset{+}{O}\overline{B}F_4$

B. Et_2O

C. $Et_2\overset{+}{O}-\overline{B}F_3$

D. C_2H_5OH

Answer: A

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3. Diether ether becomes soluble in concentrated HCl in cold condition due to the formation of

A. C_2H_5Cl

B. $(C_2H_5)_2\overline{O}ClH^+$

C. $(C_2H_5)_2\overset{+}{O}HCl^-$

D. C_2H_5OH

Answer: C

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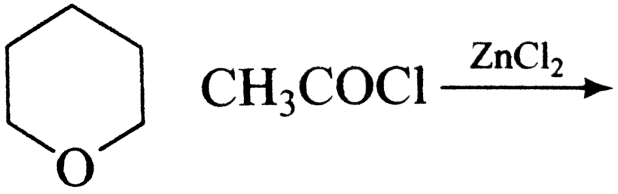
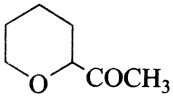
4. The product of the reaction



is

A. $HOCH_2(CH_2)_3CH_2COCH_3$

B. $HOCH_2(CH_2)_3CH_2OCOCH_3$

C. (3) 

D. $ClCH_2(CH_2)_3CH_2OCOCH_3$

Answer: D

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5. In the reaction

$(CH_3)_3C-O-CH_2CH_3+\underset{(1\text{mole})}{HI}\xrightarrow{heat}$ the products formed is

(are)

A. $(CH_3)_3COH$ and CH_3CH_2l

B. $(CH_3)_3Cl$ and CH_3CH_2I

C. $(CH_3)_3CI$ and CH_3CH_2OH

D. $(CH_3)_3C-\overset{+}{\underset{|}{\underset{H}{O}}}-CH_2CH_2CH_3I^-$

Answer: D

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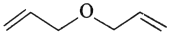
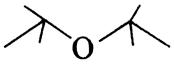
6. Which of the following ethers is the most unreactive to cleavage with concentrated HBr ?

A. $C_6H_5OC_6H_5$

B. $C_6H_5CH_2OC_6H_5$

C. (3) 

D. (4) 

Answer: A

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7. Diethyl ether on reaction with CI_2 in the dark at room temperature forms

A. $CH_3CH_2OCCI_2CH_3$

B. $CH_3CHClOCHClCH_3$

C. $CCl_3CCl_2OCCl_2CCl_3$

D. $CI_3CCH_2OCH_2CCl_3$

Answer: B

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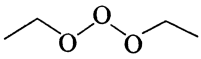
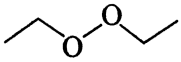
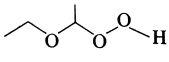
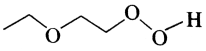
8. Diethyl ether on prolonged exposure to air forms

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: C

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9. Ethyl methyl ether on heating with PCl_5 produces

A. ethyldence dichloride and methylene dichloride

B. acetyl chloride and methyl chloride

C. ethyl chloride and methyl alcohol

D. ethyl chloride and methyl chloride

Answer: D

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Quation Bank(Building the knowledge) Level I

1. Cyclohohexanol is a

A. tertiary alcohol

B. primary alcohol

C. secondary alcohol

D. phenol

Answer: C

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2. Which of the following can be prepared by the reduction of a phenyl ester?

A. $CH_3CH_2CHOHCH_2$

B. $CH_3CH_2CH_2CH_2OH$

C. $(CH_3)_3COH$

D. $CH_3CHOHCH_3$

Answer: B

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3. The alcohol which gives the most stable carbocation during dehydration is

A. $2-$ methylpropan$-2-ol$

B. $2-$ methylpropan$-1-ol$

C. butan$-1-ol$

D. butan$-2-ol$

Answer: A

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4. Which of the following is soluble in water?

A. $CHCl_3$

B. C_2H_5OH

C. CS_2

D. CCl_4

Answer: B

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5. Which one of the following on oxidation gives a ketone?

A. primary alcohol

B. Secondary alcohol

C. tertiary alcohol

D. All of these

Answer: B

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6. What is formed when a primary alcohol undergoes catalytic hydrogenation?

A. Adehyde

B. Ketone

C. Alkene

D. Acid

Answer: A

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7. The alkyl halide is converted into an alcohol by

A. addition substitution

B. substitution

C. dehydrohalogenation

D. elimination

Answer: B

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Quation Bank(Building the knowledge) Level II

1. $C_nH_{2n+2}O$ is the general formula for

A. monohydric alcohols

B. epoxides

C. aldehydes and alkoxyalkanes

D. aldehydes and ketones

Answer: C

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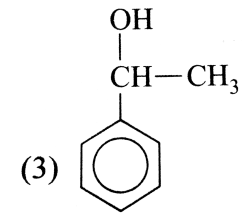
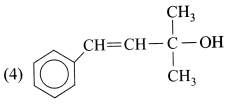
2. Which of the following is a tertiary allylic alcohol?

A. $CH_3 - \underset{\underset{CH_3}{|}}{\overset{CH_3}{\overset{|}{C}}} H_2OH$

B. $H_2C = CH - CH_2OH$

C. 

D. 

Answer: D

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3. An unsymmetrical alkene in an acid-catalysed hydration could form more than one alcohol. The regioselectivity of the reaction and the chances of rearrangement are govered by

A. Markovnikov's rule

B. Hoffmann rule

C. Saytzeff's rule

D. The stability of the carbocation intermediate

Answer: D

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4. Consider the following reaction sequence

$PhCH_2CH(OH)CH_3 \xrightarrow[heat]{conc.H_2SO_4} A \xrightarrow{dil.H_2SO_4} B$ The product (B) is

A. $PhCH=CHCH_3$

B. $PhCH_2\overset{OH}{\overset{|}{C}}HCH_3$

C. $PhCH_2CH_2CH_2OH$

D. $PhCH(OH)CH_2CH_3$

Answer: D

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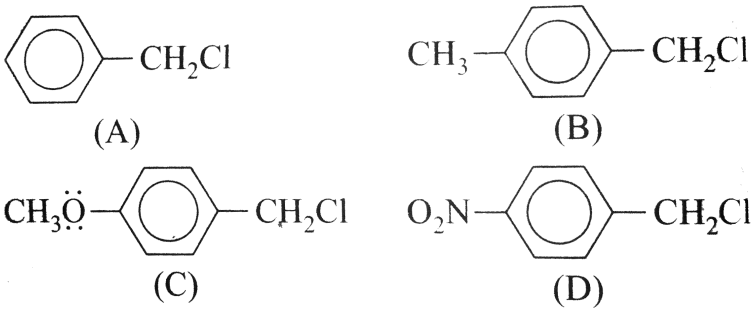
5. Consider the following chlorides



(A)

The order of reactivity of A, B, C and D towards hydrolysis by S_N1 mechanism is

A. $C < B < A < D$

B. $D < C < B < A$

C. $D < A < B < C$

D. $A < B < C < D$

Answer: C

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6. Which of the following reagents is not able to reduce an ester into an alcohol?

A. $NaBH_4$

B. $LiAlH_4$

C. Na, C_2H_5OH

D. H_2, Pt

Answer: A

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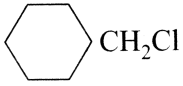
7. Which of the following chlorides is expected to hydrolyze most rapidly by S_N1 mechanism?

A. (1) 

B. Ph_2CHCl

C. $PhCHClCH_3$

D. $PhCH_2CH_2Cl$

Answer: B

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8. Which of the following pairs of reactants will furnish butan $-2-ol$ after reacting in dry ether and undergoing subsequent hydropysis?

A. CH_3COCH_3 and CH_3Mgl

B. CH_3CH_2CHO and CH_3MgI

C. $CH_3CH_2COCH_3$ and CH_3MgI

D. CH_3CHO and $CH_3MgI(2\text{moles})$

Answer: B

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9. Which of the following is commonly used in anhydrous condition for the detection of an alcohol in the laboratory?

A. CH_3MgI

B. $ZnCl_2 / HCl$

C. Na

D. $NaOH$

Answer: C

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10. A compound with the formula $C_4H_{10}O$ yields another compound C_4H_8O, on heating with $K_2Cr_2O_7$ and H_2SO_4. The compound $C_4H_{10}O$ is expected to be

A. $CH_3CH_2CHOHCH_3$

B. $CH_3CH_2CH_2CH_2OH$

C. $(CH_3)_2CHCH_2OH$

D. $(CH_3)_3C-OH$

Answer: A

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11. Which of the following will form a yellow precipitate of iodoform on heating with I_2 and dilute $NaOH$?

A. $CH_3CH_2CH_2OH$

B. $CH_2CHOHCH_3$

C. $PhCH_2CH_2OH$

D. $PhCH_2CHOHCH_2CH_3$

Answer: B

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12. $CH_3CH=CHCH(OH)CH_3 \rightarrow CH_3CH=CHCOCH_3$

which of the following reagents should be used to bring about the above conversion?

A. (1) 

B. H_2O_2/OH^-

C. $KMnO_4/H_2SO_4$

D. $K_2Cr_2O_7/H_2SO_4$

Answer: A

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13. In CH_3CH_2OH, the bond that undergoes heterolytic cleavage most readily is

A. $C - C$

B. $C - O$

C. $O - H$

D. $C - H$

Answer: C

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14. Among the following alcohols, which has the highest solubility in water?

A. $(CH_3)_3C - OH$

B. $(CH_3)_2CHCH_2CH_2CH_2OH$

C. $CH_3(CH_2)_4CH_2OH$

D. $CH_3CH_2CH_2CH_2OH$

Answer: A

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15. Which of the following reagents can distinguish between $t-$ butyl alcohol and $n-$ butyl alcohol?

A. sodium

B. $ZnCl_2$ and $Conc.\ HCl$

C. $AgNO_3$ and $NH_4^+OH^-$

D. $CuCl_2$ and $NH_4^+OH^-$

Answer: B

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16. $\begin{matrix}CH_2OH\\|\\CH_2OH\end{matrix} \xrightarrow{PBr_3} A \xrightarrow[excess]{KCN} B \xrightarrow[heat]{H_3O^+} C$

In the above sequence of reaction the end product (C) is

A. $\begin{matrix}CH_2CN\\|\\CH_2CN\end{matrix}$

B. $\begin{matrix}CH_2CH_2CN\\|\\CH_2CH_2CN\end{matrix}$

C. $\begin{matrix}CH_2COOH\\|\\CH_2COOH\end{matrix}$

D. $\begin{matrix}CH_2CH_2NH_2\\|\\CH_2CH_2NH_\circ\end{matrix}$

Answer: C

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17. Identify the products in the following reaction

$$3CH_3CH = CH_2 \xrightarrow{BH_3} X \xrightarrow{H_2O_2 / OH^-} \text{products} + H_3BO_3$$

A. $CH_3CHO + CH_3OH$

B. $CH_3CH_2OH + CH_3OH$

C. CH_3CH_2CHO

D. $CH_3CHOHCH_3$

Watch Video Solution

18. HBr reacts fastest with

A. $2 -$ methylpropan$- 1 - ol$

B. $2 -$ methylpropan$- 2 - ol$

C. propan $-2-ol$

D. propan $-1-ol$

Answer: B

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19. Ethanol and dimethyl ether form a pair of of functional isomers. The boiling point of ethanol is higher than that of dimethyl ether due to the presence of

A. hydrogen bonding in ethanol

B. hydrogen bonding in dimethyl ether

C. $-CH_3$ group in ethanol

D. $-CH_3$ group in dimethyl ether

Answer: A

Watch Video Solution

20. In the reaction given below, X is

$C_6H_5MgBr + CH_3OH \rightarrow X$

A. C_6H_6

B. C_6H_5OH

C. $C_6H_5OCH_3$

D. CH_3COOH

Answer: A

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21. In the reaction given below, X is

Neopentyl alcohol $\xrightarrow{H_2SO_4} X$

A. $2-$ methylpentane

B. $2-$ methylpent-2-ene

C. $2-$ methylbut$-2-$ ene

D. neopentane

Answer: C

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22. Lucas test is done for

A. alkyl halides

B. alcohols

C. acids

D. aldehydes

Answer: B

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23. When alcohol reacts with concentrated H_2SO_4, the intermediate species formed is

A. carbocation

B. alkoxy ion

C. alkyl hydrogen sulphate

D. none of these

Answer: A

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24. The only alcohol that can be prepared by the direct hydration of alkene is

A. ethyl alcohol

B. propyl alcohol

C. isobutyl alcohol

D. methyl alcohol

Answer: A

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25. Which of the following alkenes will give optically active alcohol when treated with H_2O / H_2SO_4

A. But$-1-$ ene

B. Ethnene

C. propene

D. $2-$ Methylpropene

Answer: A

Watch Video Solution

26. The most suitable reagent for the conversion of

$RCH_2OH \rightarrow RCHO$ is

A. $KMnO_4$

B. $K_2Cr_2O_7$

C. CrO_3

D. PCC (pyridinium chlorochromate)

Answer: D

Watch Video Solution

27. $1-$ phenylethanol can be prepared by reaction of benzaldehyde with

A. methyl iodide and magnesium

B. methyl bromide

C. methyl bromide

D. methyl bromide and $AlBr_3$

Answer: A

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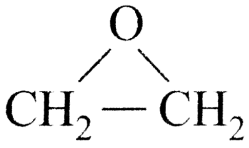
28. In the reaction sequence

$$CH_2 = CH_2 \xrightarrow[\text{acid}]{\text{hydrochlorous}} A \xrightarrow{R} \begin{matrix} CH_2OH \\ | \\ CH_2OH \end{matrix}$$

A and R are respectively

A. 

B. CH_3CH_2Cl and $NaOH$

C. CH_3CH_2OH and H_2SO_4

D. CH_2ClCH_2OH and $NaHCO_3$

Answer: D

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Quation Bank(Building the knowledge) Level III

1. Which of the following possesses two tertiary alcoholic groups?

A. pinacol

B. Glycerol

C. Propylene glycol

D. Trimethylene glycol

Answer: A

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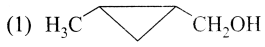
2. The major product formed in the reaction

$$CH_3 - \overset{CH_3}{\underset{CH_3}{\overset{|}{\underset{|}{C}}}} - CH_2\ddot{\underset{\cdot\cdot}{Cl}}: \xrightarrow[H_2O]{Ag^+}$$

is

A. 

B. $CH_3 - \overset{CH_3}{\underset{OH}{\overset{|}{\underset{|}{C}}}} - CH_2CH_3$

C. $CH_3 - \overset{CH_3}{\underset{CH_3}{\overset{|}{\underset{|}{C}}}} - CH_2OH$

D. $HO - CH_2\overset{CH_3}{\overset{|}{C}}HCH_2CH_3$

Answer: B

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3. One mole of ethly acetate on treatment with an excess of $LiAlH_4$ in dry ether and subsequent acidification produces

A. $\text{butan} - 2 - ol(1\text{mole})$

B. acid (1 mole) and ethyl alcohol (1 mole)

C. ethyl alcohol (1 mole) and emthyl alcohol (1 mole)

D. ethyl alcohol (2 mole)

Answer: D

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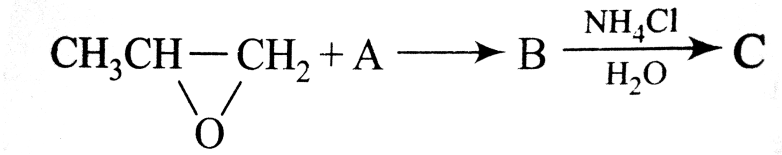
4. Consider the following sequence of reactions

$$PhBr \xrightarrow[Et_2O\,,heat]{Mg} A$$



The major product formed (C) is

A. $PhCH_2CHOHCH_3$

B. $PHCH_2COCH_3$

C. $Ph\overset{CH_3}{C}HCH_2OH$

D. $Ph\overset{CH_3}{\underset{|}{C}}HCH_2OH$

Answer: A

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5. Cosider the following transformations

$$CH_3CH=CHCHO \xrightarrow[Et_2O]{KiAlH_4} A \xrightarrow{H_2O} B$$

The fianl product (B) is

A. $CH_3CH_2CH_2CH_3$

B. $CH_3CH=CHCH_2OH$

C. $CH_3CH=CHCH_3$

D. $CH_3CH_2CH_2CH_2OH$

Answer: B

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6. Consider the following transformations

$$\underset{(excess)}{PhCH_2CH_3} \xrightarrow[heat]{Cl_3} \underset{(maj \text{ or })}{A} \xrightarrow[H_2O, heat]{aq.KOH} \underset{(maj \text{ or })}{B}$$

The major product (B) is

A. $PhCH_2CHO$

B. $Ph \equiv CH$

C. $PhCHOHCH_3$

D. $PhCH_2CH_2OH$

Answer: C

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7. Glycerol is prepared syntherically from

A. $CH_3CH = CH_2$

B. $CH_3C \equiv CH$

C. $CH_3CH_2CH_3$

D. $CH_2 = C = CH_2$

Answer: A

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8. Consider the following sequence of reactions

$$CH_2 = CH_2 \xrightarrow[CH_2Cl_2]{PhCO_3H} A \xrightarrow{dil.\,H_2SO_4} B$$

The product (B) is

A. $PhCH_2CH_2OH$

B. CH_2OHCH_2OH

C. $(CH_3)_2CHOCH_2CH_3$

D. CH_2OHCH_2Cl

Answer: B

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9. Consider the following sequence of reactions ltbRgt $CH_3CH(OH)CH_3 \xrightarrow{NaH} A \xrightarrow{CH_3CH_2I} B$ The product (B) is

A. $CH_3CH = CHCH_2CH_3$

B. $(CH_3)_2CHCH_2CH_3$

C. $(CH_3)_2CHOCH_2CH_3$

D. $(CH_3)_2C\underset{\underset{OH}{|}}{C}CH_2CH_3$

Answer: C

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10. Alcohols fail to react with

A. $HC \equiv \overline{C}Na^+$

B. $NaNH_2$

C. $LiAlH_4$

D. $aq.\ NaOH$

Answer: D

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11. Which of the following pairs can be distinguished by iodine and dilute $NaOH$?

A. $n-$ propyl alcohol and ethyl methyl ether

B. Benzyl alcohol and cyclohexanol

C. $t-$ Butyl alcohol and $s-$ butyl alcohol

D. $n-$ Propyl alcohol and $n-$ butyl alcohol

Answer: C

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12. Ethanol reacts with conc. H_2SO_4 at $0^\circ C$ to yield

A. ethylene

B. diethyl ether

C. ethyl hydrogen sulphate

D. ethyloxonium hydrogen sulphate

Answer: D

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13. Glycerol on being heated with an excess of HI produces

A. $CH_2ICHICH_2I$

B. CH_3CHICH_3

C. $CH_3CH=CH_2$

D. $CH_2=CHCH_2I$

Answer: B

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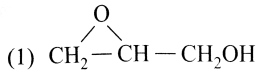
14. Glycerol on heating with solid $KHSO_4$ forms

A. 

B. $HC \equiv C - CH_2OH$

C. $CH_2 = CH - CHO$

D. CH_3COCH_2OH

Answer: C

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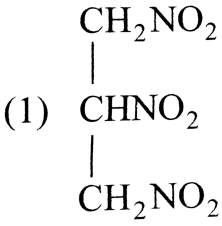
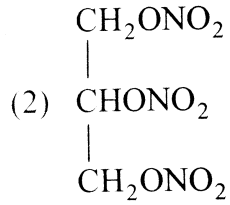
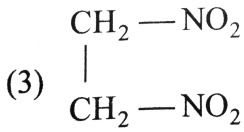
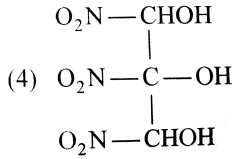
15. The shock-sensitive substance present in dynamite is

A. 

B. (2) 

C. (3) 

D. (4) 

Answer: C

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16. Identify the exculsive product of the following reaction

$(CH_3)_3CCH(CH_3)OH \xrightarrow{Conc.HCl}$

A. $(CH_3)_3CCH = CH_2$

B. $(CH_3)_3CClCH(CH_3)_2$

C. $(CH_3)_3CCH(CH_3)Cl$

D. $(CH_3)_2C = C(CH_3)_2$

Answer: B

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17. The "proof" of an alcoholic beverage is simply"_____" the percentage of ethanol (by volume).

A. twice

B. half

C. thrice

D. One third

Answer: A

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18. When phenyl magnesium bromide reacts with $t-$ bytyl alcohol, the product would be

A. phenol

B. benzene

C. $t-$ butyl benzene

D. $t-$ butyl phenyl ether

Answer: B

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19. In the following sequence of reactions,

$CH_3CH_2OH \xrightarrow{P+I_2} A \xrightarrow[ether]{Mg} B \xrightarrow{HCHO} C \xrightarrow{H_2O} D$ The compound D is

A. $n-$ propyl alcohol

B. $n-$ butyl alcohol

C. butanal

D. propanal

Answer: A

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20. The compound which reacts fastest with lucas reagent (at room temperature) is

A. butan$-1-ol$

B. butan$-2-ol$

C. $2-$ methylpropan$-1-ol$

D. $2-$ methylpropan$-2-ol$

Answer: D

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

A. 5

B. 4

C. 2

D. 3

Answer: B

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22. Methanol is industrially prepared by

A. oxidation of CH_4 by steam at $900^\circ C$

B. reduction of $HCHO$ using $LiAlH_4$

C. reduction of $HCHO$ with a solution of $NaOH$

D. reduciton of CO using H_2 and $ZnO - Cr_2O_3$

Answer: D

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

A. (ii)only

B. (iii) only

C. (i) and (iv)

D. (ii) and (iv)

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24. The major product formed when $3, 3 -$ dimethylbutan $- 2 - ol$ is heated with conc. Sulphuric acid is

A. $2, 3 -$ dimethylbut-2-ene

B. $2, 3 -$ dimethylbut-ene

C. $3, 3 -$ dimethylbut-1-ene

D. $cis -$ and trans $-$ isomers of $2, 3 -$ dimethylbut -1-ene

Answer: A

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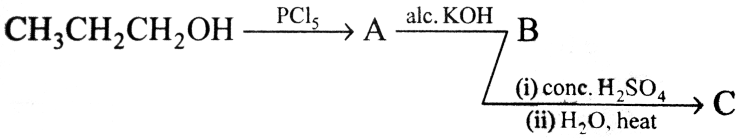
25. Identify C in the following scheme



A. Propyne

B. Propynen

C. Propan$-2-ol$

D. Prpanone

Answer: C

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26. $HC \equiv CH \xrightarrow[MgSO_4]{H_2SO_4} X \xrightarrow[(ii)\, H_2O]{(i)\, CH_3MgBr} Y \xrightarrow{PBr_3} Z$ The product Z is

A. $CH_3CHBrCH_3$

B. $CH_3CH_2CH_2Br$

C. $CH_2 = CH = CH - Br$

D. $BrCH = CH - CH_3$

Answer: A

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27. Among the following, one which reacts most readily with ethanol is

A. $p -$ nitrobenzyl bromide

B. $p -$ chlorobenzyl chloride

C. $p -$ methoxybenzyl bromide

D. $p -$ methylbenzyl bromide

Answer: C

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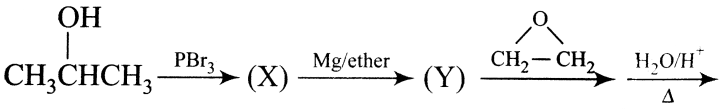
28. Complete the following reaction



A. $CVH_3\overset{CH_3}{\overset{|}{C}}HCH_2CH_2OH$

B. $CH_3O\overset{CH_3}{\overset{|}{C}}HCH_2CH_3$

C. $CH_3\overset{CH_3}{\overset{|}{C}}HOCH_2CH_3$

D. $CH_3CH_2\overset{CH_3}{\overset{|}{C}}HCH_2OH$

Answer: A

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29. Which of the following alkoxides is the most reactive nucleophile?

A. CH_3O^-

B. $C_6H_5O^-$

C. $(CH_3)_2CHO^-$

D. $(CH_3)_3CO^-$

Answer: A

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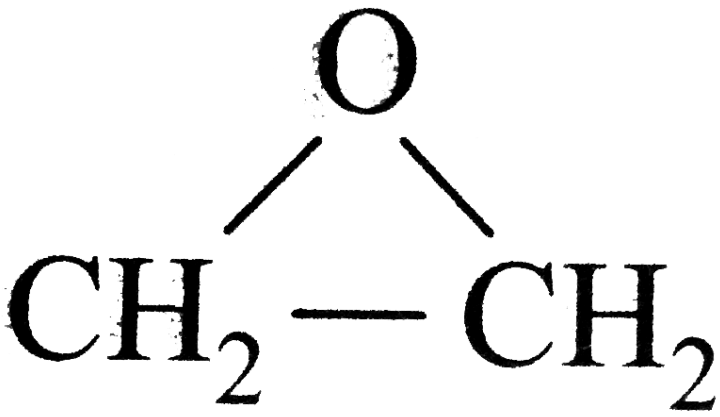
30. Reaction of



with $RMgX$ followed by hydrolysis produces

A. $RCHOHR$

B. $RCHOHCH_3$

C. R_2CHCH_2OH

D. RCH_2CH_2OH

Answer: D

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Quation Bank(Building the knowledge) Level IV

1. which of the following possesses primary alcoholic function only?

A. Mannitol

B. Pentaerythritol

C. propylene glycoll

D. Glycerol

Answer: B

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2. The total number of cyclic alcohols (including steroisomers) possible with the formula C_4H_7OH is

A. 5

B. 4

C. 7

D. 6

Answer: C

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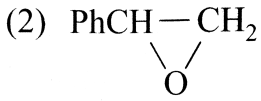
3. In the transformations

$$PhCH = CH_2 \xrightarrow[CH_2Cl_2]{ArCO_3H} A \xrightarrow[2.H_2O]{1.LiAlH_4, Et_2O} B$$

The end product (B) is

A. $PHCH_2CH_2OH$

B. (2) 

C. $PHCH_2CH_2OH$

D. $PhCH_2CH_2COAr$

Answer: C

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4. Ethylene glycol, glycol (ethane-1,2-diol), the simplest glycol may be prepared by

A. $(i), (ii)$

B. $(i), (iv), (iii)$

C. $(i), , (ii), (iii)(iv)$

D. $(i), (ii), (iv)$

Answer: C

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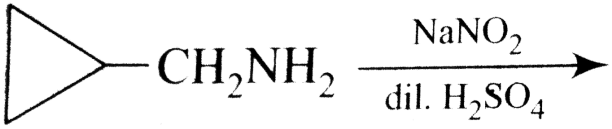
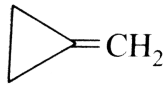
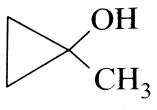
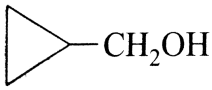
5. The reaction

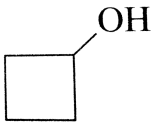


gives mainly

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: D

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6. The compound which is added to oxalic acid for its conversion to formic acid by heating at $110^{\circ} C$ is

A. ethanol is a polar compound but ethanol is not

B. glycol

C. glycerol

D. butan-2-ol

Answer: C

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7. $0.092g$ of a compound with the molecular $C_3H_8O_3$ on reaction with an excess CH_3MgI gives $67.00mL$ of methone at STP. The number of active hydrogen atoms present in a molecule of the compound is

A. four

B. three

C. two

D. one

Answer: A

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8. A comound with the molecular formula $C_4H_{10}O_3$ is converted by the action of acetyl chloride into a compound with molecular mass 190. The original compound has

A. no $-OH$ group

B. one $-OH$ group

C. three $-OH$ groups

D. teo $-OH$ groups

Answer: D

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9. When dissolved in H_2SO_4, hexa$-1,4-dien-3-ol$ is converted into

A. hexa$-3,5-$ dien$-2-$ ol

B. hexa$-2,4-$ dien$-1-$ ol

C. both (1) and (2)`

D. $H_2C=C=CH-CH=CHCH_3$

Answer: C

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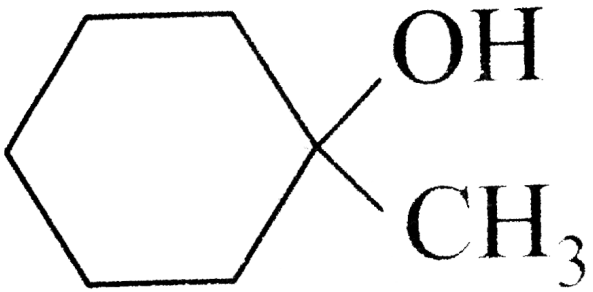
10. Consider the reaction of the following alcohols with conc. H_2SO_4

:

$\underset{(A)}{(CH_3CH_2)_2CHCH(OH)CH_3}$, $\underset{(B)}{PhCH_2CH(OH)CH(CH_3)_2}$

$\underset{(C)}{(CH_3)_3CCH(OH)CH_3}$



(D)

Which of these alcohols does not yields the expected saytzeff's product?

A. A

B. B

C. C

D. D

Answer: B

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11. Which of the following reactions is not correctly reported?

A. $PhCH(OH)CH_3 \xrightarrow[H_2/Pd]{HClO_4} PhCH_2CH_3$

B. $PhCH_2 \xrightarrow[H_2/Pd]{HClO_4} phCH_3$

C. $Ph_2C(OH)CH_2CH_2OH \xrightarrow[H_2/Pd]{HClO_4} PH_2CHCH_2CH_3$

D. $PhCOCH_2CH_3 \xrightarrow[H_2/Pd]{HClO_4} PhCH_2CH_2CH_3$

Answer: C

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12. Which of the following reactions is incorrectly reported?

A.

$$CH_3CH_2CH=CHCH_2OH \xrightarrow{MnO_2} CH_3CH_2CH=CHCHO$$

B. $Ph_2CHOH \xrightarrow{H_2/Pd(HClO_4)} Ph_2CH_2$

C. $PhCH=CHCH(OH)CH_3 \xrightarrow{PBr_2} PhCH=CHCHBrCH_3$

D.

$$m-O_2NC_6H_4CH_2COOH \xrightarrow{LiAlH_4} m-O_2NC_6H_4CH_2CH_2OH$$

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13. The product of the following reaction

$PhCOCH_2CH_2Br \xrightarrow[(ii)\,H_2O]{(i)\,LiAiD_4}$ is

A. $PhCD(OH)CH_2CH_2D$

B. $PhCH(OH)CH_2CH_3$

C. $PhCH(OH)CH_2CH_2D$

D. $PhCD(OH)CH_2CH_3$

Answer: A

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14. The best method to prepare cyclohexene form cyclohexanol is by using

A. conc. HCl

B. HBr

C. Conc. H_3PO_4

D. Conc. $HCl + ZnCl_2$

Answer: C

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PHENOLS (I)

1. Which of the following is the weakest acid?

A. Water

B. Carbonic acid

C. Sulphuric acid

D. Phenol

Answer: A

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2. Phenol on hydrogenation in the presence of nickel catalyst at $160^\circ C$ gives

A. benzene

B. cyclohexane

C. cyclohexanol

D. hexan $-$ l $-$ ol

Answer: C

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3. The functional group present in cresols is

A. $-CHO$

B. $-COOH$

C. $-OH$ (alcoholic)

D. $-OH$ (phenolic)

Answer: D

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4. Benzyl alcohol and phenol can be distinguished by using

A. CH_3MgI / ether

B. Na

C. CH_3COCl / pyridine

D. $FeCl_3$ solution

Answer: D

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5. Which of the follwing reactions is used to prepare phenol industrially?

A. $C_6H_5Cl \xrightarrow[2.H_3O^+]{1.NaOH, H_2O, 350^\circ C, 300atm}$

B. $C_6H_5SO_3Na \xrightarrow[2.H_3O^+]{1.solidNaOH, 350^\circ C}$

C. $C_6H_5CH(CH_3)_2 \xrightarrow[2.H_3O^+, 80^\circ C]{1.O_2+, 120^\circ C}$

D. All of these

Answer: D

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6. Which of the following undergoes diazo coupling reaction with benzendiazonium chloride in the presence of dilute $NaOH$ to from a dye?

A. Cyclohexanol

B. Benzaldehyde

C. Phenol

D. Acetophenone

Answer: C

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7. Which of the following statements about phenol is correct?

A. It is neutral to litmus

B. It is a stronger acid than carbonic acid

C. It is a stronger base than ammonia

D. It is a weaker acid than carbonic acid\

Answer: D

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8. Which of the following may be prepared by the application of $Kolbe$-schitt reaction?

A. Ethane

B. Salicylic acid

C. Phenol

D. Salicylaldehyde

Answer: B

Watch Video Solution

9. The most suitable convenient method of separation of $o-$ and $p-$ nitrophenol from an eequimolar mixture of the two is

A. sublimation

B. crystallization

C. steam distillation

D. chromatography

Answer: C

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10. Aspirin is acetylation product of

A. $o-$ hydroxbenzoic acid

B. $m-$ hydroxbenzoic acid

C. $p-$ hydroxybenzoic acid

D. $o-$ dihydroxbenzne

Answer: A

Watch Video Solution

PHENOLS (II)

1. Which of the following is the weakest acid?

A. $p-$ Aminophenol

B. $m-$ Aminophenol

C. $o-$ Aminophenol

D. Phenol

Answer: A

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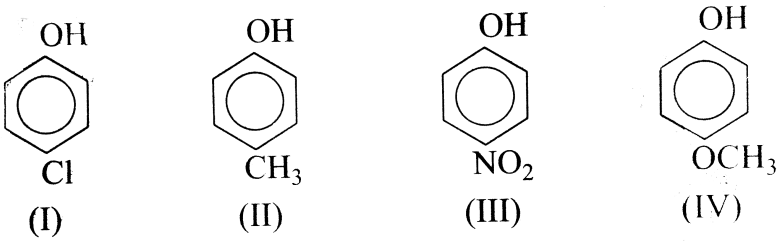
2. Arrange the following compounds in order of decreasing acidic strength.



A. $I > II > III > IV$

B. $III > I > II > IV$

C. $IV > III > I > II$

D. $II > IV > I > III$

Answer: B

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3. Sodium benzenesulphonate is fused with solid $NaOH$ and then acididfied with dilute h_2SO_4. The product obtained is

A. benzene

B. phenol

C. quinol

D. catechol

Answer: B

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4. Which of he following does not possess a carboxy group?

A. Aspirin

B. Sulphanilic acid

C. Picric acid

D. Both (2) and (3)`

Answer: D

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5. Which of the following compounds produces a violet colour on addition of a few drops of $FeCl_3$ solution?

A. Salicylic acid

B. Benzoic acid

C. tartaric acid

D. Citric acid

Answer: A

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6. Salicylic acid on heating with soda lime gives

A. benzene

B. benzoic acid

C. Benzyl alcohol

D. phenol

Answer: D

Watch Video Solution

7. When phenol is treated with a solution of Br_2 in carbon disulphide at $0^\circ C$, the major product formed is

A. $o-$ bromophenol

B. $m-$ bromophenol

C. $p-$ bromophenol

D. $2, 4, 4-$ tribromophenol

Answer: C

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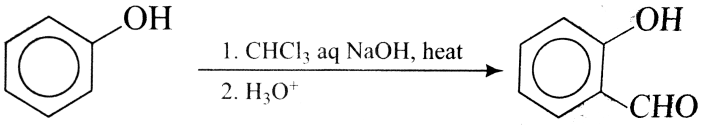
8. The reaction



is an example of

A. Perkin reaction

B. Reimer- Tiemann reaction

C. Cannizzaro reaction

D. Kothe - Schmit reaction

Answer: B

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9. Which of the following staments is correct regarding the solubilities of $p-$ nitrophenol and salicylaldehyde in aqueous

$NaOH$?

A. Both are almost insoluble

B. Both are soluble to equal extent

C. Salicylaldehyde is more readily soluble

D. $p-$ Nitriphenol is more readily soluble

Answer: D

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10. Phenol on being heated with concentrated H_2SO_4 and then with concentrated HNO_3 gives

A. $o-$ and $p-$ nitrophenol

B. $m-$ nitrophenol

C. picric acid

D. $o-$ nitrophenol

Answer: C

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11. A mixture of benzoic acid and phenol may be separated by treatment with aquenous

A. $NaaHSO_3$ solution

B. $NaOH$ solution

C. NH_3 solution

D. $NaHCO_3$ solution

Answer: D

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12. Phenol can be converted into salicylic acid by heating with

A. CO_2 (under pressure) and alkali

B. CCl_4 and alkali

C. $CHCl_3$ and alkali, followed by oxidation

D. all of above

Answer: D

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13. The major product obtanined on interaction of phenol with sodium hydroxide and carbon dioxide is

A. phthalic acid

B. benzoic acid

C. salicylic acid

D. Salicylaldehyde

Answer: C

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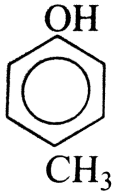
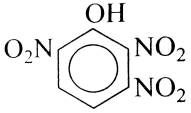
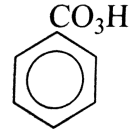
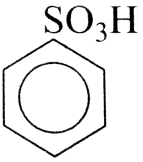
14. Which of the following does not liberate CO_2 from $NaHCO_3$.

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: A

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15. When phenol is heated with $CHCl_3$ and alcoholic KOH, salicylaldehyde is produce. This reaction is known as

A. Rosenumud's reaction

B. Reimer - Tiemann reaction

C. Friedel - Craft's reaction

D. Sommelet reaction

Answer: B

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16. Increasing order of acidic strength among $p-$ methoxyphenol $(i) p-$ methylphenol (II) and $p-$ nitrophenol (III) is

A. III, I, II

B. II, I, III

C. III, II, I

D. I, II, III

Answer: D

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17. The boiling point of $p-$ nitrophenol is higher than that of $o-$ nitrophenol because.

A. NO_2 group at p- position behaves in a different way from that at $o-$ position.

B. interamolecular hydrogen bonding exists in $p-$ nitrophenol.

C. there is intermolecular hydrogen bonding in $p-$ nitrophenol

D. $p-$ nitrophenol has a higher molecular mass than $o-$ nitrophenol.

Answer: C

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18. Isopropylbenzene on air oxidation in the presence of dilute acid gives

A. C_6H_5COOH

B. $C_6H_5COCH_3$

C. C_6H_5CHO

D. C_6H_5OH

Answer: D

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

A. sodium

B. $NAOH / I_2$

C. netrual $FeCl_3$

D. Br_2 / H_2O

Answer: A

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20. The compound used to manufacture phenol is

A. `glycerol

B. cumene

C. crown ether

D. latic acid

Answer: B

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21. Salicylic acid is prepared from phenol by

A. Reimer - Tiemann reaction

B. Kolbe's reaction

C. Kolbe - electrolytic reaction

D. none of these

Answer: B

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22. Picric acid is

A. $2, 4, 6 -$ trinitrotoluene

B. $2, 4, 6 -$ tribromoethanol

C. $2, 4, 6 -$ trinitrophenol

D. para $-$ nitrophenol

Answer: C

Watch Video Solution

23. Na reacts with phenol to produce

A. H_2 gas

B. benzene

C. Co_2 gas

D. CO gas

Answer: A

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24. Zinc powder$+PhOH \rightarrow X$

In the above reaction the product X will be

A. benzakdegyde

B. benzene

C. anisole

D. phenyl acetate

Answer: B

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25. Which of the following statements is correct?

A. Phenol is less acidic than ethyl alcohol

B. Phenol is more acidic than ethyl alcohol

C. Phenol is more acidic than ethyl carbone

D. Phenol is more acidic than ethyl CH_3COOH

Answer: B

Watch Video Solution

26. Electophilic substitution in phenol generally occurs at

A. $o-$ and $p-$ positions

B. $m-$ position

C. only $o-$ position

D. only $o-$ position

Answer: A

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27. In order to get Bakelite from phenol which of the following reagents is required?

A. $HCHO$

B. $CHCl_3 / NaOH$

C. $CCl_4 / NaOH$

D. $HCHO / H^+$ or OH^-

Answer: D

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28. Which of the following groups will increasing the acidity of phenol?

A. NO_2

B. $-CN$

C. $-X$ (halogens)

D. All of these

Answer: D

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29. Among the following phenols which is most acidic?

A. Picric acid

B. $2-$ Nitrophenol

C. $2,4-$ Dinitrophenol

D. $m-$ Nitrophenol

Answer: A

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30. Salicyladehyde can be prepard form

A. phenol and chloroform

B. phenol, chloroform and sodium hydroxide

C. phenol, carbon tetrachloride and $NaOH$

D. None of these

Answer: B

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31. Phenol is heated with CCl_4 and alkaline KOH when salicylic acid is produced. The reaction is known as

A. Friedel - Crafts reaction

B. Riemer - Tiemann reaction

C. Rosenmund's reaction

D. Sommelet reaction

Answer: B

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32. Phenol on treatment with conc. HNO_3 gives

A. Picric acid

B. styphinic acid

C. both of these

D. none of these

Answer: A

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33. $C_6H_5Oh \xrightarrow[NaOH\,(aq)]{CH_3COCl} C_6H_5OCOCH_3$

the above reaction is an example of

A. Reimer - Tiemann reaction

B. Schotten - Baumann reaction

C. Acetylation

D. Benzoylation

Answer: C

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34. 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

Answer: D

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PHENOLS (III)

1. Which of the following is incorrect?

A. Phenol is much more acidic than alcohol

B. Aqueous hydroxides convert phenol into their salts while aqueous mineral acids convert the salts back into free phenols

C. Like carboxylic acids, most phenols are soluble in aqueous sodium bicarbonate $(NaHCO_3)$

D. Methyl phenols (cresols) are less acidic than phenol it self while nitrophenols are more acidic

Answer: C

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2. Which of the following is the strongest acid ?

A. Phenol

B. $o-$ Methoxyphenol

C. $m-$ Methoxyphenol

D. $p-$ Methoxyphenol

Answer: C

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3. Which of the following is the wekest acid?

A. Phenol

B. Catechol

C. Resorcinol

D. Hydroquinone

Answer: A

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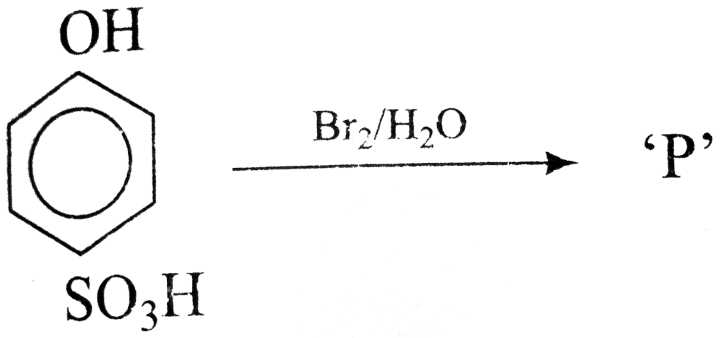
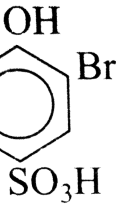


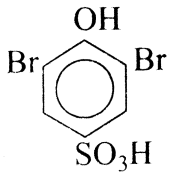
4.

The product $'P'$ of the reaciton is

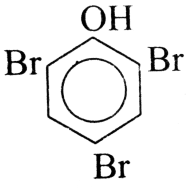
A. (1)

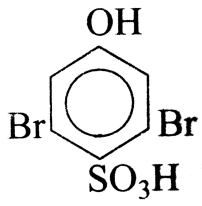


B. (2)



C. (3)



(4) 

D.

Answer: C

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5. Which of the following compound undergoes condensation with phthalic anhydride in the presence of hot concentrated H_2SO_4 to form phenolphthalein?

A. Resorcinol

B. Phenol

C. Catechol

D. Quinol

Answer: B

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6. When phenol Is heated with ammonia at $300^{\circ} C$ in the presence of anhydrous $ZnCl_2$, it is converted into

A. aniline

B. Cyclohexanol

C. cyclohexlamine

D. $p-$ phenuylendiamine

Answer: A

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7. Which one of the following not result in the formation of anisole?

A. $C_6H_5OH + (CH_3)_2SO_4 \xrightarrow{NaOH}$

B. $C_6H_5OH + CH_3I \xrightarrow{NaOH}$

C. $C_6H_5OH + CH_2N_2 \rightarrow$

D. $C_6H_5OH + CH_3Mgl \rightarrow$

Answer: D

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8. Benzoylation of phenol with benzoyl chloride in the presence of dilute $NaOH$ gives phenyl benzoate. This reaction is an example of

A. Friedel - Crafts reaction

B. Reimer - Tiemann reaction

C. Clasien - Schmidt reaction

D. Schotten - Baumann reaction

Answer: D

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9. Salol (phenyl salicylate) can be prepared by the reaction of

A. salicylic acid with phenol in the presence of phosphorus oxychloride

B. salicyl chloride with benzene in the presence of $AlCl_3$

C. salicylic acid with benzoyl

D. chloride in the presence of dilute $NaOH$

Answer: A

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10. Phenol is heated with a solution of mixture of KBr and $KBrO_3$. The major product obtained in the above reaction is

A. $2-$ bromophenol

B. $3-$ bromophenol

C. $4-$ bromophenol

D. $2,4,6-$ tribromophenol

Answer: D

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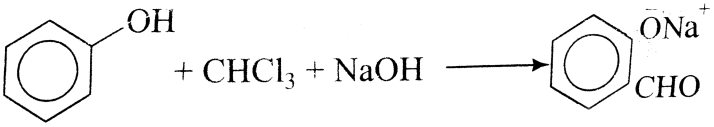
11. The electrophile involved in the following reaciton is



A. formyl cation $\left(\overset{+}{C}HO\right)$

B. Dichlorocarbene $(:CCl_2)$

C. Dichloromethul cation $\left(\overset{+}{C}HCl_2\right)$

D. Trichloromethyl cation $\left(:\bar{C}Cl_3\right)$

Answer: B

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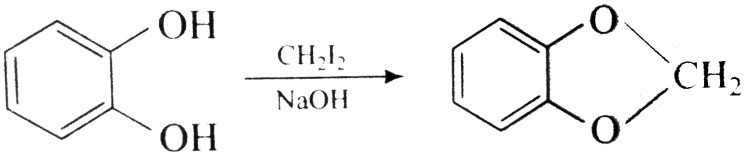
12. The reaciton



is an example of

A. Wurtz sunthesis

B. Witting reaction

C. Ullmann reaction

D. Williamson synthesis

Answer: D

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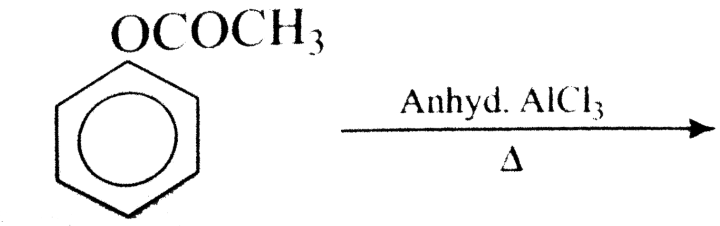
13. 

The product obtained is/are

A. $o-$ product

B. $m-$ product

C. $o-$ and $p-$ products

D. o,m- and p-products

Answer: C

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14. Carbolic acid is

A. C_6H_5CHO

B. C_6H_6

C. C_6H_5COOH

D. C_6H_5OH

Answer: D

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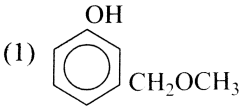
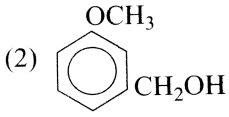
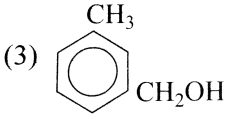
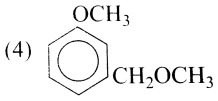
15.

The product X is

A. (1) 

B. 

C. 

D. 

Answer: B

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16. Which of the following is most acidic?

A. Phenol

B. Benzyl alchol

C. $m-$ Chlorophenol

D. Cyclohexanol

Answer: C

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17. Which of the following compounds is known as oil of winter green?

A. Phenyl benzoate

B. Phenyl salicylate

C. Phenyl acetate

D. Methyl saliycylate

Answer: D

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18. In the Libermann's nitroso reaction sequential changes in the colour of phenol occur as

A. Brown or red rarr green rarr deep blue

B. Red rarr deep blue rarr green

C. Red rarr green rarr white

D. White rarr red rarr green

Answer: A

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19. Phenol, $p-$ methylphenol, $m-$ nitrophenol and $p-$ nitrophenol follow order of increasing acidic strength

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, and $p-$ methylphenol

Answer: B

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20. Salol can be used as an

A. antiseptic

B. `antipyretic

C. both of these

D. none of these

Answer: A

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21. Salol is prepared from

A. salicylic acid and phenol

B. salicylic acid and methyl alchol

C. both of these

D. none of these

Answer: A

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PHENOLS (IV)

1. Phenolic methyl ethers are obtained in excellent yield by the action of"----------"on a phenol.

A. CH_2Cl_2

B. CH_2N_2

C. CH_2CO

D. CH_3I

Answer: B

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2. The nitration of phenol (and of aniline) is acelerated by the presence of

A. phosphorus acid

B. chlorus acid

C. nitrous acid

D. all of these

Answer: C

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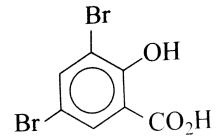
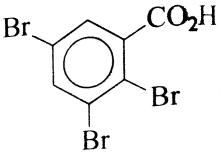
3. The aciton of bromine water (excess) on salicylic acid results in the formation of

A. (1)



B. (2)



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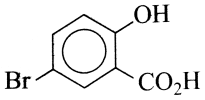
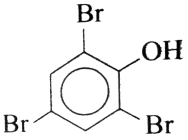


D. (4) 

Answer: D

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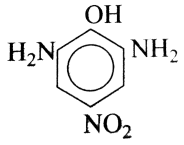
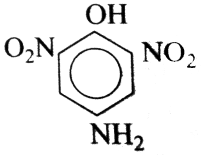
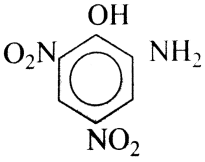
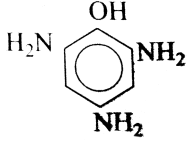
4. Which of the following is formed when picric acid is reduced with sodium sulphide?

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: C

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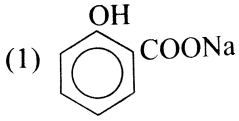
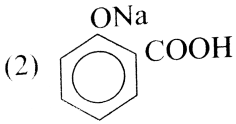
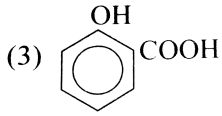
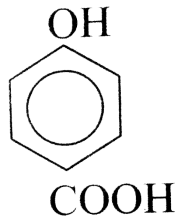
5. When sodium phenoxide is heated with CO_2 under a presence of 100 atmoshpheres at $125^\circ C$, the major product formed is

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: A

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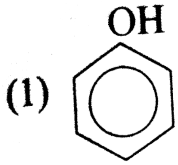
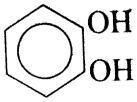
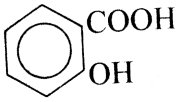
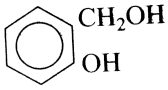
6. Salicylaldehyde is treated with alkaline hydrogen peroxide and subsequently with dilute HCl. The product formed is

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: B

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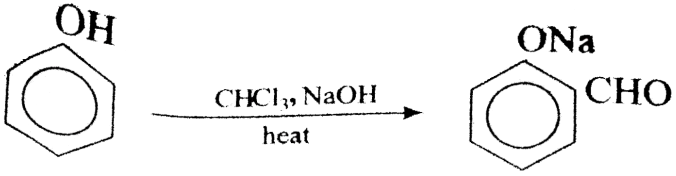
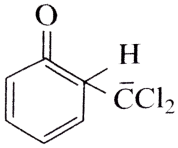
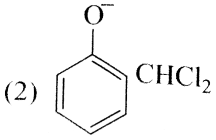
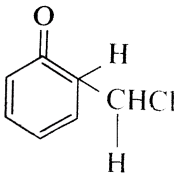
7. Consider the following reaction



Which of the following is (are) formed as intermediates in the reaction?

A. (1) 

B. (2) 

(3). 

C.

D. Both 1 and 2

Answer: D

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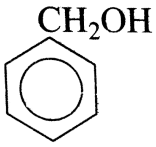
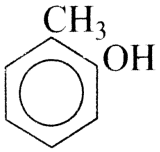
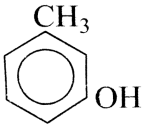
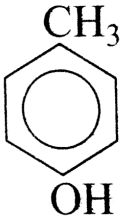
8. Compound A, C_7H_8O, is insoluble in water, dilute HCl, and aquenous $NaHCO_3$, it dissolves in dilute $NaOH$. When A is treated with bromine water is is converted rapidly into a compound of formula $C_7H_5Obr_3$. The structure of A is

(1) 

A.

B. (2) 

C. (3) 

D. (4) 

Answer: C

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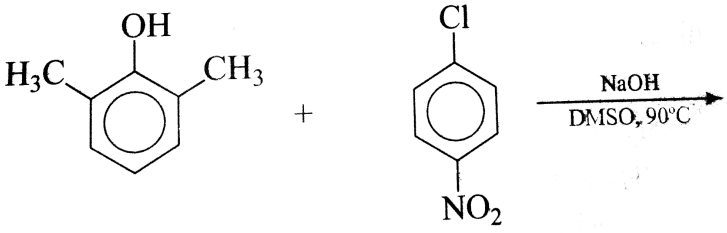
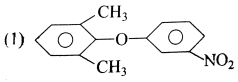
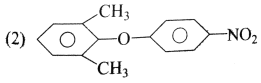
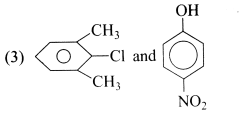
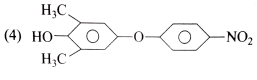
9. The major product of the reaction is



A. 

B. 

C. 

D. 

Answer: B

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10. Schotten Baumann reaction is

A. Phenol $+$ Benzoyl chloride $\xrightarrow{NaOH}$ Phenyl benzoate

B. Sodium phenate $+$ methyl iodide $\xrightarrow{-HCl}$ Anisole

C. Phenol $+$ chloroform $\xrightarrow{NaOH}$ salicyladehyde

D. Benzenediazonium chloride $+$ phenol $\rightarrow p-$ Hydroxyazobenzene

Answer: A

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ETHERS level I

1. The reaciton of an alkyl halide with a metal alkoxide forming an ether is known as

A. Frankland reaction

B. Corey-house synthesis

C. Williamson synthesis

D. Wurtz reaction

Answer: C

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2. Which of the following is not an isomer of diethyl ether?

A. Ethoxyethane

B. $2-$ Methoxypropane

C. $2-$ Methylpropan$-1-ol$

D. $2-$ Methylpropan$-2-ol$

Answer: A

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3. An organic compound (a) reacts with sodium metal and forms (b). On heating with conc. H_2S0_4(a) gives diethyl ether. (a) and (b) are

respectively

A. C_2H_5OH and C_2H_5ONa

B. C_3H_7OH and CH_3ONa

C. CH_3OH and CH_3ONa

D. C_4H_9OH and C_4H_9ONa

Answer: A

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4. The reaciton

$C_2H_5Ona + C_2H_5I - C_2H_5OC_2H_5 + NaI$

is an example of

A. Wurtz reaction

B. Kolbe reaction

C. Grignard reaction

D. Williamson synthesis

Answer: D

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5. Which of the following is a symmetrical ether?

A. $C_6H_5OCH_3$

B. $CH_3OC_2H_5$

C. CH_3OCH_3

D. $CH_3CH_2CH_2OCH_2CH_3$

Answer: C

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ETHERS level II

1. The systematic name of $s-$ butyl ethyl ether

A. $2-$ ethoxybutane

B. butoxyethane

C. $3-$ ethoxy $-3-$ methylpropane

D. $1-$ ethoxy$-1-$ methylpropane

Answer: A

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2. The $IUPAC$ name of

$$CH_3-O\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_2CH_3$$

is

A. $2-$ ethyl$-2-$ methoxypropane

B. methyl $t-$ pentyl ether

C. $2-$ methoxy$-2-$ methylbutane

D. $1-$ methoxy$-1,1-$ dimethylpropane

Answer: C

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3. Which of the following is formed as an intermediate in the conversion of ethyl alcohol into diethyl ether by heating the former with concentrated H_2SO_4?

A. $C_2H_5OSO_3H$

B. $C_2H_5\overset{+}{\underset{\cdot\cdot}{O}}H_2$

C. $C_2H_5\overset{+}{\underset{|}{\underset{\cdot\cdot}{O}}}C_2H_5$

D. All of these

Answer: D

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4. Ethyl alcohol vapour is passed over alumina heated at about 250°.

The major product formed in the reaciton is

A. ethoxyethane

B. aluminium ethoxide

C. ethoxyethene

D. ethane

Answer: A

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5. Which of the following compounds does not react with sodium?

A. CH_3CH_2OH

B. CH_3COOH

C. $CH_3CHOHCH_3$

D. CH_3OCH_3

Answer: D

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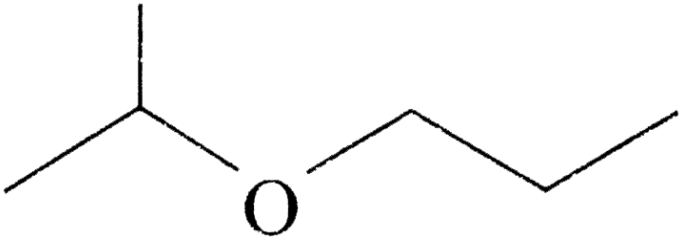
6. The common name of the compound



is

A. diisopropyl ether

B. isopropyl $n-$ propyl ketone

C. di-n-propyl ether

D. isopropyl $n-$ propyl ether

Answer: D

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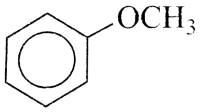
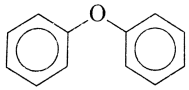
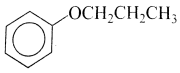
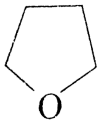
7. Which of the following ethers is not cleaved by concentrated HI even at $525K$?

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: C

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8. Ethers are quite stable towards

A. oxidizing agents

B. reducing agents

C. sodium metal

D. all of these

Answer: D

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9. Ethyl chloride is converted into diethyl ether by ether

A. Wurtz systhesis

B. Grignard reaction

C. Perkin's reaction

D. Williamson's synthesis

Answer: D

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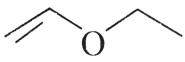
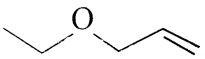
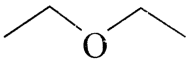
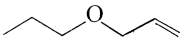
ETHERS level III

1. In which of the following the unshared pair of electrons of oxygen takes part in electron delocalization?

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: A

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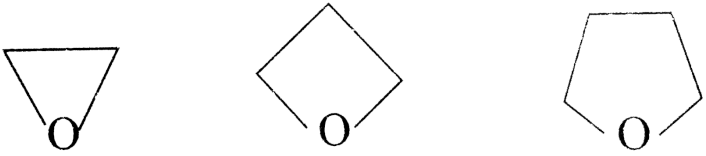
2. The systematic names of the cyclic ethers



are respectively

A. ethylene oxide, oxolane and furan

B. oxetane, oxolane and oxirane

C. oxirane, oxetane and oxolane

D. oxirane, oxolane and oxetane

Answer: C

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3. The $IUPAC$ name of allyl $n-$ propyl ether is

A. $1-$ allylocypropane

B. $3-$ propoxypropene

C. $1-$ propoxypropene

D. propyl propenyl ether

Answer: B

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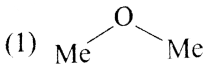
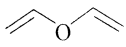
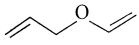
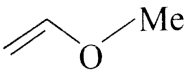
4. The ether in which all atoms exist in one plane is

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: B

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5. The total number of eters (excluding stereoisomers) with the fomula $C_5H_{12}O$ is

A. six

B. three

C. four

D. two

Answer: A

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6. Absolute ether is

A. dimethyl ether

B. ethyl methyl ether

C. diethyl ether

D. diphenyl ether

Answer: C

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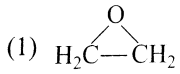
7. When $2-$ chloroethenaol $(ClCH_2CH_2OH)$ is warmed slightly with dilute $NaOH$, the major product formed is

A. (1) 

B. CH_2OHCH_2OH

C. $HOCH_2CH_2CH_2CH_2OH$

D. $CICH_2CH_2OCH_2CH_2Cl$

Answer: A

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8. Which of the following reacitons would give the best yield of $t-$ butyl methyl ether?

A. $(CH_3)_3C-Br+CH_3ONa\rightarrow$

B. $(CH_3)_3C-OH\xrightarrow[140^\circ C]{H_2SO_4}$

C. $(CH_3)_3C - OK + CH_3Br \rightarrow$

D. $(CH_3)_3C - Br + CH_3OH \rightarrow$

Answer: C

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9. Which one is formed when sodium phenoxide is heated with ethyl iodide?

A. Phenetole

B. Ethyl phenyl alcohol

C. Anisole

D. Phenol

Answer: A

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10. 2-bromopentane is heated with postassium ethoxide in ethano1

The major product obtained is .

A. $2-$ ethoxypentane

B. pent$-1-$ ene

C. trans-pent$-2-$ ene

D. cis-pent$-2-$ ene

Answer: C

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11. $CH_3OC_2H_5$ and $(CH_3)_3COCH_3$ are treated with hydriodic acid.

The fragments after reaciton obtained are

A. $CH_3I + HOC_2H_5, (CH_3)_3C - I + HOCH_3$

B. $CH_3OH + C_2H_5I, (CH_3)_3C - I + HOCH_3$

C. $CH_3OH + C_2H_5I, (CH_3)_3C - OH + CH_3I$

D. $CH_3I + HOC_2H_5, CH_3I + (CH_3)_3C - OH$

Answer: A

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12. In the following reaction

$C_2H_5OC_2H_5 + 4H \xrightarrow{RedP + HI} 2X + H_2OX$ is

A. Ethane

B. ethylene

C. butane

D. propane

Answer: A

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13. Ethyl phenyl ether on boiling with concentrated hydrobromic acid yields

A. phenol and ethyl bromide

B. bromobenzene amd ethyl alcohol

C. phenol and ethane

D. bromobenzene and ethane

Answer: A

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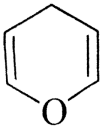
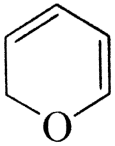
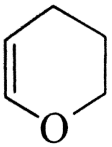
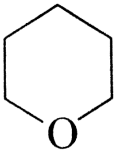
ETHERS level IV

1. Which of the following is known as $4H$ – pyran?

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: A

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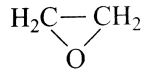
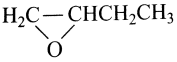
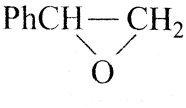
2. Which of the folloiwing is styrene oxide?

A. (1) 

B. (2) 

C. (3) 

D. None of these

Answer: C

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3. Among the following, which one is acylic polyther?

A. Furan

B. $[18]-$ crown -6

C. Pyran

D. Oxirane

Answer: B

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4. The $IUPAC$ name of $CH_3OCH_2CH_2OCH_2CH_2OCH_2CH_3$ is

A. $3, 6, 9 -$ trioxadecane

B. ethoxy methoxy diethyl ether

C. ethoxymethyl methoxyethyl ether

D. $2, 5, 8 -$ trioxdecane

Answer: D

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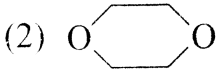
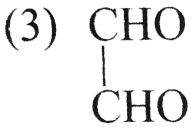
5. Ethylene glyco, $HOCH_2CH_2OH$, on heating with concentrated H_2SO_4 gives mainly.

A. (1) 

B. (2) 

C. (3) 

D. $HOCH_2CH_2OCH_2CH_2OH$

Answer: B

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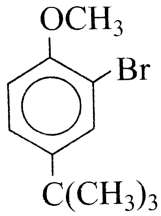
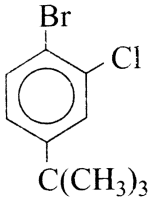
6. Anisol $\xrightarrow[AlCl_3]{(CH_3)_3CCl}$ $\xrightarrow{Cl_2/FeCl_3}$ $\xrightarrow[heat]{HBr}$ X

The product X in the above series of reacitons is

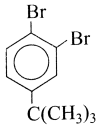
A. (1)



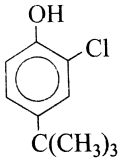
B. (2)



C. (3)



D. (4)



Answer: D

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7. Which of the following is known by known by the name epichlorohydrin?

A. $3-$ choropropane

B. $3-$ chloropropane$-1-ol$

C. $3-$ chloro-l, $2-$ epoxypropane

D. None of these

Answer: C

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