



CHEMISTRY

NCERT - FULL MARKS CHEMISTRY(TAMIL)

HYDROXY DERIVATIVES

Problem

1. How is the following conversion effected ?

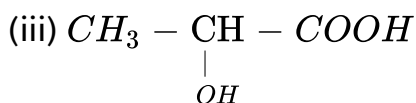
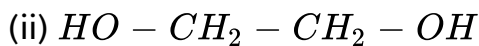
Ethyl alcohol \rightarrow Ethylene glycol



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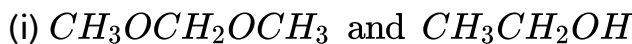
2. Give the IUPAC names of

(ui) $CH_3CH(OH)CH_2OH$

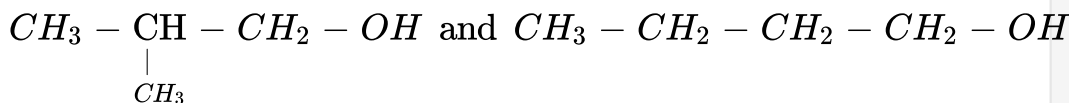


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3. Identify the isomerism in each of the following pairs.

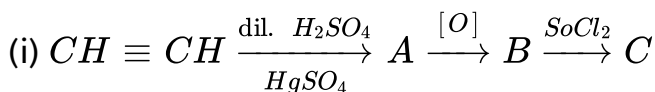


(iii)



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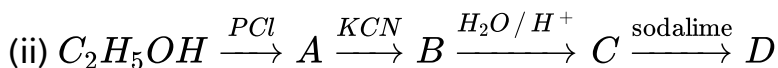
4. Complete the following equations by writing the missing A, B, C, D etc.





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5. Complete the following equations by writing the missing A, B, C, D etc.



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6. Why alcohols cannot be used as solvents with (a) Grignard reagent and (b) $LiAlH_4$.



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7. When tertiary butyl alcohol and 1-butanol are separately treated with a few drops of $KMnO_4$, in one case only the purple

colour disappears and a brown precipitate is formed. Which of the two alcohols gives the above reaction and what is that brown precipitate.

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8. Write the conversion of acetic acid to t-butyl alcohol.



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9. Compound (A) $C_6H_{12}O_2$ on reduction with $LiAlH_4$ yields two compounds B and C. The compound (B) on oxidation gave (D) which on treatment with aqueous alkali and subsequent heating furnished E. The latter on catalytic hydrogenation gave (C). Compound (D) on oxidation gave monobasic acid (molecular

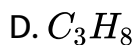
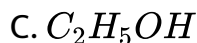
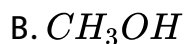
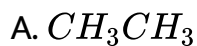
formula weight = 60). Deduce the structure of (A), (B), (C), (D) and (E).



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Self Evaluation A Choose The Correct Answer

1. Which has the highest boiling point?



Answer:



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2. Which is soluble in H_2O ?

- A. Phenol
- B. Alkanes
- C. Alcohols
- D. Alkenes

Answer:



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3. Order of reactivity of alcohol towards sodium metal is _____

- A. primary lt secondary gt tertiary
- B. primary gt secondary gt tertiary
- C. primary lt secondary lt tertiary

D. primary gt secondary lt tertiary

Answer:

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4. Ethyl alcohol cannot be used as a solvent for CH_3MgI because

- A. CH_3MgI reacts with alcohol giving methane
- B. The reaction between them is explosive in nature
- C. CH_3MgI is converted to C_2H_5MgI
- D. Alcohol is immiscible with CH_3MgI

Answer:

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5. When alcohols are converted to alkyl chlorides by thionyl chloride in presence of pyridine the intermediate formed is

- A. sulphonium ion
- B. chlorosulphonic acid
- C. alkyl chlorosulphite
- D. chlorosulphite

Answer:

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6. On oxidation of an alcohol gives an aldehyde having the same number of carbon atoms as that of alcohol. The alcohol is

- A. 1° alcohol

B. 2° alcohol

C. 3° alcohol

D. None

Answer:



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7. A compound that gives a positive iodoform test is

A. 1-pentanol

B. 2-pentanone

C. 3-pentanone

D. pentanal

Answer:

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8. The compound that reacts faster with Lucas reagent is _____

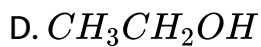
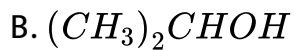
- A. butan-1-ol
- B. butan-2-ol
- C. 2-methyl propan-1-ol
- D. 2-methyl propan-2-ol

Answer:

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9. The reaction of Lucas reagent is fast with

- A. $(CH_3)_3COH$



Answer:



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10. When phenol is distilled with zinc dust it gives

A. benzaldehyde

B. benzoic acid

C. toluene

D. benzene

Answer:

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11. A compound that undergoes bromination easily is _____.

A. benzoic acid

B. benzene

C. phenol

D. toluene

Answer:

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12. Ethylene diamine is converted to ethylene glycol using

A. Na_2CO_3 solution

B. nitrous acid

C. NaHCO_3 (aqueous)

D. Baeyer's reagent

Answer:



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13. Ethylene glycol forms terylene with

A. adipic acid

B. phthalic anhydride

C. terephthalic acid

D. oxalic acid

Answer:

14. 1-Propanal and 2-propanol can be best distinguished by

- A. oxidation with $KMnO_4$ followed by reaction with Fehling solution
- B. oxidation with acidic dichromate followed by reaction with Fehling solution
- C. oxidation by heating with copper followed by reaction with Fehling solution
- D. oxidation with concentrated H_2SO_4 followed by reaction with Fehling solution

Answer:

15. Glycerol is used

- A. as a sweetening agent
- B. in the manufacture of good quality soap
- C. in the manufacture of nitro glycerin
- D. in all the above

Answer:



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16. The alcohol obtained by the hydrolysis of oils and fats is

_____.

- A. pentanol

B. propanol

C. glycerol

D. glycol

Answer:



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17. The number of secondary alcoholic group in glycerol is

A. 1

B. 2

C. 3

D. 0

Answer:

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18. The active component of dynamite is

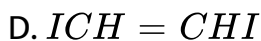
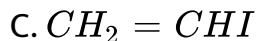
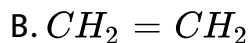
- A. Keiselghur
- B. Nitro glycerine
- C. Nitro benzene
- D. Trinitro toluene

Answer:

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19. The reaction of ethylene glycol with PI_3 gives

- A. ICH_2CH_2I



Answer:

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Self Evaluation C Answer Not Exceeding Sixty Words

1. How do primary, secondary and tertiary alcohols differ in terms of their oxidation ?

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2. How will you convert C_2H_5OH to $C_2H_5OC_2H_5$?



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3. How do primary, secondary and tertiary alcohols differ in terms of their dehydrogenation ?



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4. Explain 'esterification' reaction with an example.



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5. Why is glycol more viscous than ethanol ?



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6. Explain oxidation reactions of ethylene glycol.

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7. How is terylene prepared?

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8. Write the conversion of ethylene glycol to 1,4-dioxan ?

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9. How is glycerol obtained commercially ? State its two uses.

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10. How does glycerol react with (i) PCl_5 (ii) $KHSO_4$.

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11. Give a brief account of the following reaction. (i) esterification, (ii) Riemer Tiemann reaction.

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12. Explain Kolbe's reaction .

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13. Complete the following reaction giving names of products.



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14. Give a brief account of coupling reaction.

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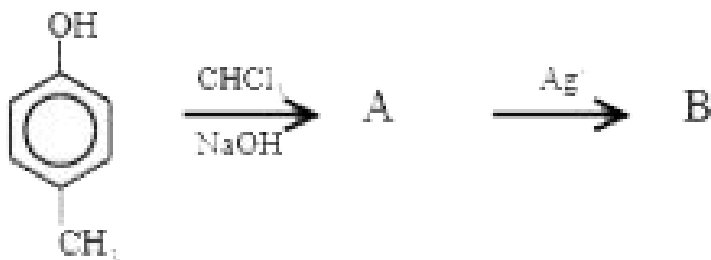
15. What happens when phenol is treated with diazonium chloride in presence of NaOH ?

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16. Explain Dow's process.

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17. Identify the product A and B.



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18. Identify C and D.



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19. Identify the product. A and B



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20. What are monohydric alcohols ? How are they classified ? Give any three methods of preparing ethyl alcohol.

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21. How will you distinguish the primary, secondary and tertiary alcohols by Victor Meyer's method ?

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22. Write equation for the following conversions.

(a) Ethyl alcohol \rightarrow ethylene

(b) Ethyl alcohol \rightarrow diethyl ether

(c) Ethyl alcohol \rightarrow ethyl amine

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23. Give short notes on the following :

(a) Kolbe's reaction

(b) Riemer Tiemann reaction

(c) Coupling reaction

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24. Explain the action of glycerol with

(i) oxalic acid at 383 K

(ii) oxalic acid at 530 K

(iii) concentrated HNO_3 and H_2SO_4 .

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25. What are the oxidation products of glycerol ?

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26. How is ethylene glycol prepared ? Give three methods.

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27. Starting from phenol how would you obtain the following compounds ?

(a) p-quinone, (b) picric acid and (c) Anisole.

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28. Give any four methods of preparing benzyl alcohol.

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Practice

1. Write the IUPAC names of (i) $CH_3OCH_2CH_2OH$ (ii) $CH_3OCH_2OCH_3$

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2. Why sodium metal cannot be used to dry alcohols but it can be used to dry ethers ?

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3. An organic compound has the formula C_4H_{10} . It reacts with metallic sodium liberating hydrogen.

(i) Write down the formula of three possible isomers of the compound which are similar and react with sodium.

(ii) What will be the product if any one of the isomers reacts with acetic acid ?

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Practice Questions

1. Give all the isomers of alcohols differing only in the position of $-OH$ with molecular formula $C_5H_{12}O$.

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2. How can ethyl alcohol be converted to isopropyl alcohol ?

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3. How can isobutyl alcohol be converted to t-butyl alcohol ?

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4. Predict the species produced during heterolytic fission of the following:

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1. How can the following conversion be effected ?

(i) glycerol \rightarrow acrolein

(ii) glycol \rightarrow dioxan

(iii) oxalic acid \rightarrow formic acid

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2. What is the action of

(i) anhydrous $ZnCl_2$ on glycol

(ii) Con.HI on glycerol

(iii) heat on a mixture of glycerol and oxalic acid (533 K)

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3. Convert the following :

(i) glycol \rightarrow Formic acid

(ii) glycerol \rightarrow TNG

(iii) glycerol \rightarrow Glycerol Triacetate

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Phenols

1. How can the following be obtained ?

(a) phenol from benzene diazonium chloride

(b) 2, 4, 6-tribromo phenol from phenol

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2. How can the following conversion be effected ?

(a) phenol to phenolphthalein

(b) phenol to benzene



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3. Write the reaction which takes place when

(i) Sodium phenoxide is treated with CO_2 and the product is acidified

(ii) Phenol is heated with chloroform and $NaOH$

(iii) Phenol is reacted with dilute HNO_3

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4. How are the following conversions done ?

(i) phenol to phenyl ethanoate

(ii) phenol to aniline and (iii) phenol to anisole

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5. (i) What happens when phenol is warmed with CCl_4 in presence of $NaOH$?

(ii) When phenol is treated with benzoyl chloride in presence of $NaOH$.

(iii) When phenol is treated with con. H_2SO_4 .



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