

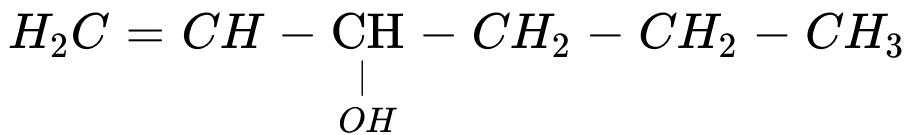
# CHEMISTRY

## BOOKS - OMEGA PUBLICATION

### ALCOHOLS, PHENOLS AND ETHERS

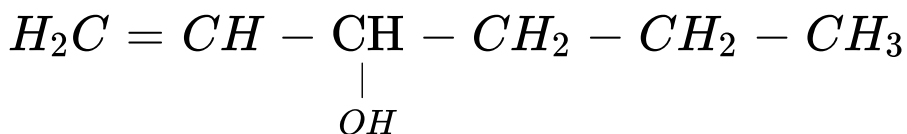
#### Questions

1. Give the IUPAC name of the following compound :



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2. Give the IUPAC name of the following compound :



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3. Give one example of tertiary alcohol and write IUPAC name of neopentyl alcohol.



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4. Draw the structure of isobutyl alcohol and give its IUPAC name.



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5. Give one example of secondary alcohol and secondary amine.



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6. Give one example of primary secondary and tertiary alcohol



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7. Draw structural formula of a primary alcohol having molecular formula  $C_4H_9OH$ .



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8. Draw structural formula of a tertiary alcohol having molecular formula  $C_4H_9OH$ .



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9. Draw the structural formula of a secondary alcohol having molecular formula  $C_4H_9OH$ .



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10. Write one chain isomer if 1- methoxy -2 -methylpropane .



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11. Write one functional isomer of methoxymethane .



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12. Write one metamer of ethoxyethane .



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13. How can alcohols be prepared from carbonyl compounds ?



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**14.** Give the preparation of alcohols from alkenes. Also discuss its mechanism.



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**15.** Explain the mechanism of acid catalysed hydration of an alkene to form corresponding alcohol.



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**16.** What is meant by hydroboration -oxidation reaction . Illustrate with an example .



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**17.** How will you obtain phenol from aniline ?



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**18.** You are given benzene conc .  
 $H_2SO_4$  and  $NaOH$  .Write equations for the  
preparation fo phenol using these reagents .



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**19.** Give the chemical reactions for the  
preparation of phenol from cumene.



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20. Phenyl methyl ether reacts with HI to give phenol and methyl iodide and not iodobenzene and methyl alcohol. Explain,



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21. How phenol is manufactured by Dow's process ?



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22. Write chemical reaction for the preparation of phenol from chlorobenzene .



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23. How can you distinguish primary, secondary and tertiary alcohols by Lucas Test?



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24. Write Luca's test.



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25. How will you get primary , secondary and tertiary alcohols from suitable carbonyl compound by action of Grignard reagent ?



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



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27. Benzyl chloride  $\rightarrow$  Benzyl alcohol

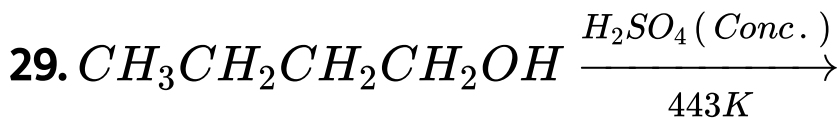


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28. Draw the structure of isobutyl alcohol and give its IUPAC name.

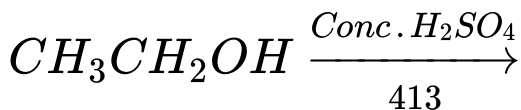


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30. Complete the following reaction:



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31. Convert the following : 1- Propanol into 2-Propanol.



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**32.** How will you convert Methanol into Ethanol ?



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**33.** Convert propanoic acid into propanol.



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**34.** How will you convert ethyl alcohol into methyl alcohol ?





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**35.** Why solubility of alcohols in water decreases with increase in molecular mass ?



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**36.** Why alcohols are weaker acids than water ?



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**37.** Why boiling point of phenols are higher than aromatic hydrocarbons of similar molecular mass ?



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**38.** Why alcohols are higher boiling point compounds than hydrocarbons ethers and aldehydes of corresponding molecular masses but have low boiling point than corresponding acids ?





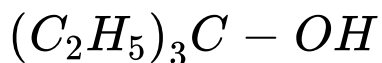
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39. Explain why propanol has higher boiling than of the hydrocarbon butane ?



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40. Give the IUPAC name of the following



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**41.** Why primary alcohols are more acidic than secondary alcohols?



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**42.** Why are alcohols comparatively more soluble in water than the corresponding hydrocarbons ?



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**43.** Phenols are less acidic than p-nitrophenol.

Explain.



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**44.** Give two reactions that show acidic nature of phenol Compare -acidity of phenol with that of ethanol .



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**45.** Why Phenols are more acidic than Alcohol ?



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**46.** Why is phenol stronger acid than the alcohols ? Explain in detail.



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**47.** Why Phenols are more acidic than Alcohol ?



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**48.** Give reasons for the following :

o-nitrophenol is more acidic than o-methoxyphenol.



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**49.** While separating a mixture of ortho and para-nitrophenols by steam distillation, name

the isomer which will be steam volatile ? Give reasons.



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50. Discuss the process of esterification.



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51. How will you convert ethanol to ethanoic acid ?



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**52.** Discuss the acidic dehydration of alcohols at different temperatures.



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**53.** Explain that the relative ease of dehydration of alcohols is tertiary > secondary > Primary.



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54. Name two fibres of each type as obtained from animals and plants.



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55. What happens when  $1^\circ$ ,  $2^\circ$  and  $3^\circ$  alcohols are passed over red hot copper ? Give equations.



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**56.** Write the reactions of alcohols with:

Sodium hydroxide



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**57.** Write the reactions of alcohols with:

HCl



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**58.** Write the reactions of alcohols with:

Acid anhydride.



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**59.** Complete the following reactions :



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60. Complete the following reactions :



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61. How will you show whether a given -OH group is alcoholic or phenolic ?



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**62.** How phenol reacts with phthalic anhydride in the presence of concentrated sulphuric acid ?



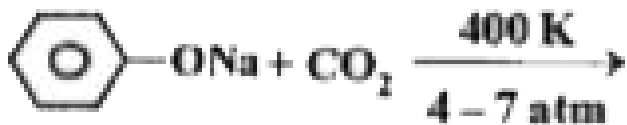
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**63.** Write the structure and IUPAC name of Aspirin.



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64. Complete the reaction :



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65. Write Kolbe reaction of phenol.



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66. Complete the reaction :



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67. What happens when phenol is treated with conc.  $HNO_3$  ?



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68. Write short notes on Coupling reaction





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**69.** Write short notes on the Gattermann reaction



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**70.** Explain Reimer Tiemann reaction with one example.



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71. What happens when phenol is treated with benzoyl chloride in the presence of aqueous NaOH?



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72. How does phenol react with:  
Sodium



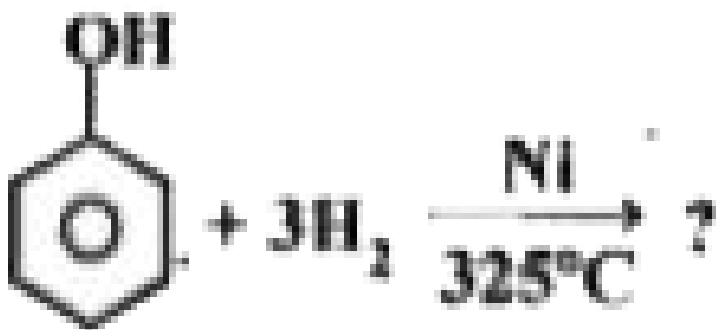
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73. How does phenol react with:

Ammonia ?

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74. Complete the reaction :



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**75.** Write the following reactions :

Phenol with benzene diazonium chloride.



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**76.** How does phenol react with

Zinc dust.



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**77.** How does phenol react with :

Acid anhydride ?



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**78.** Why nitration of phenol gives only ortho and para products ?

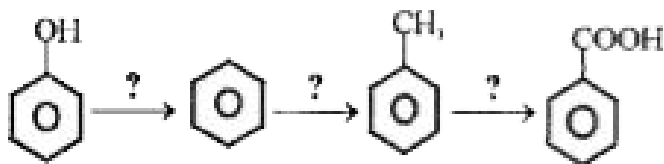


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79. Out of phenol and benzene which is more easily nitrated and why ?

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80. Complete the reaction :



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**81.** What is Fries Rearrangement .



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**82.** How will you convert phenol to acetophenone ?



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**83.** Convert the following

ii) Phenol to p-hydroxy acetophenone.



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**84.** A certain radio station broadcasts on a frequency of 980 KHz (kilohertz) . What is the wavelength of electromagnetic radiation broadcast by the radio station?



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**85.** What happens when phenol is treated with aqueous bromine water?







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**86.** How are the following conversions carried out ?

(i) Propene  $\rightarrow$  Propan -2- ol



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**87.** Benzyl chloride  $\rightarrow$  Benzyl alcohol



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**88.** Ethyl magnesium chloride  $\rightarrow$  Propan -1-ol



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**89.** Methyl magnesium bromide  $\rightarrow$  2-Methylpropan -2- ol .



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**90.** How are the following conversions carried out ?

Benzoquinone from phenol



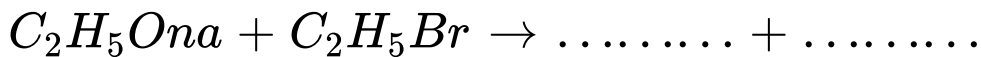
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91. How can ethers be prepared by dehydration of alcohols ?



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92. Complete the following reaction :



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**93.** Explain Williamson's synthesis.



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**94.** How will you convert ethyl bromide to diethyl ether .



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**95.** The Boiling Point of ethers are lower than isomeric alcohols why ?





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96. C-O-C bond angle in ethers is higher than H-O-H bond angle in water through O is  $sp^3$  - hybridised in both the cases.



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97. Why are ethers polar in nature ?



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98. Give one reaction of ether involving cleavage of C-O bond.



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99. What happens when diethyl ether is treated with excess of chlorine gas in the presence of sun light ?



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**100.** How will you distinguish between ethanol and acetic acid ?



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**101.** Which of the following is used to distinguish between  $1^\circ$ ,  $2^\circ$  and  $3^\circ$  alcohols ?



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**102.** Write equations of the following reactions

:

Friedel-Crafts alkylation of anisole.



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**103.** Write equations of the following reactions

:

Bromination of anisole in ethanoic acid medium.



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**104.** Write equations of the following reactions :

Bromination of anisole in ethanoic acid medium.



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**105.** Write equations of the following reactions

:

Friedel-Crafts acetylation of anisole.



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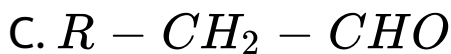
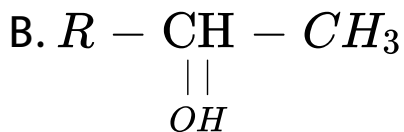
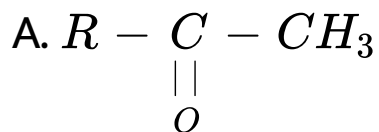
**106.** 11.6g of an organic compound having formula  $C_nH_{2n+2}$  is burnt in excess of  $O_2(g)$  initially taken in a 22.41 litre steel vessel. Before reaction the gaseous mixture was at  $273K$  with pressure reading 2 atm. After complete combustion and loss of considerable amount of heat, the mixture of product and excess of  $O_2$  had a temperature of  $546K$  and 4.6 atm pressure. The formula of organic compound is :



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## Multiple Choice Question

1. In  $B_2H_6$ , B-atom is



**Answer: D**



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2. What is fermentation?

A.  $CO_2$

B.  $O_2$

C. invertase

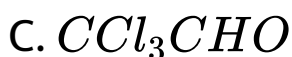
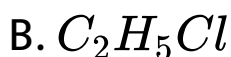
D. yeast

**Answer: D**



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3. What happens when phenol is treated with benzoyl chloride in the presence of aqueous NaOH?



**Answer: D**



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4. Rust is mixture of:

A. 95-% ethyl alcohol + 5% water

B. 94% ethyl alcohol + 4.53 water

C. 94.4% ethyl alcohol + 5.43% water

D. 95.87% ethyl alcohol + 4.13% water.

**Answer: D**



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5. In glycerine,

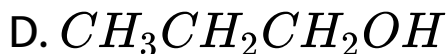
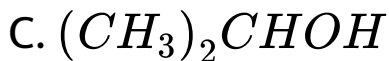
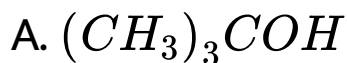
- A. one primary -OH group is present only
- B. one tertiary -OH group is present
- C. two secondary-OH groups are present
- D. one secondary OH group is present,

**Answer: D**



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6. Victor Meyer's test is not given by



**Answer: A**



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7. When phenol is treated with  $CHCl_3$  and NaOH, the product formed is



A. benzaldehyde

B. salicylaldehyde

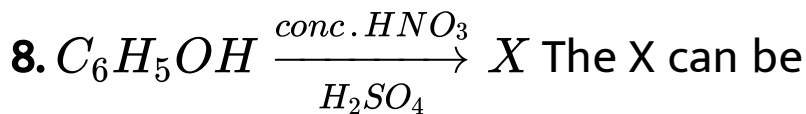
C. salicylic acid

D. benzoic acid.

**Answer: B**



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A. Benzene

B. Catechol

C. p-Nitrophenol

D. 2, 4, 6- Trinitrophenol

**Answer: D**



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**9.** Which compound is predominantly formed when phenol is allowed to react with bromine in aqueous medium ?

A. Picric acid

B. Salicylic acid

C. 2, 4, 6-Tribromophenol

D. p-Bromophenol.

**Answer: C**



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**10.** Phenol upon distillation with zinc dust gives :

A. Benzene

B. Benzaldehyde

C. Benzoic acid

D. Benzophenone

**Answer: A**



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**11.** Commercial alcohol is made unfit for drinking by adding

A. Methyl alcohol

B. Antimony oxide and acetic acid

C. Morphine and adipic acid

D. Snake poison and malonic acid

**Answer: A**



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**12.** The test used to distinguish alcohols from one another is known as

A. Hinsberg's test

B. 2, 4-DNP test

C. Iodoform test

D. Lucas test

**Answer: D**



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**13.** Reaction used for the preparation of ethers

is

A. Reimer - Tiemann Reaction

B. Williamson's synthesis

C. Wartz reaction

D. Cannizzaro reaction

**Answer: B**



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**14.** Which of the following is used to distinguish between  $1^\circ$ ,  $2^\circ$  and  $3^\circ$  alcohols ?

A. Grignard's reagent

B. Lucas reagent

C. Tollen's reagent

D. Bayer's reagent

**Answer: B**



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