



## CHEMISTRY

### FOR IIT JEE ASPIRANTS OF CLASS 12 FOR CHEMISTRY

### ALCOHOLS, ETHERS, PHENOL

WE

1. Identify the most stable conformer of glycol.

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2. Glycerol does not contain..... Alcoholic group

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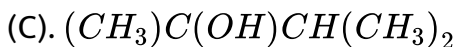
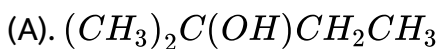
3. How acetylene is converted to ethyl alcohol?

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4. How benzyl alcohol is obtained from benzyl chloride ?

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5. Predict the major product of dehydration of each of



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6. Assertion (A): Dehydration of alcohols can be carried out with Conc  $H_2SO_4$  but not with conc HCl

Reason (R):  $H_2SO_4$  is dibasic while HCl is monobasic.

- (1). Both A and R are true and R is the correct explanation to A
- (2). Both A and R are true and R is not the correct explanation to A
- (3). A is true but R is false
- (4). A is false but R is true

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7. Hydroboration -Oxidation of  $CH_3CH = CH_2$  produces

- A.  $CH_3CH_2CH_2OH$
- B.  $CH_3CH(OH)CH_3$
- C.  $CH_3CH(OH)CH_2OH$
- D.  $CH_3COCH_3$

**Answer:**

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8. The compound which give the most stable carbonium ion on dehydration is

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

ii. Classify the isomers of alcohols in Q.No.3 (i) as primary, secondary, and tertiary alcohols.

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10. How are the following conversions carried out ?

i. Propene  $\rightarrow$  Propan-2-ol

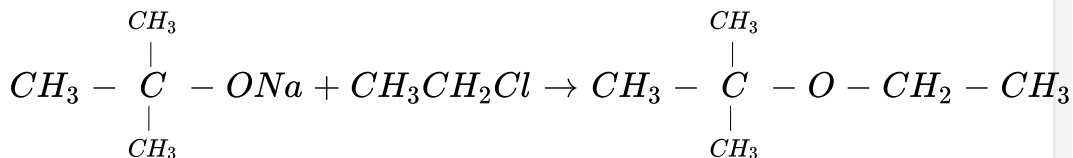
ii. Benzyl chloride  $\rightarrow$  Benzyl alcohol

iii. Ethyl magnesium chloride  $\rightarrow$  Propan-1-ol

iv. Methyl magnesium bromide  $\rightarrow$  2-Methylpropan-2-ol

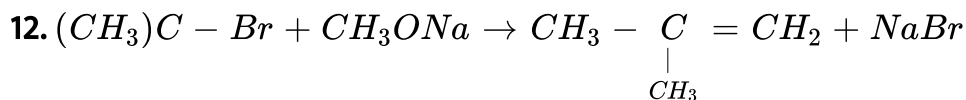
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11. The reaction



is called

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13.  $(CH_3)_3C - ONa + C_2H_5Cl \rightarrow (CH_3)_3C - O - C_2H_5$  true or false?

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14. From chloroethane, 2-chloropropane and chloro ethene, which is more reactive towards Williamson's synthesis.

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15. From ether and alcohol which can be dried over sodium metal.

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16. How ethanol is distinguished from ether

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17. O-Nitro phenol is less acidic than P- nitro phenol. Give reason

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18. Give equations of the following reactions:

- (i) Reaction of propene with mercuric acetate followed by hydrolysis.
- (ii) Oxidation of propane-1-ol with alkaline  $KMnO_4$  solution
- (iii) Reaction of bromine in  $CS_2$  with phenol
- (iv) Action of dilute  $HNO_3$  with phenol

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

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Level I

1. 2, 4-Dimethyl pentan -3-ol is a

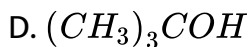
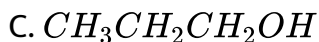
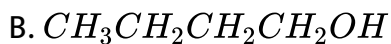
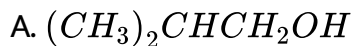
- A. primary alcohol
- B. secondary alcohol
- C. tertiary alcohol
- D. dihydric alcohol

**Answer: B**

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2. Which of the following is a tertiary alcohol



Answer: D



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3. The enzyme which converts glucose into ethyl alcohol

$(C_2H_5OH)$  is

A. zymase

B. invertase

C. maltase

D. distase

**Answer: A**

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4. Which the following is Lucase reagent

A. ammonical silver nitrate

B.  $Br_2 / CCl_4$

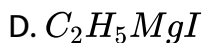
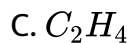
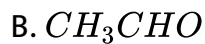
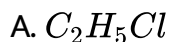
C. an  $ZnCl_2 / \text{con.HCl}$

D. alk.  $KMnO_4$

**Answer: C**

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5. Ethyl alcohol is the hydrolysis product in acidic medium of



**Answer: C**



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6. 95% ethyl alcohol can be converted to 100 % ethyl alcohol by the following

A. Magnesium chloride

B. Calcium oxide

C. Magnesium phosphate

D. Magnesium sulphate

**Answer: B**



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7. Wash or wort possessse ---- percentage of ethyl alcohol

A. 0.95

B. 1

C. 0.669

D. 6 – 10 %

**Answer: D**



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8.  $\text{CaCl}_2 + \text{C}_2\text{H}_5\text{OH} \rightarrow \text{CaCl}_2 \cdot x\text{C}_2\text{H}_5\text{OH}$ . 'x' is

A. 3

B. 6

C. 2

D. 1

**Answer: A**



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9. Ethanol and Methanol are miscible in water due to

A. Dissociation of water

B. Their acidic character

C. Alkyl groups

D. Hydrogen bonding

**Answer: D**

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**10.** To bring about dehydration of alcohols we can use

A. Conc.  $H_2SO_4$

B. anhydrous  $Al_2O_3$

C. ZnO

D. both 1,2

**Answer: D**

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11. The reaction  $2ROH + 2Na \rightarrow 2RONa + H_2$  suggests that alcohols are

- A. basic
- B. amphoteric
- C. neutral
- D. acidic

**Answer: D**

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12. Which of the following reaction conditions are used for the conversion of ethanol to ethylene

- A. conc.  $H_2SO_4 / 70^\circ C$
- B. dil.  $H_2SO_4 / 140^\circ C$

C. dil.  $H_2SO_4$  /  $100^\circ C$

D. conc.  $H_2SO_4$  /  $170^\circ C$

**Answer: D**

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**13.** Primary secondary and tertiary alcohols are distinguished by

A. oxidation method

B. Lucas test

C. Victor Meyer's method

D. all the above

**Answer: D**

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14. The reaction between an alcohol and carboxylic acid leads to the formation of

- A. Aldehyde
- B. Ester
- C. Ketone
- D. Paraffins

**Answer: B**



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15. Alcoholic beverages contain

- A. Glycerol
- B. Ethyl alcohol
- C. ethyl alcohol

D. Isopropyl alcohol

**Answer: B**

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**16.** Ethyl alcohol on oxidation with acidified  $K_2Cr_2O_7$  gives

A.  $CH_3COCH_3$

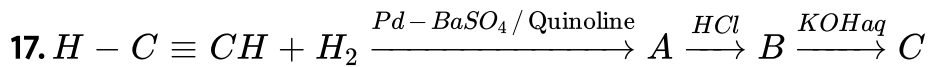
B.  $HCOOH$

C.  $CH_3COOH$

D.  $HCHO$

**Answer: C**

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Here the 'C' is

- A. Propane
- B. Ethanol
- C. Ethyne
- D. Ethylene

**Answer: B**

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18. A compound X with molecular formula  $C_3H_8O$  can be oxidized to a compound Y with the molecular formula  $C_3H_6O_2$ . X is most likely to be a:

- A. Aldehyde

B. Alcohol

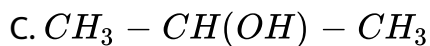
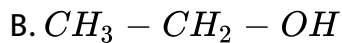
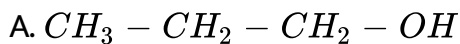
C. Ether

D. Both 2 and 3

**Answer: B**

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**19.** Which of the following gives Iodo form test



D. Both 2 and 3

**Answer: D**

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20. There are three alcohols x, y, z which have 2, 1 and 0 alpha hydrogen atoms(s) respectively. Which does not give Lucas Test immediately

A. x

B. y

C. z

D. all the three do not give test

**Answer: A**



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21. Which of the following is a tertiary alcohol

A. Ethyl alcohol

B. Isopropyl alcohol

C. Neopentyl alcohol

D. 2-Methyl propan-2-ol

**Answer: D**

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22. Glycerol does not contain..... Alcoholic group

A.  $1^\circ$

B.  $2^\circ$

C.  $3^\circ$

D.  $1^\circ$  and  $2^\circ$

**Answer: C**

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23. the conversion of maltose to glucose is possible by the enzyme :

- A. Invertase
- B. Zymase
- C. Maltase
- D. Diastase

**Answer: C**

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24. Absolute alcohol is prepared form rectified spirit by

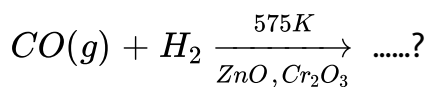
- A. Steam distillation
- B. Fractional distillation
- C. distillation with CaO & Ca

D. simple distillation

**Answer: C**

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25. Which of the following is produced during the following reaction ?



A. HCHO

B.  $CH_3COOH$

C.  $HCOOH$

D.  $CH_3OH$

**Answer: D**

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26. When wine is exposed to air it becomes sour due to

- A. Oxidation of  $C_2H_5OH$  into  $CH_3COOH$
- B. Bacteria
- C. Virus
- D. Formic acid formation

Answer: A



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27. Absolute alcohol cannot be obtained by simple fractional distillation because

- A. pure  $C_2H_5OH$  is unstable
- B.  $C_2H_5OH$  forms chemical bonding with water

C. oxidation

D. it forms azeotropic mixture with water

**Answer: D**



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**28.** The number of  $1^\circ$ ,  $2^\circ$  and  $3^\circ$  alcoholic groups in Mannitol or Sorbitol are respectively

A. 2, 4 and 0

B. 1, 4 and 0

C. 2, 2 and 0

D. 2, 1 and 1

**Answer: A**



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29. An isomer of ethanol is:

- A. Methanol
- B. Dimethyl ether
- C. Diethyl ether
- D. Ethyl glycol

**Answer: B**



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30. Which one of the following is a secondary alcohol?

- A. 2-Methyl propan -1-ol
- B. 2-Methyl propan -2-ol
- C. Butan-2-ol

D. Butan-1-ol

**Answer: C**

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31. If the boiling point of ethanol (molecular weight = 46) is  $78^{\circ}C$ , the boiling point of dimethyl ether (molecular weight = 46) is

A.  $100^{\circ}C$

B.  $78^{\circ}C$

C.  $86^{\circ}C$

D.  $34^{\circ}C$

**Answer: D**

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32. The percentage of  $C_2H_5OH$  in wash is (approximatly)

A. 0.95

B. 0.1

C. 0.5

D. 0.75

**Answer: B**



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33. Which of the following alkenes when passed through conc.  $H_2SO_4$  followed by hydrolysis with boiling water would give tert-butyl alcohol

A. Ethylene

B. Isobutylene

C. Propylene

D. But-1-ene

**Answer: B**

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

A. Methane

B. Ethane

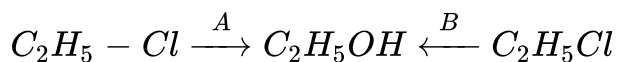
C. Carbondioxide

D. Propane

**Answer: A**

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35. Identify A and B in the following reaction



- A. A = aqueous KOH, B = moist  $Ag_2O$
- B. A = alcoholic KOH, B = aqueous NaOH
- C. A = aqueous NaOH, B =  $AgNO_2$
- D. A =  $AgNO_2$ , B =  $KNO_2$

Answer: A

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36. 23 g of sodium will react with methanol to give

- A. one mole of oxygen
- B. 1/2 mole of hydrogen

C. one mole of hydrogen

D. 1/4 mole of oxygen

**Answer: B**

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**37.** The correct order of decreasing basicity of the following species

is:

$H_2O, OH^-, CH_3OH, CH_3O^-$

A.  $CH_3OH < H_2O < OH^- < CH_3O^-$

B.  $OH^- > CH_3O^- > H_2O > CH_3OH$

C.  $H_2O < CH_3OH < CH_3O^- < OH^-$

D.  $CH_3O^- > OH^- > CH_3OH > H_2O$

**Answer: D**





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38. Which of the following alcohols is expected to have a lowest  $pK_a$  value ?

- A. Ethanol
- B. 2-Fluoro ethanol
- C. 2, 2, 2-Trifluoroethanol
- D. 2-Chloroethanol

**Answer: C**



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39. Action of bleaching powder on ethyl alcohol gives

- A. Choloform

B. Dichloromethane

C. Trichloroethane

D. Ethylenechloride

**Answer: A**

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**40.** Which is formed when ethanol reacts with acetic acid

A.  $CH_3COOC_2H_5$

B.  $C_2H_5OC_2H_5$

C.  $CH_3OCH_3$

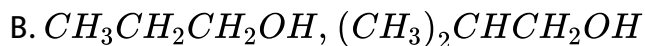
D.  $CH_3CH_2CHO$

**Answer: A**

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## Level II

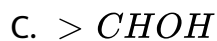
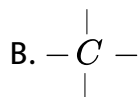
1. Which one of following pairs of compounds are functional isomers of each other



**Answer: D**

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2. Primary alcoholic group is



**Answer: A**

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3. Ethyl alcohol containing 9.5% methyl alcohol and 0.5 % pyridine is called

A. Spirit

B. Denaturated spirit

C. Rectified spirit

D. Absolute alcohol

**Answer: B**

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4. Breaking of big organic molecules in the presence of enzymes is called

- A. Cracking
- B. Pyrolysis
- C. Fermentation
- D. Oxidation

**Answer: C**

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5. Which alcohol is most reactive towards  $HCl$  in the presence of anhydrous  $ZnCl_2$ ?

- A. primary
- B. secondary
- C. tertiary
- D. all of these

**Answer: C**

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6. When tertiary butyl alcohol is passed over reduced copper, the reaction taking place is

- A. Ethylene
- B. Acetone

C. Ether

D. Acetaldehyde

**Answer: B**



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7. When tertiary butyl alcohol is passed over reduced copper, the reaction taking place is

A. oxidation

B. reduction

C. dehydration

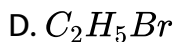
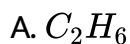
D. substitution

**Answer: C**



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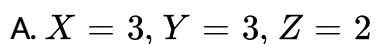
8. When ethylalcohol reacts with  $Br_2$  in presence of red phosphorus the compound formed is



**Answer: D**

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9. Ethyl alcohol forms  $X$   $CaCl_2$ ,  $C_2H_5OH$  when  $C_2H_5OH$  reacts with respective anhydrous salts. Then





B.  $X = 3, Y = 6, Z = 3$

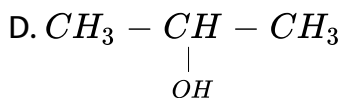
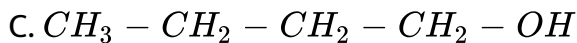
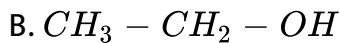
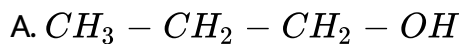
C.  $X = 3, Y = 7, Z = 4$

D.  $X = 4, Y = 4, Z = 4$

**Answer: B**

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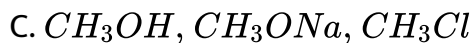
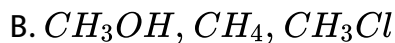
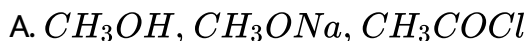
**10.** Which of the following on oxidation gives ketone



**Answer: D**

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11. Compound A reacts with Na metal to give B. A also reacts with  $PCl_5$  to give C. B and C reacts with each other to give dimethyl ether. Then A, B and C respectively are



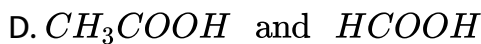
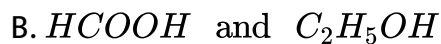
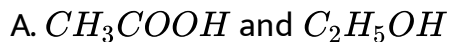
Answer: C



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12. Two organic compound A and B react with sodium metal and release  $H_2$  gas. A and B react with each other to give ethyl acetate.

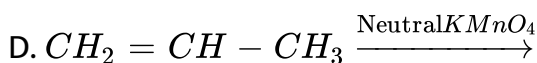
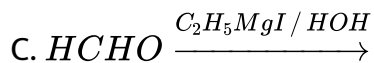
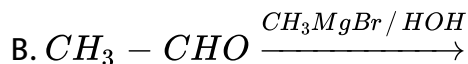
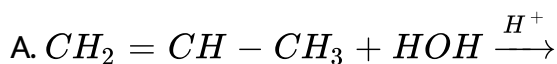
The A and B are



Answer: A

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13. Which of the following reactions will yield only propan-2-ol ?



**Answer: B**

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**14.** Identify the product in the following reaction



A. 

B. 

C. 

D. 

**Answer: B**

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**15.**  $X \xrightarrow{Y}$  Benzoquinone. Identify X and Y in this reaction

A. X is cyclohexanol, Y is Zn

B. X is phenol, Y is  $Na_2Cr_2O_7 / H_2SO_4$

C. X is Cyclohex-2-ene-1-ol, Y is  $Na_2Cr_2O_7 / H_2SO_4$

D. X is phenol, Y is Zn

**Answer: B**



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**16.** 2-Methyl pentan-1-ol is a

A.  $1^\circ$  Alcohol

B.  $2^\circ$  alcohol

C.  $3^\circ$  Alcohol

D. enol

**Answer: A**



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17. Primary alcohol cannot be prepared by the reduction of

A. aldehyde

B. acid

C. Ketone

D. ester

**Answer: C**



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18. The two enzymes present in yeast that are responsible for the formation of ethylalcohol from molasses in the fermentation process are

A. Invertase, zymase

B. invertase, diastase

C. Zymase, diastase

D. Invertase, maltase

**Answer: A**

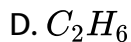
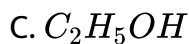
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**19.** An organic liquid *A* containing *C*, *H* and *O* has a pleasant odour with a boiling point of  $78^{\circ}C$ . On boiling. *A* with conc.  $H_2SO_4$  a colourless gas is produced which decolourises bromine water and alkaline  $KMnO_4$ . One mole of this gas also takes one mole of  $H_2$ .

The organic liquid *A* is

A.  $C_2H_5Cl$

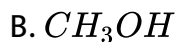
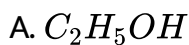
B.  $C_2H_5COOCH_3$



**Answer: C**

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20. When equal weight of methyl alcohol and ethyl alcohol react with excess of sodium metal, the volume of  $H_2$  liberated is more in the case of



C. Equal in both

D.  $H_2$  is not liberated

**Answer: B**



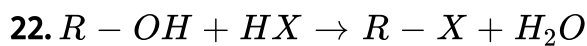
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21. Which one of the following gases is liberated when ethyl alcohol is heated with methyl magnesium iodide?

- A. Methane
- B. Ethane
- C. Carbondioxide
- D. Propane

**Answer: A**

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In the above reaction the reactivity of different alcohols is

A. Tertiary > secondary > Primary

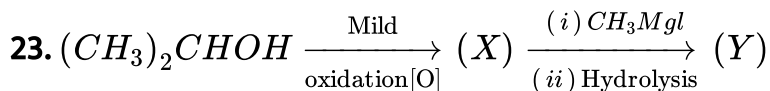
B. Tertiary < secondary < Primary

C. Tertiary > primary > secondary

D. Secondary > primary > tertiary

**Answer: A**

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In the above sequence of reaction, (Y) is:

A. Iso butyl alcohol

B. Iso butylene

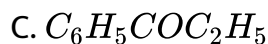
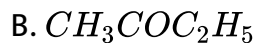
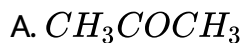
C. sec. Butyl alcohol

D. tert. Butyl alcohol

Answer: D

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24. Haloform reaction is not given by



Answer: C

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25. What is the final product obtained when chlorine reacts with ethyl alcohol in KOH ?

A.  $CHCl_3$

B.  $CCl_3CHO$

C.  $CH_3Cl$

D. none

Answer: A



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26.  $C_2H_5OH \xrightarrow{KMnO_4 / H^{\oplus}} X \xrightarrow[H_2SO_4]{Y} CH_3COOC_2H_5$ , X and Y respectively are

A.  $CH_3OH, C_2H_5OH$

B.  $CH_3CHO, CH_3OH$

C.  $CH_2 = CH_2, CH_3COOH$

D.  $CH_3COOH, C_2H_5OH$

Answer: D

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27. Match the following lists

List -I	List II
A Ethlene	1 Natalite
B Acetylene	2 Preservative
C Ethanol	3 Hawker's lamp
D Diethyl ether	4 Drug
	5 Polyethlene

Correct match is:

A.  $\begin{matrix} A & B & C & D \\ 3 & 2 & 1 & 5 \end{matrix}$

B.  $\begin{matrix} A & B & C & D \\ 5 & 1 & 2 & 3 \end{matrix}$

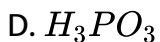
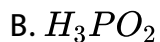
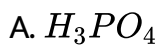
C.  $\begin{matrix} A & B & C & D \\ 5 & 3 & 2 & 1 \end{matrix}$

D.  $\begin{matrix} A & B & C & D \\ 5 & 1 & 4 & 2 \end{matrix}$

Answer: C

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28. 3 moles of ethanol react with one mole of phosphorous tribromide to form 3 moles of bromo ethane and one mole of X. which of the following is 'X'



Answer: D



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29. Which is the most suitable method for removing the traces of water from ethanol ?

- A. Heating with Na metal
- B. Passing dry HCl through it
- C. Distilling it with CaO
- D. Reacting with Mg

**Answer: C**

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**30.** Which of the following compound gives ethylmethyl ketone on oxidation ?

- A. Propan-2-ol
- B. Butan-1-ol
- C. Butan-2-ol
- D. 2-methylbutan-2-ol

Answer: C

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

A.  $C - C$

B.  $O - H$

C.  $C - H$

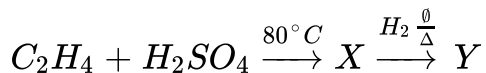
D.  $C - O$

Answer: B

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32. What are X and Y in the reaction



- A.  $C_2H_6, C_2H_5OH$
- B.  $C_2H_2, C_2H_5SH$
- C.  $C_2H_5OSO_3H, C_2H_5OH$
- D.  $C_2H_2, CH_3CHO$

Answer: C



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33. Which one of the following contains  $C_{sp^2} - OH$  bond?

- A. vinyl alcohol
- B. allyl alcohol

C. benzyl alcohol

D. carboxylic acid

**Answer: A**

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**Level iii**

1. An example for a polydric alcohol is

A. Methyl alcohol

B. Neopentyl alcohol

C. Sec butyl alcohol

D. Mannitol

**Answer: D**

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2. Which one of following is a secondary alcohol

A. 2-Methyl propan-2-ol

B. Propan-1-ol

C. Butun-1-ol

D. Pentan-2-ol

**Answer: D**

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3. Ethyl alcohol is manufactured from ethylene by

A. Permanganate

B. Catalytic oxidation

C. Absorption into Conc.  $H_2SO_4$  followed by hydrolysis

D. Reduction

**Answer: C**

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4. Which of the following pairs of the compounds can be used as starting materials in the synthesis of 2-Phenyl pentan-2-ol?

A.  $CH_3(CH_2)_3Br$  and  $PhCOOH$

B.  $(CH_3)_2CHCH_2Br$  and  $PhCOCH_3$

C.  $PhBr$  and  $CH_3CH_2CH_2COCH_3$

D.  $PhBr$  and  $(CH_3)_2CHCH_2COCH_3$

**Answer: C**

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

A. Diastase

B. Zymase

C. Maltase

D. Invertase

**Answer: A**

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6. Which the catalyst in the conversion of water gas and hydrogen into methyl alcohol?

A. MnO

B. raney Ni

C. Fe

D.  $ZnO - Cr_2O_3$

**Answer: D**

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7. When ethyl alcohol is distilled with bleaching powder and water then chloroform is obtained. The no. of moles of bleaching powder needed in the preparation of one mole of chloroform is

A. 10

B. 5

C. 4

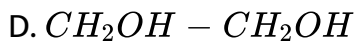
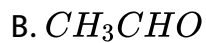
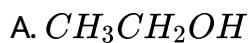
D. 2

Answer: C

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$A \xrightarrow{KCN} B \xrightarrow{\text{hydrolysis}} C$ . Then "C" is

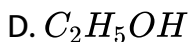
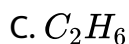
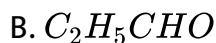
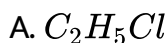


Answer: C

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9. An organic liquid  $A$  containing  $C$ ,  $H$  and  $O$  has a pleasant odour with a boiling point of  $78^\circ C$ . On boiling,  $A$  with conc.  $H_2SO_4$  a colourless gas is produced which decolourises bromine water and alkaline  $KMnO_4$ . One mole of this gas also takes one mole of  $H_2$ .

The organic liquid  $A$  is



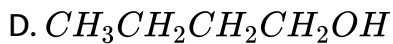
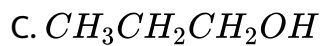
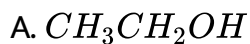
**Answer: D**



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10. A compound reacts with sodium and liberates hydrogen and on oxidation gives ketone. The formula of the compound could be



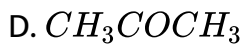
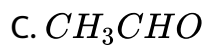
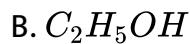
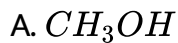


**Answer: B**



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**11. Iodororm cannot be prepared from**



**Answer: A**



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12.  $I_2$  produced when ozone reacts with moist KI is used to convert  $C_2H_5OH$  to  $CI_3CHO$ . Number of moles of ozone required to convert 1 mole of  $C_2H_5OH$  into  $CI_3CHO$  is

A. 1

B. 2

C. 4

D. 3

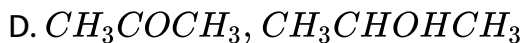
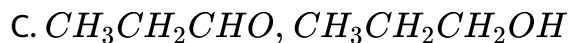
Answer: C



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13. A compound "X" of the formula  $C_3H_8O$  gives iodoform test. On oxidation with acidified  $K_2Cr_2O_7$  gave Y. Y also gives iodoform

test. Then X and Y are



**Answer: B**

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**14.** In the Victor-Meyer's test, red colouration is shown by

A.  $1^\circ$  Alcohol

B.  $2^\circ$  Alcohol

C.  $3^\circ$  Alcohol

D. Phenol

**Answer: A**

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15. When a mixture containing  $PCl_3$  and  $PCl_5$  is heated with ethyl alcohol, a total of 4 moles of ethyl chloride is formed. Mole ratio of  $PCl_3$  and  $PCl_5$  in the mixture is

A. 3: 1

B. 1: 1

C. 1: 3

D. 2: 1

**Answer: B**

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16. When vapours of an alcohol are passed over hot reduced copper, it gives an alkene. The alcohol is

- A. Primary
- B. Secondary
- C. Tertiary
- D. None of these

**Answer: C**

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17. When ethyl hydrogen sulphate is heated with excess of ethyl alcohol at 413 K the product is :

- A. Ethane
- B. Ethylene

C. Diethyl ether

D. Diethyl sulphate

**Answer: C**

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**18.** 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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19. Methanol is industrially prepared by

- A. Oxidation of  $CH_4$  by steam at  $900^\circ C$
- B. Reduction of  $HCHO$  using  $LiAlH_4$
- C. Reaction HCHO with a solution of NaOH
- D. Reduction of CO using  $H_2$  and  $ZnO - Cr_2O_3$

Answer: D



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20.  $(CH_3)_3C - OH \xrightarrow{H_2SO_4} (CH_3)_2C = CH_2$ , This reaction takes place through

- A.  $S_N1$  mechanism
- B.  $S_N2$  mechanism
- C.  $E_1$  mechanism

D.  $E_2$  mechanism

Answer: C

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Level Iv

1. Assertion(A): In the fermentation process of molasses, along with yeast  $(NH_4)_2SO_4$ ,  $(NH_4)_3PO_4$  is added

Reason (R):  $(NH_4)_3PO_4$  and  $(NH_4)_2SO_4$ , act as food and helps the growth of yeast.

- A. Both A and R are true and R is the correct explanation to A
- B. Both A and R are true and R is not the correct explanation to A
- C. A is true but R is false
- D. A is false but R is true



**Answer: A**

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2. Assertion (A): Ethanol is miscible in all proportions with water

Reason (R): Hydrogen bond is formed between water and alcohol molecules.

- A. Both A and R are true and R is the correct explanation to A
- B. Both A and R are true and R is not the correct explanation to A
- C. A is true but R is false
- D. A is false but R is true

**Answer: B**

 [View Text Solution](#)

3. Assertion(A):  $CaCl_2$  can't be used for drying ethyl alcohol

Reason (R): Hydrogen bond is formed between water and alcohol molecules.

- A. Both A and R are true and R is the correct explanation to A
- B. Both A and R are true and R is not the correct explanation to A
- C. A is true but R is false
- D. A is false but R is true

**Answer: A**

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4. Assertion (A): Ethyl alcohol is soluble in organic solvents

Reason(R): Calcium chloride can form an addition compound with ethyl alcohol

- A. Both A and R are true and R is the correct explanation to A
- B. Both A and R are true and R is not the correct explanation to A
- C. A is true but R is false
- D. A is false but R is true

**Answer: A**



**View Text Solution**

5. Assertion(A): Ethyl alcohol is soluble in organic solvents

Reason (R): Ethyl alcohol is having non polar ethyl group

- A. Both A and R are true and R is the correct explanation to A
- B. Both A and R are true and R is not the correct explanation to A
- C. A is true but R is false
- D. A is false but R is true

**Answer: A**

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6. Assertion (A): The boiling point of  $C_2H_5OH$  is less than that of  $H_2O$  though the molecular weight of  $C_2H_5OH$  is more than that of water.

Reason (R):  $C_2H_5OH$  molecules are not highly associated through hydrogen bonding as water is

- A. Both A and R are true and R is the correct explanation to A
- B. Both A and R are true and R is not the correct explanation to A
- C. A is true but R is false
- D. A is false but R is true

**Answer: A**

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7. Assertion (A): Dehydration of alcohols can be carried out with Conc  $H_2SO_4$  but not with conc HCl

Reason (R):  $H_2SO_4$  is dibasic while HCl is monobasic.

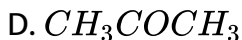
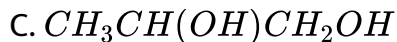
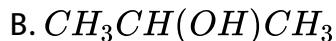
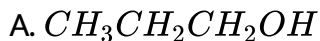
- (1). Both A and R are true and R is the correct explanation to A
- (2). Both A and R are true and R is not the correct explanation to A
- (3). A is true but R is false
- (4). A is false but R is true

- A. Both A and R are true and R is the correct explanation to A
- B. Both A and R are true and R is not the correct explanation to A
- C. A is true but R is false
- D. A is false but R is true

**Answer: B**

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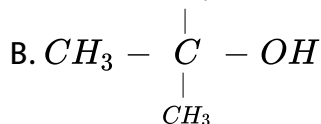
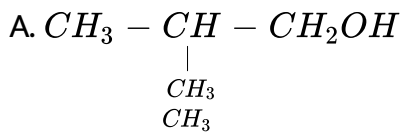
8. Hydroboration -Oxidation of  $CH_3CH = CH_2$  produces

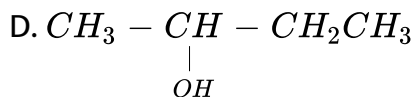
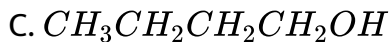


Answer: A

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9. The compound which give the most stable carbonium ion on dehydration is

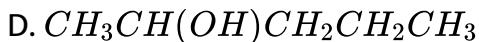
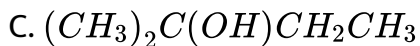
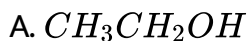




**Answer: B**

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10. An alcohol on oxidation is found to give  $CH_3COOH$  and  $CH_3CH_2COOH$ . The structure of the alcohol is

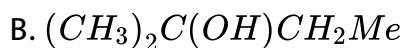
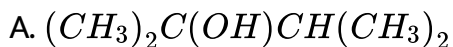


**Answer: D**

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11. An alcohol (A) on heating with concentrated  $H_2SO_4$  gives alkene (B) as major product and (B) can show geometrical isomerism.

The compound (A) is :



D. All of the above

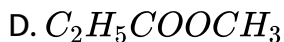
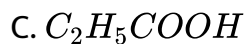
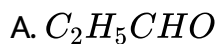
**Answer: C**



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12. Which of the following compounds on reaction with  $CH_3MgBr$  will give a tertiary alcohol ?





**Answer: D**

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**13.** 0.037g of an alcohol, R-OH was added to  $CH_3MgBr$  and the gas evolved measured 11.2 mL at STP. The Molecular mass of R-OH will be .

A. 47

B. 79

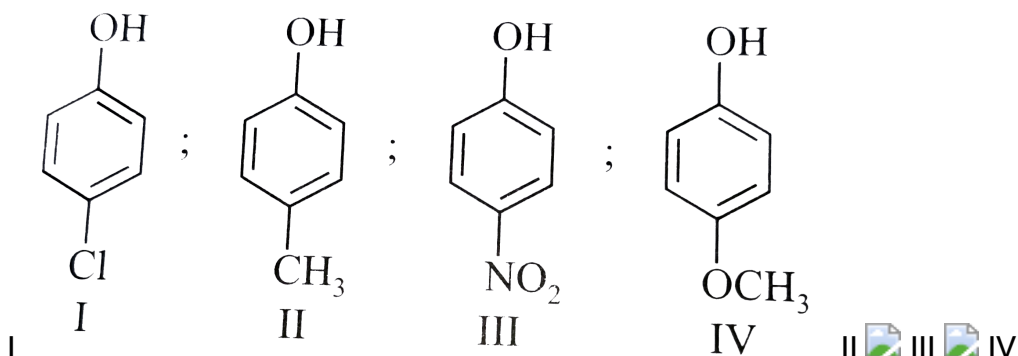
C. 74

D. 77

Answer: C

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14. Arrange the following compounds in the order of decreasing acidity.



A.  $II > IV > I > III$

B.  $I > II > III > IV$

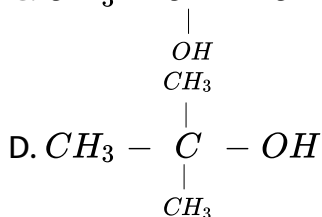
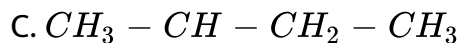
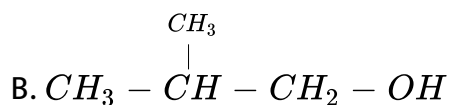
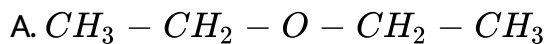
C.  $III > I > II > IV$

D.  $IV > III > I > II$

Answer: C

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15. What is the structure of ( $C_4H_{10}O$ ) which can give positive haloform test and evolves hydrogen gas with  $LiAlH_4$



Answer: C

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16. The relative rates of reaction with concentrated  $H_2SO_4$  of the following is

(I) 

(II) 

(III) 

A.  $I > II > III$

B.  $II > I > III$

C.  $I > III > II$

D.  $II > III > I$

**Answer: D**



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17. Which of the following is the best dehydrating agent for  $1^\circ$  alcohols

A. Con  $H_2SO_4$

B.  $CaO$

C.  $Al_2O_3$

D.  $POCl_3$

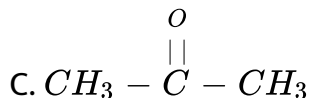
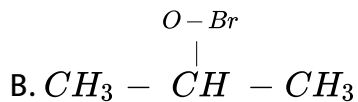
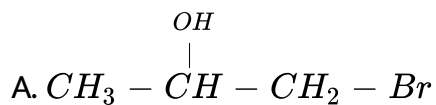
**Answer: D**

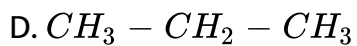


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18. 

Product (A) is





**Answer: C**

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**19.** What is the major the following reaction?



A. 

B. 

C. 

D. 

**Answer: A**

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20. Which are not cleaved by  $HIO_4$ ?

(I) Glycerol

(II) glycol

(III) 1, 3-propenediol

(IV) methoxy-2-propanol

A. I, II, III, IV

B. I, II

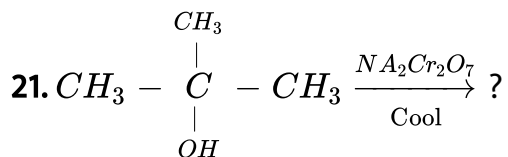
C. II, III

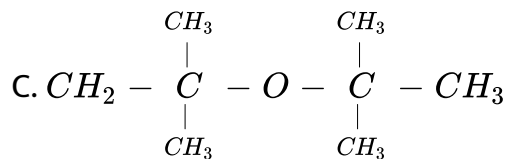
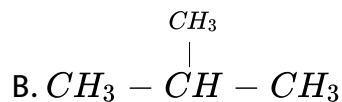
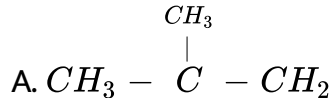
D. III, IV

Answer: D



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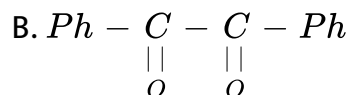
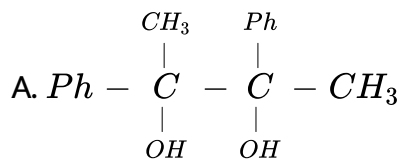
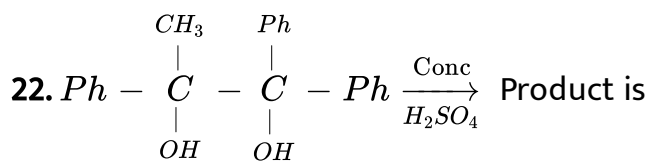




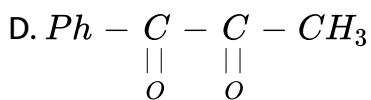
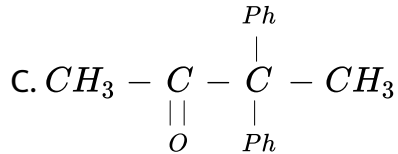
D. No reaction

Answer: D

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**Answer: C**

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**23.** Which of the following alcohols is the least soluble in water?

A. Ethanol

B. 1-Propanol

C. 1-Butanol

D. 1-Pentanol

**Answer: D**

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24. 3, 3-Dimethyl-2-butanol no reaction with HCl yield mainly

- A. 2-Chloro-2, 3-dimethyl butane
- B. 1-Chloro-2, 3-dimethyl butane
- C. 2-Chloro-3, 3-dimethylbutane
- D. 1-Chloro-3, 3-dimethylbutane

**Answer: A**



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25. Propylene is subjected to hydroboration oxidation reaction. The product formed would be

- A. Propanal
- B. 1-Propanol

C. 2-Propanol

D. Propanone

**Answer: B**

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26. Ethylene glycol when heated in the presence of an hydrous  $ZnCl_2$  yields

A. Ethanal

B. Ethylene oxide

C. Dioxane

D. Diethylene glycol

**Answer: D**

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27. Clear organic solution of chromic anhydride in aqueous sulphuric acid turns blue-green on reaction with

A. 3-Methyl-3-pentanol

B. 2-Butanol

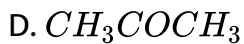
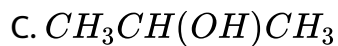
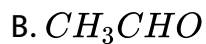
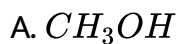
C. 2-Methyl-2-propanol

D. 2-Methyl-2-butanol

**Answer: B**

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28. An organic compound 'X' on treatment with acidified  $K_2Cr_2O_7$  gives a compound 'Y' which reacts with  $I_2$  and sodium carbonate to form triiodomethane. The compound 'X' could be



**Answer: C**



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**29.** Fusel oil is a mixture of

A. Ethers

B. Alcohol

C. Alcohols and ethers

D. Alcohols and ketones

**Answer: B**



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30. How many isomeric compounds are possible for  $C_4H_{10}O$  ?

A. 4

B. 5

C. 6

D. 7

Answer: D



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31. 

The compound Y in the above sequence is

A. 2-Methyl 1-2-phenyl-1-propanol

B. 2-Phenyl-2-propanol

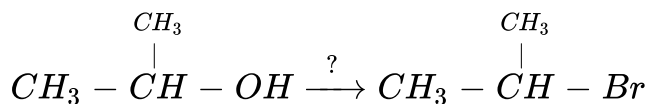
C. Acetophenone

D. 2-Methyl-1-phenyl-2-propanol

**Answer: C**

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32. Which is the best reagent to convert isopropyl alcohol to isopropyl bromide ?



A.  $\text{HBr}$

B.  $\text{SOBr}_2$

C.  $\text{Br}_2$

D.  $\text{CH}_3\text{MgBr}$

**Answer: B**

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**33.** Choose the alcohol that is most reactive with conc.  $HCl / ZnCl_2$

?

A. Methanol

B. Ethanol

C. 2-Propanol

D. 2-methyl-2-propanol

**Answer: D**

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**34.** Treatment of 3-methyl-2-butanol with dry HCl gives



A. 

B. 

C. 

D. 

**Answer: B**

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35. Glycol on treatment with  $PI_3$  mainly gives

A. Ethylene

B. Ethylene iodide

C. Ethyl iodide

D. Ethane

**Answer: A**



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36. Acrolein is formed when glycerol is heated with

A. Acidified  $KMnO_4$

B.  $Br_2$  water

C.  $KHSO_4$

D.  $HNO_3$

Answer: C



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37. Glycerol on treatment with oxalic acid at  $110^\circ C$  forms

A. Allyl alcohol

B. Formic acid

C.  $CO_2$  and  $CO$

D. Glyceric acid

**Answer: B**

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38. If the starting material is 1-methyl-1, 2-epoxy cyclopentane, of absolute configuration, decide which one compound correctly represent the product of its reaction with sodium methoxide in methanol

A. 

B. 

C. 

D. 

**Answer: B**



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**39.** Rate of hydration of



with be in order,

A.  $I < II < III$

B.  $I < III < II$

C.  $II < I < III$

D.  $III < II < I$

**Answer: A**



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40. Glycerol  $\xrightarrow{KHSO_4}$  A  $\xrightarrow{LiAlH_4}$  B.

- A. Acrolein, allyl alcohol
- B. Glyceryl sulphate, acrylic acid
- C. Allyl alcohol, acrolein
- D. only acrolein (B is not formed)

Answer: A

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41. 

- A. OH at  $C_2$  is more basic than that of at  $C_5$
- B. OH at  $C_2$  is more acidic than that at  $C_5$
- C. both have same basic strength

D. both have same acidic strength

Answer: A

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42. Lucas test is used to make distinction between  $1^\circ$ ,  $2^\circ$  and  $3^\circ$  alcohols. This do not show that

A. ROH behaves as a base

B. greater than value of  $pK_a$  (alcohol), greater the reactivity with conc. HCl and thus sooner the formation of white turbidity

C. alcohol which reacts fastest with Na metal, will give turbidity at fastest rate

D. alcohol which gives red colour during Victor Mayor test, will give turbidity at slower rate than those giving blue or white

colour during Victor Mayor test.

Answer: A::B::D

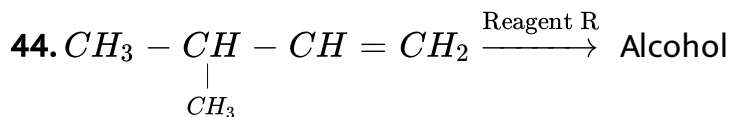


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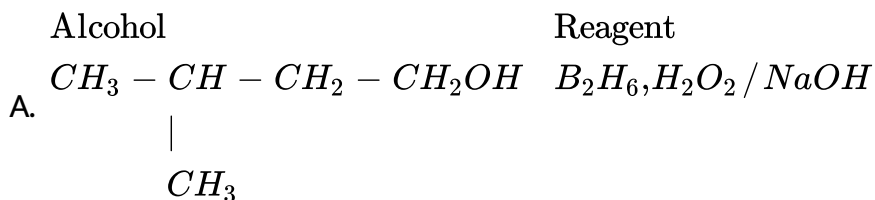
43. Match the column:



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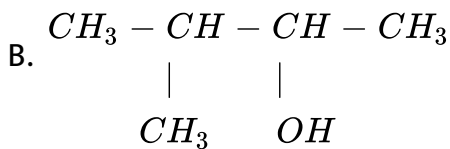


Which is true about alcohol and R ?

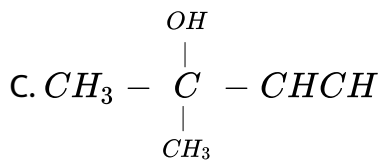


Alcohol

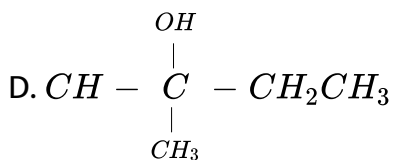
Reagent



$\text{PdCl}_2, \text{H}_2\text{O}, \text{O}_2 / \text{LAH}$



$\text{Hg}(\text{Oac})_2, \text{H}_2 \xrightarrow{\text{N}} \text{aBH}_4$



dil.  $\text{H}_2\text{SO}_4$

Answer: A::B::D

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Level I

1. The compound which is not isomeric with diethyl ether is :



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

**Answer: A**

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2. The number of metameric ethers possible with the formula  $C_4H_{10}O$  are

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

**Answer: B**

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3. The IUPAC name of  $C_2H_5OC_2H_5$

- A. Diethyl ether
- B. Ethoxy ethane
- C. Ethoxy propane
- D. Dimethyl ether

**Answer: B**

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4. Phenol on heating with NaOH followed by reaction with alkyl halide gives

- A. Acetone
- B. Ether
- C. Ethanal
- D. Acetic acid

**Answer: B**

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5. Ethers are obtained by

- A. Reaction of alkyl halide with dry ZnO
- B. Reaction of alkyl halide with moist ZnO
- C. Reaction of alkyl halide with dry  $Ag_2O$
- D. Reaction of alkyl halide with moist  $Ag_2O$

**Answer: C**



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6. Following one is formed when a diethyl ether is exposed to air for longer period

- A. Ethyl alcohol
- B. Acetaldehyde
- C. Ethylene
- D. Peroxide of diethyl ether

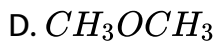
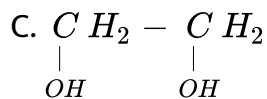
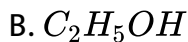
**Answer: D**



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7. The compound which has the lowest boiling points is

- A.  $H_2O$



**Answer: D**

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8. Total number of lone pair of electrons around oxygens in diethyl peroxide *is / are*

A. 2

B. 3

C. 4

D. 0

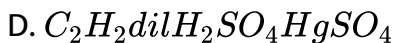
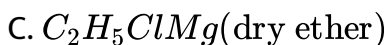
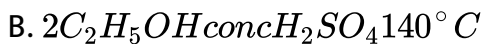
**Answer: C**



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9. Ethyl chloride reacts with sodium ethoxide to form a compound

(A) Which of the following reaction also yields (A) ?



Answer: B



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10. The IUPAC name of  $C_2H_5 - O - CH(CH_3)_2$

A. Ethoxy propane

B. 1,1-dimethyl ether

C. 2-Ethoxy isopropane

D. 2-Ethoxy propane

**Answer: D**

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11. A reacts with  $C_2H_5I$  giving 'B' and NaI. Here 'A' and 'B' respectively are

A.  $CH_3COONa$ ,  $CH_3OCH_3$

B.  $C_2H_5OC_2H_5$ ,  $C_2H_5COOC_2H_5$

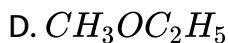
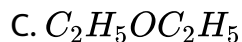
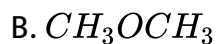
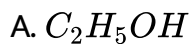
C.  $C_2H_5ONa$ ,  $C_2H_5OC_2H_5$

D.  $C_2H_5OHC_2H_5$ ,  $C_2H_5OC_2H_5$

**Answer: C**

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12. Which of the following compounds when heated with CO at 423K and 500 atm. Pressure in presence of  $BF_3$  forms ethyl propionate ?



Answer: C

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13. One mole of diethyl ether on heating with conc. HI gives





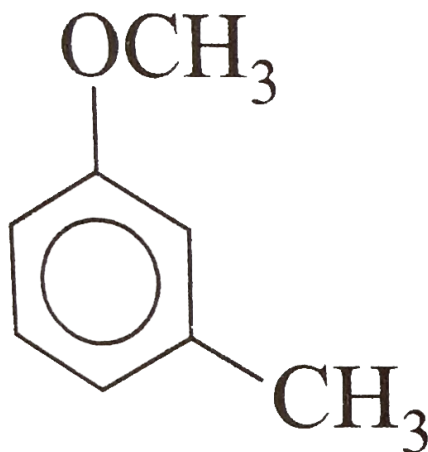
B. 2 Moles of iodoethane

C. 2 Moles of ethanol

D. Iodoethane and ethanol but not in a 1 : 1 mole ratio

**Answer: B**

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14.

The major product formed on monobromination  $\left(\frac{\text{Br}_2}{\text{FeBr}_3}\right)$  of the following compound. Is

A. 

B. 

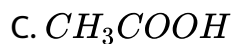
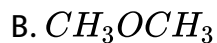
C. 

D. 

**Answer: D**

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

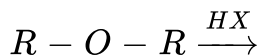


**Answer: B**



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16. Which of the following halogen acids is most reactive towards the given reaction ?



A. HCl

B. HI

C. HBr

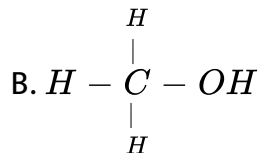
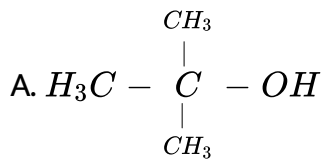
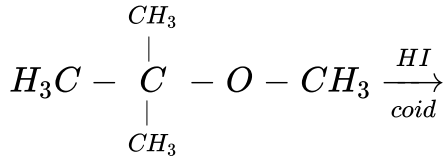
D. Equally reactive

**Answer: B**



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17. Which of the following compounds is produced when this reaction takes place ?



C. Both of these

D. None of these

**Answer: B**

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**18.** Alcohols can be distinguished from ethers by

A. Sodium metal

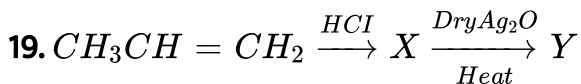
B. Ester formation

C. Iodoform test

D. All the above

**Answer: D**

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The product Y in the above sequence is

A. Di isopropyl ether

B. Di n-propyl ether

C. 2-propanal

D. 1,2-Epoxypropane

**Answer: A**

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20. A mixture of ether and .... Gives temperature as low as 163 K

(1) NaCl

(2) Ice

(3) Solid  $CO_2$

$C_2H_5OH$

- A. Both A and R are true and R is the correct explanation to A
- B. Both A and R are true and R is not the correct explanation to A
- C. A is true but R is false
- D. A is false but R is true

**Answer: C**



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21. (A) Ether behaves as bases in the presence of mineral acids.

(R) Due to the presence of lone pair of electrons on oxygen.

A. Both A and R are true and R is the correct explanation to A

B. Both A and R are true and R is not the correct explanation to A

C. A is true but R is false

D. A is false but R is true

**Answer: A**

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22. Assertion: (A) Diethyl ether is used as general anaesthesia

Reason (R): Diethyl ether produces unconsciousness without effecting lungs

A. Both A and R are true and R is the correct explanation to A

B. Both A and R are true and R is not the correct explanation to A

C. A is true but R is false

D. A is false but R is true

**Answer: A**

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**23.** Assertion: (A) Ethers are relatively inert when compared to



Reason (R): The hybridization of C and O in  $CH_3 - O - CH_3$  is  $sp^3$

A. Both A and R are true and R is the correct explanation to A

B. Both A and R are true and R is not the correct explanation to A

C. A is true but R is false

D. A is false but R is true



**Answer: B**

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**24.** Assertion (A): Diethyl ether reacts with hot Conc  $H_2SO_4$  and gives ethyl hydrogen sulphate

Reason (R): The reaction involves cleavage of C-O bond in diethyl ether

- A. Both A and R are true and R is the correct explanation to A
- B. Both A and R are true and R is not the correct explanation to A
- C. A is true but R is false
- D. A is false but R is true

**Answer: A**

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25. (A) Ether behaves as bases in the presence of mineral acids.

(R) Due to the presence of lone pair of electrons on oxygen.

A. Both A and R are true and R is the correct explanation to A

B. Both A and R are true and R is not the correct explanation to A

C. A is true but R is false

D. A is false but R is true

**Answer: A**

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26. Assertion (A): Alkyl aryl ethers on reaction with HI give alkyl iodide phenols

Reason (R): Aryl - oxygen bond is weaker than alkyl oxygen bond

A. Both A and R are true and R is the correct explanation to A

B. Both A and R are true and R is not the correct explanation to A

C. A is true but R is false

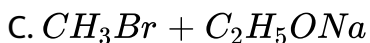
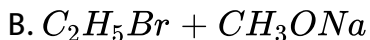
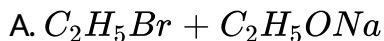
D. A is false but R is true

**Answer: C**

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**Level II**

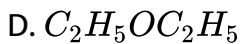
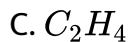
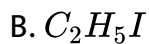
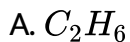
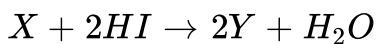
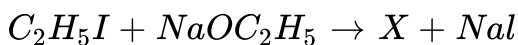
1. Which of the following pairs of reagents will not form ether



Answer: D

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2. What is Y in the following reactions



Answer: B

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3. Which is the following cannot be prepared by using Williamson synthesis ?

- A. Methoxybenzene
- B. Benzyl -p- nitrophenyl ether
- C. Methyl tert butyl ether
- D. Ditertiary butyl ether

**Answer: C**

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4. Methoxy benzene is called anisole

 How many more structure can be drawn for the same formula ?

- A. 5
- B. 4

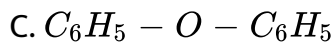
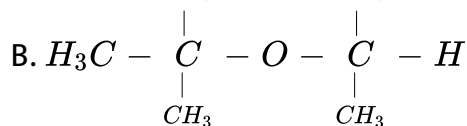
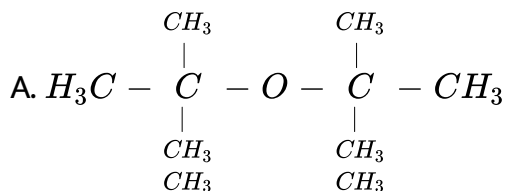
C. 3

D. 2

**Answer: B**

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5. Which of the following types of ethers cannot be synthesized by Williamson synthesis ?

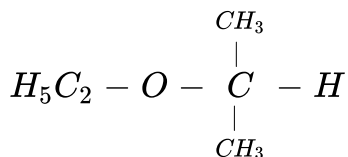


D. None of these

**Answer: D**

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6. Which alkyl halide would be preferred for the synthesis of the following ether by Williamson synthesis ?

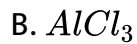


- A. n- Propyl chloride
- B. Isopropyl chloride
- C. Ethyl chloride
- D. Methyl chloride

**Answer: C**

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7. Which of the following does not react with diethyl ether

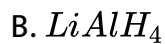
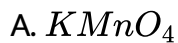


**Answer: A**



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8.  $C - O - C$  bond in ethers can be cleaved by

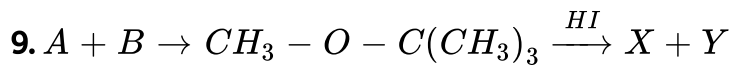


**Answer: D**





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Correct statement among the following is

A. A and B are  $CH_3O\text{Na}$  and  $(CH_3)_3\text{CBr}$

B. X and Y are  $CH_3\text{I}$  and  $(CH_3)_3\text{COH}$

C. X and Y are  $CH_3\text{OH}$  and  $(CH_3)_3\text{Cl}$

D. A and B are  $CH_3\text{OH}$  and  $(CH_3)_3\text{COH}$

Answer: C



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Correct statement among the following is

A. P and Q are  $C_6H_5$  Ona and  $C_2H_5$  Cl

B. R and S are  $C_6H_5I$  and  $CH_3$  OH

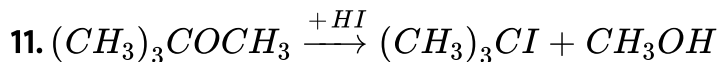
C. R and S are  $C_6H_5$  OH and  $(CH_3)_3$  Cl

D. P and Q are  $C_6H_5Cl$  and  $CH_3$  Ona

**Answer: C**



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follows which mechanism ?

A.  $S_N1$

B.  $S_N2$

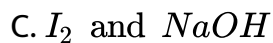
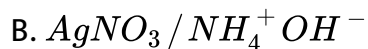
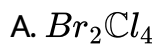
C.  $E_1$

D.  $E_2$

Answer: A

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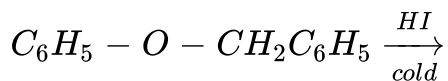
12. Which of the following reagents can distinguish ethyl methyl ether from isopropyl alcohol ?



Answer: C

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13. Which of the following compounds is produced with this reaction takes place ?



A. 

B. 

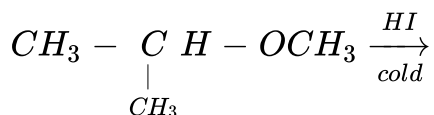
C. Both of these

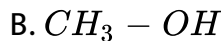
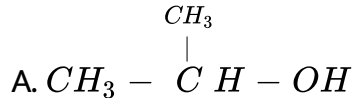
D. None of these

**Answer: B**

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14. Which of the following compounds is produced when this reaction takes place ?





C. Both of these

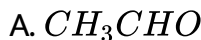
D. None of these

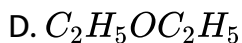
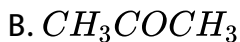
**Answer: A**

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Level Iii

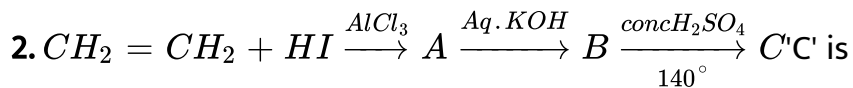
1. A compound X of the formula  $C_2H_6O$  on reaction with Na metal gave Y, X also reacts with  $PCl_5$  to give Z the product obtained in the reaction between Y and Z is





**Answer: D**

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A. Ethoxy ethane

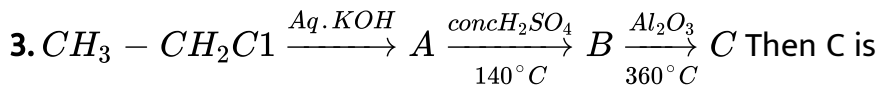
B. Ethanol

C. Ethanal

D. Acetone

**Answer: A**

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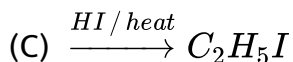
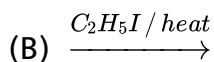
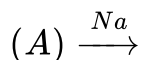


- A. Ethyne
- B. Ethene
- C. Ethoxy ethane
- D. Ethyl alcohol

**Answer: B**

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4. In the sequence of reaction (A) is



- A. Acetic acid
- B. Methyl alcohol
- C. Ethyl alcohol
- D. Propionic acid

**Answer: C**

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5.  $HBr$  reacts with  $CH_2 = CH - OCH_3$  under anhydrous conditions at room temperature to give:

- A.  $H_3C - CHBr - OCH_3$
- B.  $CH_3CHO$  and  $CH_3Br$
- C.  $BrCH_2CHO$  and  $CH_3OH$
- D.  $BrCH_2 - CH_2 - OCH_3$



**Answer: A**

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6. The major product obtained when tert-butyl bromide is heated with sodium ethoxide is

- A. 2-Methyl-1-propene
- B. Ethene
- C. tert-Butyl methyl ether
- D. Diethyl ether

**Answer: A**

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Correct statement among the following is

A. A and B are  $CH_3ONa$  and  $(CH_3)_3 CBr$

B. X and Y are  $CH_3I$  and  $(CH_3)_3 COH$

C. X and Y are  $CH_3OH$  and  $(CH_3)_3 Cl$

D. A and B are  $CH_3OH$  and  $(CH_3)_3 COH$

**Answer: C**

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8. IUPAC name of methyl isopropyl ether is

A. 2-methoxy propane

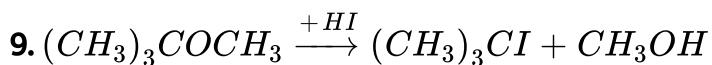
B. 3- methoxy propane

C. Ethoxy ethane

D. Methoxy ethane

Answer: A

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follows which mechanism ?

A.  $S_N1$

B.  $S_N2$

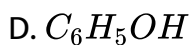
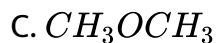
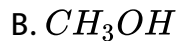
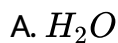
C.  $E_1$

D.  $E_2$

Answer: A

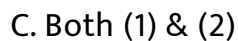
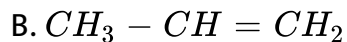
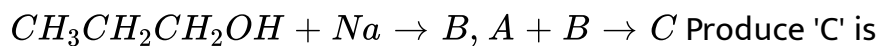
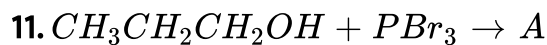
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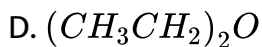
10. Which of the following is strongest Lewis Base



Answer: C

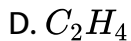
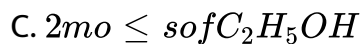
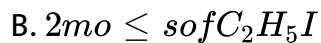
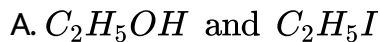
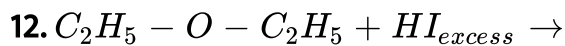
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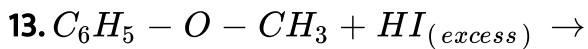
Answer: A

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Answer: B

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A.  $CH_3OH$  and  $C_6H_5I$

B.  $CH_3I$  and  $C_6H_5OH$

C.  $CH_3I$  and  $C_6H_5I$

D.  $C_6H_6$  and  $CH_4$

**Answer: B**

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Level IV

1. Which of the following ether cannot be prepared by Williamson's synthesis

A. 

B. 

C. 

D. All

**Answer: C**

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2. 1.68 mg of an organic compound (A) with molecule formula ( $C_9H_{12}O_3$ ) on Zeisel estimation produces an yellow precipitate of wt 4.7 mg the compound (A) is

A. 

B. 

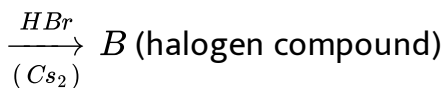
C. 

D. 

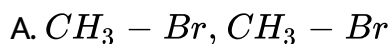
Answer: C

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3. 



A & B respectively are



B. 

C. 

D. 

Answer: A

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1. The following represents ether



**Answer: D**



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2. The dialky 1 derivative of  $H_2O$  is

A. Alcohol

B. Ether

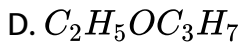
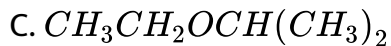
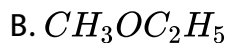
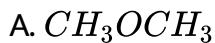
C. Ester

D. Ketone

**Answer: B**

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3. Which of the following is a simple ether ?



**Answer: A**

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4. Ethers are isomeric with

A. Aldehydes

B. Acids

C. Alcohols

D. Ketones

**Answer: C**



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5.  $C_nH_{2n+2}O$  is the general formula of ethers To exhibit the functional group isomerism 'n' must be minimum

A. 1

B. 2

C. 3

D. 4

**Answer: B**

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6. Heating together sodium ethoxide and ethyl chloride will give :

A. ether

B. ethyl alcohol

C. acetaldehyde

D. acetic acid

**Answer: A**

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7. Williamsons synthesis is used to prepare

A. Diethyl ether

B. PVC

C. Bakelite

D. Ethyl alcohol

**Answer: A**



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

A. 2- methyl -2- propanol

B. 2- Methoxypropane

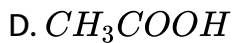
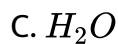
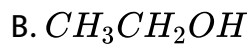
C. 2- Methyl -1- propanal

D. Ethoxyethane

Answer: D

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9. The compounds in which hydrogen bonding is not possible is



Answer: A

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**10.** Diethyl ether is used as

- A. Anaesthetic
- B. Solvent
- C. Refrigerant
- D. All

**Answer: D**



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**11.** The safest general anaesthesia used at present is

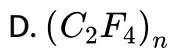
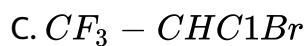
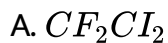
- A. chloroform
- B. diethyl ether
- C. acetylene

D. halothane

**Answer: D**

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**12. Formula of halothane is**



**Answer: C**

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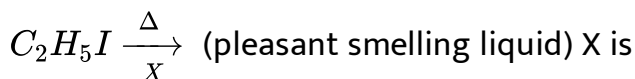
13. The IUPAC name of an unsymmetrical ether with the molecule formula  $C_4H_{10}O$

- A. Ethoxypropane
- B. Methoxyethane
- C. Ethoxyethane
- D. Methoxypropane

**Answer: D**

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14. Consider the following reaction



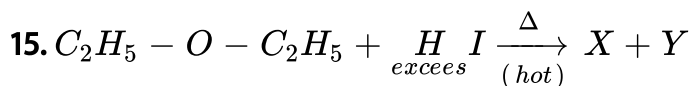
- A. Sodium
- B. Dry silver oxide

C. Ethyl chloride

D. Dry silver powder

**Answer: B**

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here X and Y are

A.  $C_2H_5I$  and  $C_2H_5OH$

B.  $C_2H_5I$  and  $H_2O$

C.  $C_2H_5OH + H_2O$

D.  $C_2H_4 + H_2O$

**Answer: B**

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

- A. Phenetole
- B. Ethyl phenyl alcohol
- C. Phenone
- D. None of these

**Answer: A**

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17. Anisole with conc.  $HNO_3$  and conc.  $H_2SO_4$  gives

- A. Phenol
- B. Nitrobenzene

C. O - and - P - Nitroanisole

D. O- Nitroanisole

**Answer: C**



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**18. Oxygen atom in ether is**

A. Very active

B. Replaceable

C. Active

D. Relatively inert

**Answer: D**



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

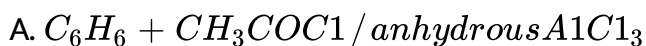
- A. Wurtz reaction
- B. Kolbe's reaction
- C. Williamson's synthesis
- D. Perkin's reaction

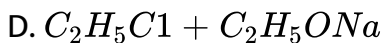
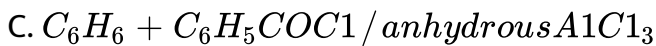
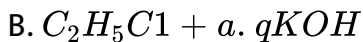
**Answer: C**



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2. In which of the following reactions, the product is an ether ?





**Answer: D**

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3. Williamson's synthesis is an example of

A. Nucleophilic addition

B. Electrophilic addition

C. Electrophilic substitution

D. Nucleophilic substitution reaction

**Answer: D**

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4. Ethoxy benzene is called PHENETOLE



How many more ethers can be drawn for the same formula ?

A. 5

B. 4

C. 3

D. 2

**Answer: B**



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5. Diethyl ether reacts with cold. HI to give

A. Ethyl iodide

B. Ethyl alcohol

C. Both 1 and 2

D. Ethylene

**Answer: C**

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6. The bond angle and hybridisation in ether ( $CH_3OCH_3$ ) is :

A.  $sp$

B.  $sp^2$

C.  $sp^3$

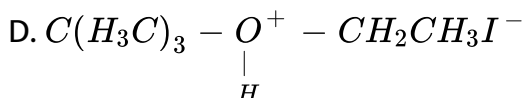
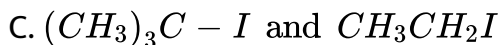
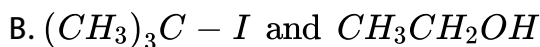
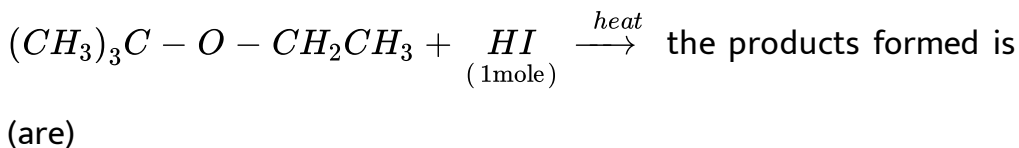
D.  $sp^3d$

**Answer: C**

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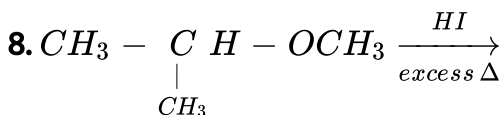


7. In the reaction



Answer: B

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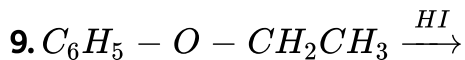


Which of the following is not formed in the above reaction ?

- A. Methyl iodine
- B. Isopropyl iodine
- C. Isopropyl alcohol
- D. All of these

**Answer: C**

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which of the following is not formed in this reaction ?

- A.  $C_6H_5 - I$
- B.  $C_6H_5 - OH$
- C. Both of these
- D. None of these

**Answer: A**

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**10.** Ethyl phenyl ether on reaction with excess HI yields

- A. Ethyl iodide and iodobenzene
- B. Ethyl iodide and phenol
- C. Ethyl alcohol and phenol
- D. Ethyl alcohol and iodobezene

**Answer: B**

 [Watch Video Solution](#)

1. Phenol is also called

- A. salicylic acid
- B. benzyl alcohol
- C. carbolic acid
- D. salol

**Answer: C**



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2. Benzene diazonium chloride on hydrolysis gives

- A. Benzene
- B. Benzyl alcohol
- C. Phenol

D. Chlorobenzene

**Answer: C**

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**3. Which does not have a carboxyl group?**

A. Picric acid

B. Ethanoic acid

C. Aspirin

D. Benzoic acid

**Answer: A**

 [Watch Video Solution](#)

4. When phenol is treated with excess of bromine water, it gives

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

**Answer: D**



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5. Phenols does not react with

- A. sodium bicarbonate
- B. sodium hydroxide
- C. potassium hydroxide

D. ferric chloride

**Answer: A**

 [Watch Video Solution](#)

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

A. Gattermann aldehyde synthesis

B. Sandmeyer's reaction

C. Perkin's reaction

D. Reimer-Tiemann reaction

**Answer: D**

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7. Phenol is

- A. a base weaker than ammonia
- B. an acid stronger than carbonic acid
- C. an acid weaker than carbonic acid
- D. a neutral compound

**Answer: C**

 [Watch Video Solution](#)

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

- A. m-bromophenol
- B. o- and p-bromophenol
- C. p-bromophenol



D. 2, 4,6-tribromophenol

**Answer: B**

 [Watch Video Solution](#)

9. Phenol is less acidic than

A. p-nitrophenol

B. ethanol

C. cresol

D. benzyl alcohol

**Answer: A**

 [Watch Video Solution](#)

10. Phenol on treatment with conc.  $HNO_3$  gives

- A. picric acid
- B. o-and m-nitrophenols
- C. cresol
- D. resorcinol

**Answer: A**

 [Watch Video Solution](#)

Level II C W

1. One mole of phenol reacts with bromine to form tribromophenol.

How much bromine is used?

- A. 3.0 mole

B. 1.5 mole

C. 4.5 mole

D. 6.0 mole

**Answer: A**



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2. The most acidic compound among the following is

A. phenol

B. ethanol

C. 3, 5-dinitrophenol

D. 4, 4-methoxy phenol

**Answer: C**



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3. Which one of the following compounds would undergo nitration with greatest ease

- A. benzene
- B. phenol
- C. nitrobenzene
- D. benzoic acid

**Answer: B**

 [Watch Video Solution](#)

4. Phenol on distilling with zinc dust gives

- A. benzene
- B. diphenyl ether

C. diphenol

D. zinc phenoxide

**Answer: A**



[Watch Video Solution](#)

5. Salicylic acid is produced when phenol in alcoholic KOH is treated with

A.  $CH_3Cl$

B.  $CHCl_3$

C.  $CH_2Cl_2$

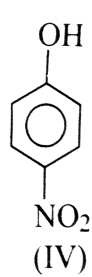
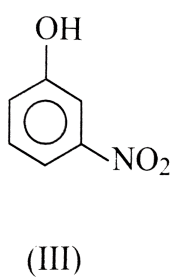
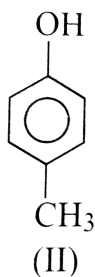
D.  $CCl_4$

**Answer: D**

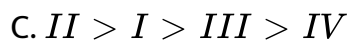
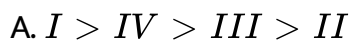


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6. In the following compounds,



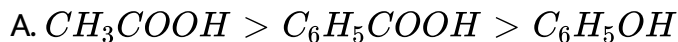
the order of acidity is:



Answer: D

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7. Which order is correct about acidity?



Answer: B

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8. phenol  $\xrightarrow{\text{conc. } H_2SO_4}$  A  $\xrightarrow{\text{conc. } HNO_3}$  B Here A and B are respectively.

A. P-Hydroxy benzenesulphonic acid, P-nitrophenol

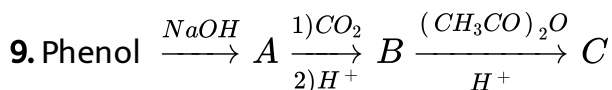
B. 4-Hydroxybenzenesulphonic acid, picric acid

C. 4-Hydroxybenzene-1, 3-disulphonic acid, 2, 4-dinitrophenol

D. 3-Hydroxybenzene sulphonic acid, picric acid

**Answer: B**

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Incorrect statement among the following is

- A. Preparation of 'B' from phenol is called Kolbe's reaction
- B. B' is steam volatile
- C. C' has a free -OH group of 'B'
- D. C' can be used as anti-inflammatory analgesic and antipyretic.

**Answer: C**

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## Level Iii Properties Of Phenol

1. Benzene diazonium chloride on reaction with phenol in a basic medium gives:

- A. benzene
- B. chlorobenzene
- C. diphenyl ether
- D. p-hydroxy azobenzene

**Answer: D**

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2. The reaction



- A. Wurtz reaction
- B. Kolbe reaction
- C. Rimer-tiemann reaction
- D. Schotten-Baumann reaction

**Answer: D**



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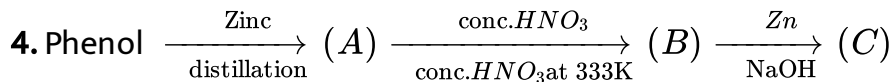
**3. Phenol is**

- A. a neutral compound
- B. a base weaker than ammonia
- C. an acid stronger than carbonic acid
- D. an acid weaker than carbonic acid

**Answer: D**



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In the above reaction, compounds (A), (B) and (C) are :

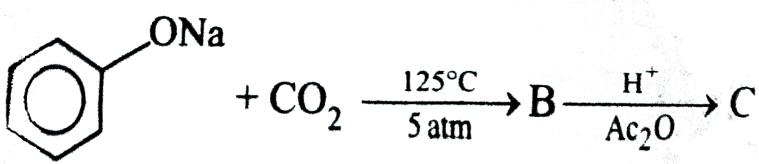
- A. benzene, nitrobenzene and hydrazobenzene
- B. benzene, nitrobenzene and aniline
- C. benzene, dinitrobenzene and m-nitroaniline
- D. toluene, m-nitrobenzene and m-toulidine

Answer: A



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5. Sodium phenoxide when heated with  $CO_2$  under pressure at  $125^\circ C$  yield a product which on acetylation gives product C



- A. salol
- B. salicylaldehyde
- C. sodium benzoate
- D. sodium salicylate

**Answer: D**

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6. Salol is prepared from

- A. salicylic acid and methyl alcohol
- B. salicylic acid and phenol
- C. both 1 and 2

D. aspirin and phenol

**Answer: B**

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### Level Iv Ncert Based Q

1. When phenol reacts with chloroform and an alkali, the compound formed is salicylaldehyde. If pyrene is used in place of chloroform, the product obtained is :

- A. Salicylic acid
- B. Salicylaldehyde
- C. Phenolphthalein
- D. Cyclo hexanol

**Answer: A**

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2. The most suitable method of separation of a mixture of ortho and para nitrophenol in the ratio 1 : 1 is :

- A. Crystallisation
- B. Distillation
- C. Sublimation
- D. Chromatography

**Answer: B**

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3. Assertion (A): o-phenol sulphonic acid on heating at  $100^{\circ}C$  changes to p-phenol sulphonic acid.

Reason : Sulphonation of phenol is a reversible process.

- A. Both A and R are correct and R is correct explanation of A
- B. Both A and R are correct but R is not the correct explanation of A
- C. A is correct but R is incorrect
- D. A is incorrect but R is correct

**Answer: B**

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4. (A) Benzoic acid and phenol can be distinguished by NaOH.

(R) Benzoic acid is stronger acid than phenol.

- A. Both A and R are correct and R is correct explanation of A
- B. Both A and R are correct but R is not the correct explanation of A
- C. A is correct but R is incorrect
- D. A is incorrect but R is correct

**Answer: D**

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5. Phenol is more reactive than benzene towards electrophilic substitution reaction.

In case of Phenol, the intermediate carbocation is more resonance stabilised.

A. Both A and R are correct and R is correct explanation of A



- B. Both A and R are correct but R is not the correct explanation of A
- C. A is correct but R is incorrect
- D. A is incorrect but R is correct

**Answer: A**

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6. Assertion: *p*-nitrophenol is a stronger acid than *o*-nitrophenol.

Reason: Intramolecular hydrogen bonding makes the *o*-isomer weaker than the *p* – isomer.

- A. Both A and R are correct and R is correct explanation of A
- B. Both A and R are correct but R is not the correct explanation of A
- C. A is correct but R is incorrect

D. A is incorrect but R is correct

**Answer: A**

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7. Assertion: Phenol is more reactive than benzene towards electrophilic reactions.

Reason : The +R effect of OH group increases the electron density on benzene nucleus.

A. Both A and R are correct and R is correct explanation of A

B. Both A and R are correct but R is not the correct explanation of A

C. A is correct but R is incorrect

D. A is incorrect but R is correct

**Answer: A**

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**8. Assertion :** Phenols are more acidic than aliphatic alcohols.

**Reason :** Phenoxides are stabilized by resonance.

- A. Both A and R are correct and R is correct explanation of A
- B. Both A and R are correct but R is not the correct explanation of A
- C. A is correct but R is incorrect
- D. A is incorrect but R is correct

**Answer: A**

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1. Cumene  $\xrightarrow[\text{(II) } H_2O, H^+]{\text{(i) } O_2}$  (X) and (Y),

(X) and (Y) respectively are :

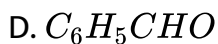
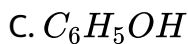
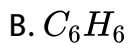
- A. toluene, propene
- B. toluene, propylchloride
- C. phenol, acetone
- D. phenol, acetaldehyde

**Answer: C**

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2. In the reaction  $C_6H_5NH_2 \xrightarrow{NaNO_2 + HCl / O^\circ C} X \xrightarrow{H_2O, \text{ warm}} Y$ . 'Y' is

- A.  $C_6H_5Cl$



**Answer: C**

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3. Picric acid is a yellow coloured compound. Its chemical name is

A. m-nitrobenzoic acid

B. 2, 4, 6-trinitrophenol

C. trinitrotoluene

D. trinitroaniline

**Answer: B**

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4.  $C_6H_5OH + CHCl_3 + NaOH \rightarrow$  salicylaldehyde The electrophile involved in the above reaction is.

A. dichloromethyl cation  $\left( \overset{\oplus}{C}HCl_2 \right)$

B. dichlorocarbene  $( :CCl_2 )$

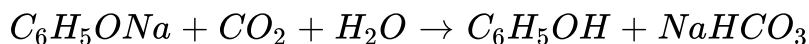
C. trichloromethyl anion  $( \bar{C}Cl_3 )$

D. formyl cation  $\left( \overset{\oplus}{C}HO \right)$

**Answer: B**

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5. The reaction,



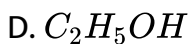
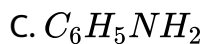
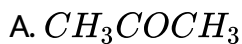
suggests that :

- A. Phenol is a stronger acid than carbonic acid
- B. Carbonic acid is stronger acid than phenol
- C. Water is stronger acid than phenol
- D. None of the above

**Answer: B**

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6. Which of the following compounds when dissolved in water, gives a solution with pH less than seven ?



Answer: B

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7. Increasing  $pK_a$  values of o-, m- and p- cresols is

A.  $o < p < m$

B.  $m < p < o$

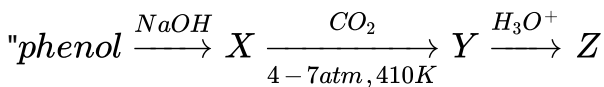
C.  $m < o < p$

D.  $p < o < m$

Answer: B

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8. Identify the product Z in the following sequence of reactions





- A. Aspirin
- B. Salicylaldehyde
- C. Benzoic acid
- D. Salicylic acid

**Answer: D**

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9.  $Br_2$  dissolved in  $CS_2$  reacts with phenol at 273 K to give ..... as the major product

- A. o-Bromophenol
- B. m-Bromophenol
- C. p-Bromophenol
- D. 2,4,6-Tribromophenol

Answer: C

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Level II H W

1. One mole of aniline warmed with the mixture of  $NaNO_2 + HCl$ .

If we assume 100% yield, volume of  $N_2$  gas liberated at S.T.P is

A.  $11.2L$

B.  $22.4L$

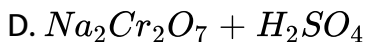
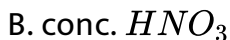
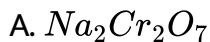
C.  $33.6L$

D.  $44.8L$

Answer: B

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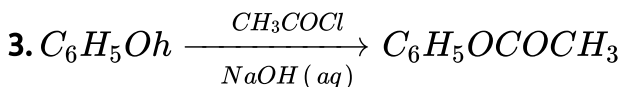
2. Phenol reacts with which one of the following reagents gives a conjugate diketone will be formed ?



Answer: D



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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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4. Which of the following is most acidic?

A. Phenol

B.  $CH_3CH_2OH$

C. Picric acid

D. p-Nitrophenol

**Answer: C**

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5. The descending order of  $k_b$  values of the following compounds is



A.  $d > b > c > a$

B.  $a > c > b > d$

C.  $b > d > c > a$

D.  $a > c > d > b$

**Answer: B**



**View Text Solution**

6. When benzene sulphonic acid and P-nitrophenol are treated with

$NaHCO_3$ , the gases released, respectively, are :

A.  $SO_2, NO_2$

B.  $SO_2, NO$

C.  $SO_2$ ,  $CO_2$

D.  $CO_2$ ,  $CO_2$

**Answer: D**

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7. 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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8. From amongst the following alcohols, the one that would react fastest with conc. HCl and anhydrous  $ZnCl_2$  is

A. 1-Butanol

B. 2-Butanol

C. 2-Methylpropan-2-ol

D. 2-Methylpropanol-1

**Answer: C**

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Level V

1. 

A. 

B. 

C. 

D. 

**Answer: B**



**View Text Solution**

2. 

A. 

B. 

C. 

D. 

**Answer: A**





[View Text Solution](#)

3. 

A. 

B. 

C. 

D. 

**Answer: B**



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4. 

Which of the following statements is correct ?

A. major product is formed at a

B. major product is formed at b

C. major product is formed at c.

D. Reaction does not take place.

**Answer: C**



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5. 

A. 

B. 

C. 

D. 

**Answer: B**



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6. 

A. 

B. 

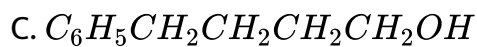
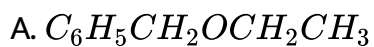
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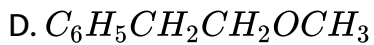
D. 

**Answer: B**

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7. 





Answer: C

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8. 

A. 

B. 

C. 

D. 

Answer: A

 View Text Solution

9. 

A. 

B. 

C. 

D. 

**Answer: B**



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10. A  $C_6H_{12}O$  compound does not react with  $Br_2$  in  $CCl_4$ , produces a flammable gas on treatment with  $LiAlH_4$ , and reacts with  $H_2CrO_4$  changing the color from orange to green. Which of the following compounds best agrees with these facts?

A. 1-methylcyclopentanol

B. methoxycyclopentane

C. 2-cyclopropyl-2-propanol

D. 2-cyclobutylethanol

**Answer: D**



**View Text Solution**

11. 

Sum of x and y is

A. 2

B. 3

C. 4

D. 5

**Answer: B**

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12. 

Products formed are

A. 

B. 

C. 

D. 

**Answer: D**

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13.  ,  $\xrightarrow[\Delta]{AlCl_3}$  Product formed as?

A. 

B. 

C. 

D. 

**Answer: A**

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14. 

A. 

B. 

C. 

D. 

**Answer: A**

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15. Which of the following statements is incorrect?

- A. 2, 4,6 trimethy phenol is less acidic than 2, 4,6 trinitrophenol.
- B. 2, 6 dichlorophenol is stronger than 3, 5 dichloro phenol
- C. para nitro phenol is more acidic than meta nitro phenol.
- D. para chloro phenol is less acidic the para flouro phenol.

Answer: D

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16. 

A. 

B. 

C. 

D. 

**Answer: A**

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17. 

A. 


B. 

C. 

D. 

**Answer: D**

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18. ,  $\xrightarrow[\text{Alc. KOH} / \Delta]{\text{CHCl}_3\text{BrI}}$  Appropriate product among the following.

A. 

B. 

C. 

D. 

**Answer: A**



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19. A  $C_7H_{12}O_2$  optically active alcohol is oxidised by Jones reagent to an optically inactive ketone. The molecule is.

A. 

B. 

C. 

D. 

**Answer: C**



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20. 

A. 

B. 

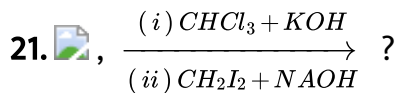
C. 

D. 

**Answer: B**



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A. 

B. 

C. 

D. 

**Answer: C**

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22. A chiral  $C_5H_{10}O$  ether reacts with hot HI to give a  $C_5H_{10}I_2$  product. Treatment of this with hot KOH in ethanol produces 1,3-pentadiene. What is the structure of the original ether?

A. 

B. 

C. 

D. 

**Answer: B**

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23. A chiral  $C_7H_{16}O_2$  diol is oxidized by PCC in  $CH_2Cl_2$  to an achiral  $C_7H_{12}O_2$  compound. Which of the following would satisfy these facts ?

A. 

B. 

C. 

D. 

**Answer: B**



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24. A chiral  $C_5H_{10}O$  alcohol is reduced by catalytic hydrogenation to an achiral  $C_5H_{12}O$  alcohol. The original alcohol is oxidized by activated  $MnO_2$  to an achiral carbonyl compound ( $C_5H_8O$ ) Which of the following might be the chiral alcohol ?

- A. 1-penten-3-ol
- B. 4-penten-2-ol
- C. 3-methyl-2-buten-1-ol
- D. 2-methyl-2-buten-1-ol

**Answer: A**



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25. Which of the following ethers is unlikely to be cleaved by not conc. HBr ?

A. 

B. 

C. 

D. 

**Answer: D**

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26. Phenol when condensed with phthalic anhydride in the presence of conc.  $H_2SO_4$ , yields ,

A. Methyl orange

B. Phenolphthaline

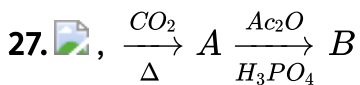


C. Aspirin

D. Methyl Blue

**Answer: B**

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Identify B in the sequence

A. Methyl orange

B. Phenolphthaline

C. Aspirin

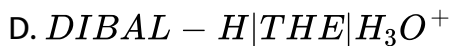
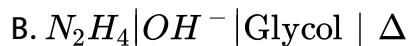
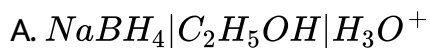
D. Methyl Blue

**Answer: C**

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28. 

In the above transformation 'X' could be



Answer: C

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29. 

The above transformation can be done by using

A. Baeyer's Reagent

B. Tollen's reagent

C. Pyridinium dichloromate in  $CH_2Cl_2$

D. Jone's reagent

**Answer: C**

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30. An unknown organic compound (A) having M.F.  $C_3H_8O_3$  reacts with an excess of acetyl chloride gives an acetyl derivative with M.Wt.

218. Then howmany hydroxyl groups are in 'A'.

A. 2

B. 3

C. 4

D. 5

**Answer: B**

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## Multiple Correct Answer Type Questions

1. (HBO) Hydroboration and Oxymercuration-Demercuration, and acid catalysed hydration will not give the same product in

A. 

B. 

C. 

D. 

**Answer: A,B,D**

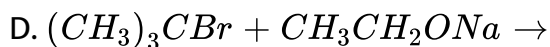
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2. Which method is useful synthesis of ether

A. 

B. 

C. 



Answer: A,B,C



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3. Which of the following alcohols do not give white turbidity on treatment  $HCl / ZnCl_2$ ?

A. 

B. 

C. 

D. 

**Answer: A,C**

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4. Which of the following gives positive victormeyer test yellow precipitate with  $NaOH / I_2$

A. 

B. 

C. 

D. 

**Answer: A,C**

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5. Which of the following is correctly matched

A. 

B. 

C. 

D. 

**Answer: A,B,C**

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6. In which of the following ring expansion/ring contraction takes place when protic acid is added to the compound ?

A. 

B. 

C. 

D. 

**Answer: A,B,C,D**

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7. Which of the following undergo reimer tiemann reaction ?

A. 

B. 

C. 

D. 

**Answer: A,B**

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8. Which of the following statements (are) correct ?

A. Nitration of phenol is faster than phenyl acetate.

B. Reaction of phenoxide ion is faster than para cyano phenoxide  
With  $PhCH_2Cl$ .

C. Base catalysed hydrolysis of p-nitrophenyl acetate is faster  
than phenyl acetate.

D. Acid catalysed esterification of phenol is faster than p-nitro  
phenol.

Answer: A,B,C



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9. Which of the following compounds would give alcohol on  
reduction by  $LiAlH_4 / Et_2 \frac{\emptyset}{H_3} O^+$

A. 

B. 

C. 

D. 

**Answer: A,B,C,D**



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**10.** Select the correct statements from the following

A. A-methoxy phenol is more reactive than P-nitro phenol towards Reimer-Tiemann reaction.

B. Phenol gives ortho isomer predominantly than para isomer in Reimer-Tiemann reaction.

C. The electrophile involved in R.T.R is  $Cl^+$ .

D. Para cresol is less reactive than phenol in R.T.R.

**Answer: A,B**

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**11.** Which of the following species would you expect to obtain when p-cresol is subjected to Reimer-Tiemann reaction.

A. 

B. 

C. 

D. 

**Answer: B,C**

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12. Which of the statements is true regarding below reaction



- A. The number of intermediates formed are 3.
- B. Configuration at epoxy carbon does not change.
- C. Two stereogenic centres are formed in the equal in the final product.
- D. Reaction is 5th order.

**Answer: A::C**

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13. Which of the following statements is correct regarding the following reaction ?



A. 

B. 

C. 

D. 

**Answer: B::C**

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**14.** Consider para sulphony benzene diazonium reacting with para amino phenol



which of the following statements are correct :

A. A coupling is an electrophilic substitution.

B. under basic conditions diazonium attacks at alpha position.

C. under weakly acidic condition diazonium attacks at b position.

D. If sulphonyl group is replaced with methyl group coupling takes place

**Answer: A::B::C**

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15. One compound of the pair will react rapidly than the other. Identify correct order

A. 

B. 

C. 

D. 

**Answer: A**

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16. , Possible products formed are ?

A. 

B. 

C. 

D. 

**Answer: B::C**



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17. Which of the following esterification reactions are unimolecular ?

A. 

B. 

C. 

D. 

**Answer: A::B::C**

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18. 

Products formed in step 1 and 2 are

A. 

B. 

C. 

D. 

**Answer: A::B::C**

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19. ,  $\xrightarrow[(2) H_2O]{(1) NaOH}$  Products formed in two steps are

A. 

B. 

C. 

D. 

Answer: A::B::C::D



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## Comprehension Type Questions

1. 1-chloromethyl-4-methyl-1, 3-cyclopentadiene is solvolysed in aqueous acetone based on the above solve the following questions.

Which of the intermediates is not possible?

A. 

B. 

C. 

D. 

**Answer: D**

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2. 1-chloromethyl-4-methyl-1, 3-cyclopentadiene is solvolysed in aqueous acetone based on the above solve the following questions.

which of the following product is not formed?

A. 

B. 

C. 

D. 

**Answer: D**

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3. 1-chloromethyl-4-methyl-1, 3-cyclopentadiene is solvolysed in aqueous acetone based on the above solve the following questions.

The number of enantiomeric pair formed during the reaction is

A. 1

B. 2

C. 3

D. 4

**Answer: B**

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4. The alkali metals (Li, Na, K etc.) and the alkaline earth metals (Mg and Ca. together with Zn) are good reducing agents, the former being stronger than the latter. Sodium, for example, reduced elemental chlorine to chloride anion (sodium is oxidized to its cation), as do the other metals under varying conditions. In a similar fashion these same metals reduce the carbon-halogen si converted to halide anion, and the carbon bonds to the metal (the carbon has carbanionic character). Halide reactivity increases in the order:  $Cl < Br < I$ . These reactions are obviously substitution reactions, but they cannot be classified as nucleophilic substitution, as were the earlier reactions of alkyl halides. Because the functional carbon atoms has been reduced, the polarity of the resulting functional group is inverted (an originally electrophilic carbon become nycleophilic). Reaction carbon in these compounds. The nucleophilic carbon of these reagents also bonds readily with electrophiles such as iodine and carbon dioxide. The polarity of the carbon-oxygen double bonds of  $CO_2$  makes the carbon atom electrophilic, shown

by the formula in the shaded box, so the nucleophilic carbon of the Frignard reagent bonds of this site.

What is the product (B) of the following reaction sequence ?



Hydrolysis of B gives

A. 

B. 

C. 

D. 

**Answer: A**



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5. The alkali metals (Li, Na, K etc.) and the alkaline earth metals (Mg and Ca. together with Zn) are good reducing agents, the former being stronger than the latter. Sodium, for example, reduced

elemental chlorine to chloride anion (sodium is oxidized to its cation), as do the other metals under varying conditions. In a similar fashion these same metals reduce the carbon-halogen si converted to halide anion, and the carbon bonds to the metal (the carbon has carbanionic character). Halide reactivity increases in the order:  $Cl < Br < I$ . These reactions are obviously substitution reactions, but they cannot be classified as nucleophilic substitution, as were the earlier reactions of alkyl halides. Because the functional carbon atoms has been reduced, the polarity of the resulting functional group is inverted (an originally electrophilic carbon become nucleophilic). Reaction carbon in these compounds. The nucleophilic carbon of these reagents also bonds readily with electrophiles such as iodine and carbon dioxide. The polarity of the carbon-oxygen double bonds of  $CO_2$  makes the carbon atom electrophilic, shown by the formula in the shaded box, so the nucleophilic carbon of the Frignard reagent bonds of this site.

 Itbr. Product formed is

A. 

B. 

C. 

D. 

**Answer: C**



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6. Ring-opening reactions of epoxides can proceed by either  $S_N2$  or  $S_N1$  mechanisms, depending on the nature of the epoxide and on the reaction conditions. If the epoxide is asymmetric, the structure of the product will vary according to which mechanism dominates. When a symmetric epoxide undergoes solvolysis in basic methanol, ring-opening occurs by an  $S_N2$  mechanism, and the less substituted carbon is the site of nucleophilic attack. Conversely, when solvolysis occurs in acidic methanol, the reaction occurs by a

mechanisms with substantial  $S_N1$  character, and the more substituted carbon is the site of attack. These are both good examples of regioselective reactions, examine the basic,  $S_N2$  case first. The leaving group is an alkoxide anion, because there is not acid available to protonate the oxygen prior to ring opening. An alkoxide is a poor leaving group, and thus the ring is unlikely to open without a 'push' from the nucleophile. Like in other  $S_N2$  reactions, nucleophilic attack takes place from the backside, resulting in inversion at the electrophilic carbon. The best way to depict the acid-catalyzed epoxide ring-opening reaction is as a hybrid, or cross, between an  $S_N2$  and  $S_N1$  mechanism. First, the oxygen is protonated, creating a good leaving group. Then the carbon-oxygen bond begins to break and positive charge begins to build up on the more substituted carbon. answer the following based on the above :



A. 



B. 

C. 

D. 

**Answer: A**

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7. Ring-opening reactions of epoxides can proceed by either  $S_N2$  or  $S_N1$  mechanisms, depending on the nature of the epoxide and on the reaction conditions. If the epoxide is asymmetric, the structure of the product will vary according to which mechanism dominates. When an symmetric epoxide undergoes solvolysis in basic methanol, ring-opening occurs by an  $S_N2$  mechanism, and the less substituted carbon is the site of nucleophilic attack. Conversely, when solvolysis occurs in acidic methanol, the reaction occurs by a mechanism with substantial  $S_N1$  character, and the more

substituted carbon is the site of attack. These are both good examples of regioselective reactions, examine the basic,  $S_N2$  case first. The leaving group is an alkoxide anion, because there is not acid available to protonate the oxygen prior to ring opening. An alkoxide is a poor leaving group, and thus the ring is unlikely to open without a 'push' from the nucleophile. Like in other  $S_N2$  reactions, nucleophilic attack takes place from the backside, resulting in inversion of the electrophilic carbon. The best way to depict the acid-catalyzed epoxide ring-opening reaction is as a hybrid, or cross, between an  $S_N2$  and  $S_N1$  mechanism. First, the oxygen is protonated, creating a good leaving group. Then the carbon-oxygen bond begins to break and positive charge begins to build up on the more substituted carbon. answer the following based on the above :



The product formed after nucleophilic attack and mild hydrolysis is

A. 

B. 

C. 

D. 

**Answer: A**

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8. 

Where E = electrophile, L.G. = Leaving Group based on the above answer the following

Which of the following combination give aryl alkyl ethers on heating

A. 

B. 

C. 

D. 

**Answer: A**

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9. 

Where E = electrophile, L.G. = Leaving Group based on the above answer the following

Which of the following does not give phenolic type compound on acidic hydrolysis.

A. 

B. 

C. 

D. 

**Answer: A**

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10. 

Where E = electrophile, L.G. = Leaving Group based on the above answer the following

Which of the following products cannot be formed without blocking reagent action on phenol ?

A. 

B. 

C. 

D. 

**Answer: C**



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11. Compound (A),  $C_{10}H_{12}O$  gives off hydrogen on treatment with sodium metal and decolourises  $Br_2$  in  $CCl_4$  to give (B),  $C_{10}H_{12}OBr$ . (A) on treatment with  $I_2$  in  $NaOH$  gives iodoform and an acid (C) after acidification. Give the structure of (A) to (C) and also of all geometrical and optical isomers of (A).

Answer the following based on the above.

Compound A is

A. 

B. 

C. 

D. 

**Answer: A**



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12. Compound (A),  $C_{10}H_{12}O$  gives off hydrogen on treatment with sodium metal and decolourises  $Br_2$  in  $CCl_4$  to give (B),  $C_{10}H_{12}OBr$ . (A) on treatment with  $I_2$  in  $NaOH$  gives iodoform and an acid (C) after acidification. Give the structure of (A) to (C) and also of all geometrical and optical isomers of (A).

Answer the following based on the above.

Compound B is

A. 

B. 

C. 

D. 

**Answer: A**



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13. Compound (A),  $C_{10}H_{12}O$  gives off hydrogen on treatment with sodium metal and decolourises  $Br_2$  in  $CCl_4$  to give (B),  $C_{10}H_{12}OBr$ . (A) on treatment with  $I_2$  in  $NaOH$  gives iodoform and an acid (C) after acidification. Give the structure of (A) to (C) and also of all geometrical and optical isomers of (A).

Answer the following based on the above.

Which of the following statements regarding A are incorrect ?

- A. In the presence of acidic medium A forms a 5 membered ring.
- B. A has 2 geometrical isomers.
- C. A has 4 pairs of diastereomers
- D. A has 2 chiral centres

**Answer: D**



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## Matrix Matching Type Questions

1. 



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2. 



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3. 



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4. 




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5. 

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## Integer Type Questions

1.  The number of pi bonds in the final product is

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2. The number of moles of Periodic acid used in oxidation of




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3. During the reaction of Benzene diazonium chloride with para-cresol the substitution occurs at \_\_\_\_ position of p-cresol.

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4.  on heating forms \_\_\_\_ membered ring transition state.

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5.  ,  $\xrightarrow{H^+}$  The number of dehydration products are \_\_\_\_

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6. The number of intermediates + transition states possible during the following reaction is \_\_\_\_\_



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7. The number of moles of dichromate used in oxidation of  $RCH_2OH$  to  $RCO_2H$  is \_\_\_\_\_

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8. The number of moles of Manganate ion used in oxidation of cyclopentene to cyclopent (1.2) diol is \_\_\_\_

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9. The number of moles of  $HIO_3$  formed during periodic oxidation of cyclohexa (1,2,3) triol \_\_\_

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10. The number of compounds that undergo ring expansion on reaction with  $H_2SO_4$  is



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11. The number of compounds in which isotopic oxygen is retained by olefinic bond on reaction with hydroiodic acid is \_\_\_



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12.  Acidification results in cleavage of bond at \_\_ carbon.

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13. 

The number of oxygens that undergo tautomerisation acid reaction.

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14. On heating in following compound an allyl group will migrate to which position.



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15. 

products. How many products could expect to at time in the above

reaction.

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16. How many of the following compounds are more acedic than phenol.



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17. Howmany of the following compounds are dissolve in aqueous solution of  $NaOH$

(i) Phenol (ii) Cyclohexanol (iii) 2, 4-di nitro phenol (iv) Benzoic (v) Benzene sulphonic acid (vi) P-cresol (vii) P-methoxy phenol (viii)  $\alpha$  – naphthol (ix) N-methyl aniline

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18. How many of the following compounds are dissolve in aqueous solution of  $NaOH$

(1) Phenol (2) p-cresol (3) Benzoic acid (4) Benzene sulphonic acid (5) Aniline (6) P-toluedine (7) Picric acid (8) Squaric acid

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19. How many of the following compounds would give turbidity with lucas reagent without heating

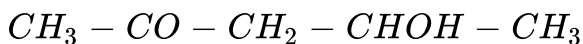
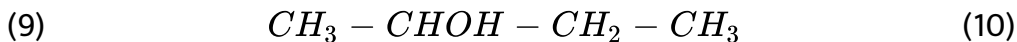
(1) Benzyl alcohol (2) Allyl alcohol (3) Cyclohexanol  
(4) 20,ethyl -2-proponol (5) Neopentanol (6) Phenol  
(7) O-cresol (8) Cylopropyl methyl carbionol (9) P-Nitro benzyl alcohol

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20. How many of the following compounds would give Iodoform test

(1)  $sCH_3 - CO - CH_2 - CO - OCH_3$  (2)





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## Statement Type Questions

1. Statement-1 :  rate of dehydration.

Statement-2: Rate of dehydration is directly proportional to stability of carbocation

A. Statement -1 is True, Statement-2 is True, Statement-2 is a correct explanation for Statement-1

- B. Statement-1 is true, Statement-2 is true, Statement-2 is not a correct explanation for statement-1
- C. Statement-1 is true, Statement-2 is false
- D. Statement-1 is false, Statement-2 is true

**Answer: D**



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2. Statement-1 : 

Statement-2 : reaction proceeds by electrophilic aromatic substitution.

- A. Statement -1 is True, Statement-2 is True, Statement-2 is a correct explanation for Statement-2
- B. Statement-1 is true, Statement-2 is true, Statement-2 is not a correct explanation for statement-2

C. Statement-1 is true, Statement-2 is false

D. Statement-1 is false, Statement-2 is true

**Answer: C**



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3. Statement-1 : 

Statement-2 : Reaction proceeds via inversion configuration in  $SN_2$

A. Statement -1 is True, Statement-2 is True, Statement-2 is a correct explanation for Statement-3

B. Statement-1 is true, Statement-2 is true, Statement-2 is not a correct explanation for statement-3

C. Statement-1 is true, Statement-2 is false

D. Statement-1 is false, Statement-2 is true

**Answer: D**

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4. Statement-1 : 


Statement-2 : Hydrolysis of, , involves unimolecular mechanism.

- A. Statement -1 is True, Statement-2 is True, Statement-2 is a correct explanation for Statement-4
- B. Statement-1 is true, Statement-2 is true, Statement-2 is not a correct explanation for statement-4
- C. Statement-1 is true, Statement-2 is false
- D. Statement-1 is false, Statement-2 is true

**Answer: D**

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5. Statement -1 : 

Statement-2 : Conjugate base of ,  is more stable

A. Statement -1 is True, Statement-2 is True, Statement-2 is a correct explanation for Statement-5

B. Statement-1 is true, Statement-2 is true, Statement-2 is not a correct explanation for statement-5

C. Statement-1 is true, Statement-2 is false

D. Statement-1 is false, Statement-2 is true

**Answer: A**

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6. Statement-1 :  undergoes inversion in DMSO with hydroxide ion

Statement-2 : The reaction proceeds by  $SN_2$  mechanism.

- A. Statement -1 is True, Statement-2 is True, Statement-2 is a correct explanation for Statement-6
- B. Statement-1 is true, Statement-2 is true, Statement-2 is not a correct explanation for statement-6
- C. Statement-1 is true, Statement-2 is false
- D. Statement-1 is false, Statement-2 is true

**Answer: A**

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7. Statement-1: In protic solvents phenoxide ion is alkylated primarily at C-alkylation whereas in polar aprotic solvents O-alkylation with alkyl halide.

Statement-2 : C-alkylation products are more stable than O-alkylation products.

- A. Statement -1 is True, Statement-2 is True, Statement-2 is a correct explanation for Statement-7
- B. Statement-1 is true, Statement-2 is true, Statement-2 is not a correct explanation for statement-7
- C. Statement-1 is true, Statement-2 is false
- D. Statement-1 is false, Statement-2 is true

**Answer: B**

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8. Statement-I: Optically active 2-iodobutane on treatment with  $NaI$  in acetone undergoes racemisation.

Because Statement-II: Repeated Walden inversions on the reactant and its product eventually gives a racemic mixture.

- A. Statement -1 is True, Statement-2 is True, Statement-2 is a correct explanation for Statement-8
- B. Statement-1 is true, Statement-2 is true, Statement-2 is not a correct explanation for statement-8
- C. Statement-1 is true, Statement-2 is false
- D. Statement-1 is false, Statement-2 is true

**Answer: A**

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9. Assertion : Phenol undergoes Kolbe's reaction whereas ethanol does not .

Reason : Phenoxide ion is more basic than ethoxide ion .

- A. Statement -1 is True, Statement-2 is True, Statement-2 is a correct explanation for Statement-9



- B. Statement-1 is true, Statement-2 is true, Statement-2 is not a correct explanation for statement-9
- C. Statement-1 is true, Statement-2 is false
- D. Statement-1 is false, Statement-2 is true

**Answer: C**

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**10.** Statement-1 : Para chloro phenol is more acidic than para flouro phenol.

Statement-2 : negative inductive Effect if flourine is greater than in chlorine

- A. Statement -1 is True, Statement-2 is True, Statement-2 is a correct explanation for Statement-1

- B. Statement-1 is true, Statement-2 is true, Statement-2 is not a correct explanation for statement-1
- C. Statement-1 is true, Statement-2 is false
- D. Statement-1 is false, Statement-2 is true

**Answer: B**

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## Level Vi Single Answer Questions

1. Which of the following gives the product below on heating with anhydrous  $AlCl_3 / CS_2$



A.

B.

C. 

D. 

**Answer: B**

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2. 

Which of the statements regarding is incorrect.

A. If both alkyl groups are aromatic then products are formed by

$SN^1$  mechanism

B.  $SN2$  cleavage occurs at a faster rate with HI and than HCl

C. If both alkyl groups are primary in polar protic solvent

undergoes  $SN^2$  mechanism.

D. R=primary,  $R^1$  = tertiary, cleavage takes places by  $S_N1$ .

**Answer: A**

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3. Epoxy resins use a polymer made from bisphenol A and epichlorohydrin in basic medium. Which of the Statement are incorrect.



- A. Reaction proceeds via  $SN_2$
- B. The nucleophile attacks from hindered side.
- C. Chirality of carbon in epichlorohydrin is retained
- D. in each step two  $SN_2$  reactions take place.

**Answer: B**

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4. 

Identify A

A. 

B. 

C. 

D. 

**Answer: B**

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5. Predict the product for the following reaction



A. 

B. 

C. 

D. 

**Answer: D**

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6. 

A. 

B. 

C. 

D. 

**Answer: A**

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7. 

Product formed is

A. 

B. 

C. 

D. 

**Answer: C**



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8. , product formed is

A. 

B. 

C. 

D. 

**Answer: A**

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9. The highest rate of hydrolysis of the following compounds is

A. 

B. 

C. 

D. 

**Answer: D**

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10. Which of the following transformations are correct in acidic medium ?

A. 

B. 

C. 

D. 

**Answer: D**

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11. , Which of the following graphs is suitable

A. 

B. 

C. 

D. 

**Answer: A**

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12. Which of the following would give tertiary alcohol when it reacts with an excess of  $CH_3MgBr$  followed by hydrolysis

A. 

B. 

C. 

D. All of these

**Answer: D**

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13. Which of the following compound would give secondary alcohol when reacts with an excess of phenyl magnesium bromide followed by hydrolysis.

A. 

B. 

C. 

D.  $C_6H_5 - CH_3CN$

**Answer: C**



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14. Glycerol on treatment with excess HI gives

A. Allyliodide

B. 1,2,3,-triiodopropane

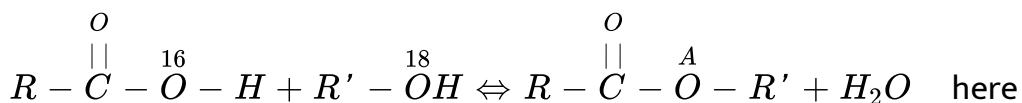
C. Isopropyl iodide

D. Acrolein

**Answer: C**

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15. Fischer esterification is represented as follows



( $R = CH_3$ ,  $R' = C_2H_5$ ) in the above reaction  $A/2$  is equal to

A. 8

B. 9

C. 6

D. 12

**Answer: B**



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16. 

The product P

A. is the retained form of (X)

B. is the inverted form of (X)

C. has no chiral carbon

D. is a meso compound

**Answer: B**



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17. The end product of the following reaction is



A. 

B. 

C. 

D. 

**Answer: A**



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**18.** The major products of following reactions sequence are :



A. 

B. 

C. 

D. 

**Answer: D**

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**19. Identify the possible structure of X and Y**



A. 

B. 

C. 

D. 

**Answer: D**

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20. Observe the following reactions



The reagent  $R_1$  and  $R_2$  can be respectively.

A.  $\text{NaI}/\text{Acetone}$ , aq.  $\text{AgNO}_3$

B. aqueous  $\text{KOH}$ ,  $\text{HI}$

C. aq.  $\text{AgNO}_3$ ,  $\text{NaI}/\text{Acetone}$

D.  $\text{HI}$ , aqueous  $\text{KOH}$

**Answer: D**



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21. , the major product is :

A. 

B.  $\text{C}_2\text{H}_5\text{O} - \text{CH}_5$



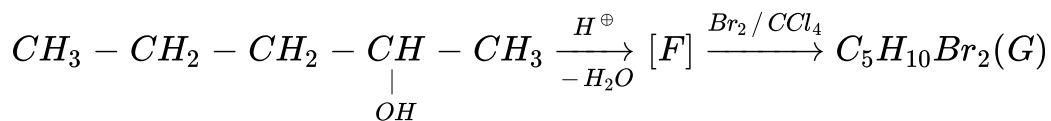
C. 

D. 

**Answer: A**

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22.



How many structures of (G) is possible ? (including all stereoisomers)

A. 2


B. 6

C. 3

D. 5

**Answer: B**

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23. , The products above reaction will be :

A. 

B. 

C. 

D. 

**Answer: A**

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24. 

The major product of the above reaction is

A. 

B. 


C. 

D. 

**Answer: B**



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25. , P and Q are respectively:

A. 

B. 

C. 

D. 

**Answer: B**



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26. Predict major product of the following reaction



A.

B.

C.

D.

Answer: C

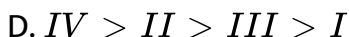
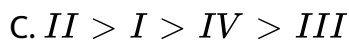
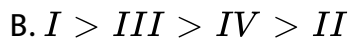
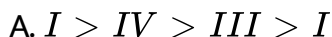


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Comprehension 1

1. Dialkyl ethers react with very few reagents other acids. The only reactive sites that molecules of a dialkyl ether has to another reactive substance are the C H bonds of the alkyl groups and the O group of the ether linkage. Heating dialkyl ethers with very strong acids. ( $HI$ ,  $HBr$ , and  $H_2SO_4$ ) causes them to undergo reactions in which the carbon-oxygen bond breaks. When mixed ethers are used, the alcohol and alkyl iodide that form depend on the nature of the alkyl groups. Mechanism is by  $S_N^2$  reaction or  $S_N^1$ .

What is the correct order of reactivity towards conc. HI assuming  $S_N^2$  type cleavage?



Answer: B

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## Comprehension 2

1. Dialkyl ethers react with very few reagents other acids. The only reactive sites that molecules of a dialkyl ether has to another reactive substance are the C H bonds of the alkyl groups and the O group of the ether linkage. Heating dialkyl ethers with very strong acids. ( $HI$ ,  $HBr$ , and  $H_2SO_4$ ) causes them to undergo reactions in which the carbon-oxygen bond breaks. When mixed ethers are used, the alcohol and alkyl iodide that form depend on the nature of the alkyl groups. Mechanism is by  $S_N^2$  reaction or  $S_N^1$ .



B gives positive lucas test in a few seconds. Which is 'B'.

A. 

B. 

C. 

D. 

**Answer: B**

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### Comprehension 3

1. Dialkyl ethers react with very few reagents other acids. The only reactive sites that molecules of a dialkyl ether has to another reactive substance are the C H bonds of the alkyl groups and the O group of the ether linkage. Heating dialkyl ethers with very strong acids. ( $HI$ ,  $HBr$ , and  $H_2SO_4$ ) causes them to undergo reactions in which the carbon-oxygen bond breaks. When mixed ethers are used, the alcohol and alkyl iodide that form depend on the nature of

the alkyl groups. Mechanism is by  $S_N^2$  reaction or  $S_N^1$ .



A.

B.

C.

D.

**Answer: B**



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C 2

1. Diane diol worked for several days to prepare compounds shown. She labelled and slept. When she got up all labels had slipped. Her friend Glycol said that They could be easily distinguished by two



experiments. Which of the m were optically active.

How many products were obtained when each is treated with periodic acid. after experimentation Diane found the following results

1. Compounds A, E, F were optically active and B, C and D were optically inactive.
2. one product was obtained from the reaction of A, B and D with periodic acid.
3. Two products were obtained from the reaction of F with periodic acid.
4. C and E didnt react with periodic acid.

The structure of the compounds were



Answer the following based on the above observations,

Which structure could be suggested for A

A. II

B. III

C. IV

D. VI

**Answer: B**



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2. Diane diol worked for several days to prepare compounds shown. She labelled and slept. When she got up all labels had slipped. Her friend Glycol said that they could be easily distinguished by two experiments. Which of the m were optically active.

How many products were obtained when each is treated with periodic acid. after experimentation Diane found the following results

1. Compounds A, E, F were optically active and B, C and D were optically inactive.

2. one product was obtained from the reaction of A, B and D with

periodic acid.

3. Two products were obtained from the reaction of F with periodic acid.

4. C and E didn't react with periodic acid.

The structure of the compounds were



Answer the following based on the above observations,

Which structure could be compound F

A. II

B. III

C. IV

D. VI

**Answer: C**



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3. Diane diol worked for several days to prepare compounds shown. She labelled and slept. When she got up all labels had slipped. Her friend Glycol said that they could be easily distinguished by two experiments. Which of them were optically active.

How many products were obtained when each is treated with periodic acid. After experimentation Diane found the following results

1. Compounds A, E, F were optically active and B, C and D were optically inactive.
2. One product was obtained from the reaction of A, B and D with periodic acid.
3. Two products were obtained from the reaction of F with periodic acid.
4. C and E didn't react with periodic acid.

The structure of the compounds were



Answer the following based on the above observations,

On the basis of the observation which compounds cannot be distinguished ?

A. compounds C and F

B. compounds B and D

C. compounds B and C

D. compounds D and E

**Answer: B**



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C 3

1. 

Which of the statements regarding formation of compound A is correct ?

- A. Epoxide ring opening is by trimolecular reaction
- B. A has a chiral carbon
- C. a gives positive test with neutral ferric chloride
- D. A decolourises dichromate solution in acidic medium

**Answer: D**



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2. 

- A. C does not respond to lucas test.
- B. C is an enantiomeric mixture
- C. C is transformed to D via  $E_2$  reaction.
- D. C cannot be obtained by grignard reaction

**Answer: B**



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3. 

Which of the following is correct

A. 

B. 

C. 

D. 

**Answer: A**



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4. 

Answer the following based on the above

Compound A is ?

A. 

B. 

C. 

D. 

**Answer: A**



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5. 

Answer the following based on the above

Compound F is ?

A. 

B. 

C. 

D. 



**Answer: C**

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6. 

Answer the following based on the above

Compound C is

A. 

B. 

C. 

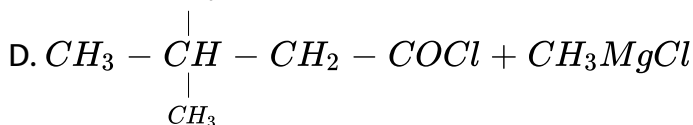
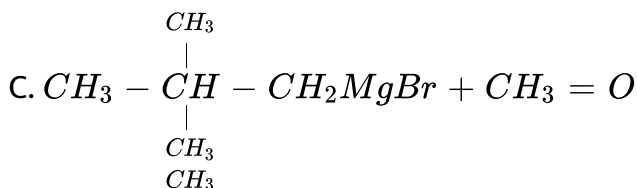
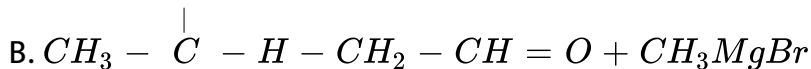
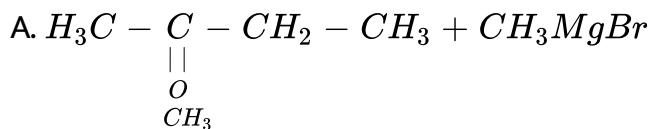
D. 

**Answer: C**

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7. P is an alcohol which on heating with  $Al_2O_3$  forms an alkene Q. Q on ozonolysis produces R and S. When the mixture of R and S is heated with NaOH, a redox reaction takes place and a mixture of an acid salt and alcohol is formed.

The alcohol (P) is obtained by :



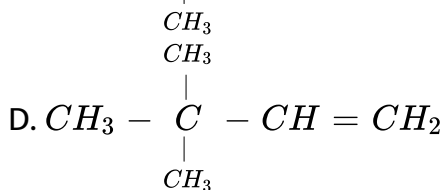
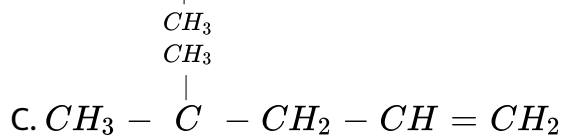
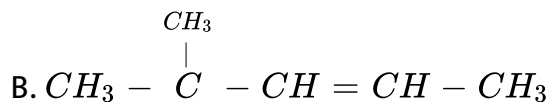
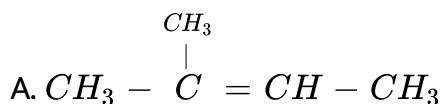
Answer: C



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8. P is an alcohol which on heating with  $Al_2O_3$  forms an alkene Q. Q on ozonolysis produces R and S. When the mixture of R and S is heated with NaOH, a redox reaction takes place and a mixture of an acid salt and alcohol is formed.

The compound (Q) is :



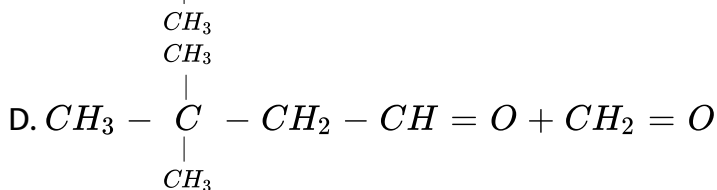
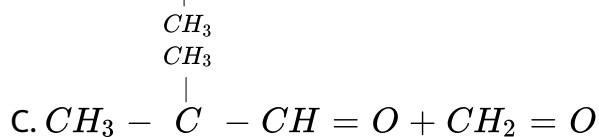
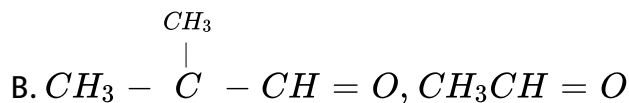
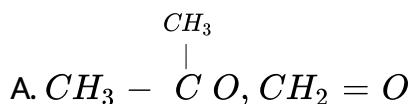
Answer: D



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9. P is an alcohol which on heating with  $Al_2O_3$  forms an alkene Q. Q on ozonolysis produces R and S. When the mixture of R and S is heated with NaOH, a redox reaction takes place and a mixture of an acid salt and alcohol is formed.

The compounds R and S are :



Answer: C



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1. Assertion : 

Reason : Aromaticity in three rings gives more stability than two rings

- A. Assertion is true, Reason is true, Reason is a correct explanation for Assertion
- B. Assertion is true, Reason is true, Reason is not a correct explanation for Assertion
- C. Assertion is true, Reason is false
- D. Assertion is false, Reason is true

**Answer: D**



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2. Assertion : Cyclohexa -2, 4-dieneone does not give positive test for ketones

Reason : Enol form of Cyclohexa-2, 4-dieneone is more stable and it undergoes tautomerism

A. Assertion is true, Reason is true, Reason is a correct explanation for Assertion

B. Assertion is true, Reason is true, Reason is not a correct explanation for Assertion

C. Assertion is true, Reason is false

D. Assertion is false, Reason is true

**Answer: A**



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3. Assertion : Phenol has lower boiling point than water

Reason : Water forms more number of hydrogen bonds

A. Assertion is true, Reason is true, Reason is a correct explanation for Assertion

B. Assertion is true, Reason is true, Reason is not a correct explanation for Assertion

C. Assertion is true, Reason is false

D. Assertion is false, Reason is true

**Answer: A**

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4. Assertion : o-Hydroxybenzaldehyde is less soluble in water than p-Hydroxybenzaldehyde.

Reason : Intra molecular hydrogen bonding in o-Hydrozbenzaldehyde Decrease extent of intermolecular hydrogen bonding with water

- A. Assertion is true, Reason is true, Reason is a correct explanation for Assertion
- B. Assertion is true, Reason is true, Reason is not a correct explanation for Assertion
- C. Assertion is true, Reason is false
- D. Assertion is false, Reason is true

**Answer: A**

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5. Assertion : Rate of Ether formation with methanol at c-1 more than at c-2 in





Reason : Carbocation At C1 more resonance stabilised than at C2

- A. Assertion is true, Reason is true, Reason is a correct explanation for Assertion
- B. Assertion is true, Reason is true, Reason is not a correct explanation for Assertion
- C. Assertion is true, Reason is false
- D. Assertion is false, Reason is true

**Answer: A**



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6. Assertion: 

Reason : Nitric acid, a strong oxidizing agent Phenol in to para benzoquinone

A. Assertion is true, Reason is true, Reason is a correct explanation for Assertion

B. Assertion is true, Reason is true, Reason is not a correct explanation for Assertion

C. Assertion is true, Reason is false

D. Assertion is false, Reason is true

**Answer: A**



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7. Assertion: Phosphorus tribromide is often preferred as a reagent for the transformation of an alcohol to the corresponding alkyl bromide

Reason: The net result is conversion of 3 mol of alcohol to alkyl bromide by 1 mol of phosphorus tribromide

A. Assertion is true, Reason is true, Reason is a correct explanation for Assertion

B. Assertion is true, Reason is true, Reason is not a correct explanation for Assertion

C. Assertion is true, Reason is false

D. Assertion is false, Reason is true

**Answer: A**

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8. Assertion: Intermolecular dehydration is not useful for the preparation of unsymmetrical ethers from primary alcohols

Reason: The reaction leads to a mixture of products.

A. Assertion is true, Reason is true, Reason is a correct explanation for Assertion

B. Assertion is true, Reason is true, Reason is not a correct explanation for Assertion

C. Assertion is true, Reason is false

D. Assertion is false, Reason is true

**Answer: A**



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9. Assertion: Bond angle at oxygen in ethers is greater than ideal tetrahedral angle

Reason: Steric hindrance between alkyl groups increase bond angle.

A. Assertion is true, Reason is true, Reason is a correct explanation for Assertion

B. Assertion is true, Reason is true, Reason is not a correct explanation for Assertion

C. Assertion is true, Reason is false

D. Assertion is false, Reason is true

**Answer: A**

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**10. Assertion:** 

Reason : Salicylate ion is a weaker base than para hydroxy benzoated due to stablization by intramolecular hydrogen bonding.

A. Assertion is true, Reason is true, Reason is a correct explanation for Assertion

B. Assertion is true, Reason is true, Reason is not a correct explanation for Assertion

C. Assertion is true, Reason is false

D. Assertion is false, Reason is true

**Answer: A**



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