Alcohol Phenol Ether Chemistry Questions with Solutions

Q1. Which alcohol is commercially available in shops and edible to consume?

Answer: Ethanol (C_2H_5OH) is the alcohol which is commercially available in shops and is edible to consume.

Q2. Which alcohol is unfit for consumption?

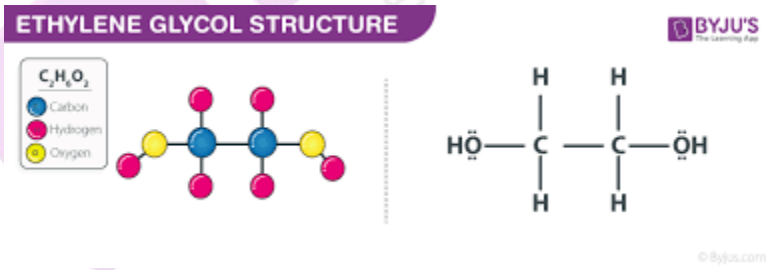
Answer: Methanol (CH_3OH) is unfit for consumption. It is also called wood alcohol. It is highly toxic and could lead to blindness, coma and death.

Q3. Are alcohols polar in nature?

Answer: Yes, alcohols are highly polar in nature.

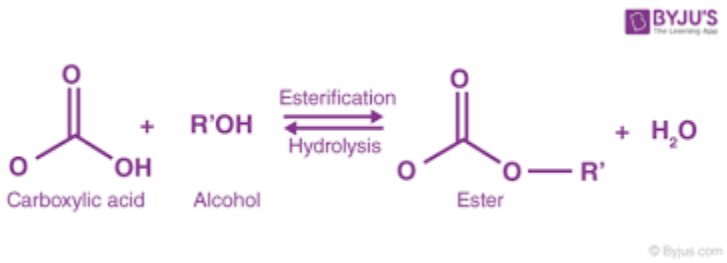
Q4. What is the correct formula for ethylene glycol alcohol? Mention its uses.

Answer: The correct formula for ethylene glycol is $HO\text{-}CH_2\text{-}CH_2\text{-}OH$. It is used in cosmetics, paints and is also used as an anti-freeze agent.



Q5. Explain Esterification.

Answer: Esterification is a reaction in which an alcohol and carboxylic acid combine together to produce ester and water in the presence of an acid catalyst**.** Esters are derivatives of carboxylic acids and have a pleasant, fruity odor.



Q6. What is the order of reactivity of alcohols during esterification reaction?

Answer: The order of reactivity of alcohols during esterification is $1^o > 2^o > 3^o$ alcohols.

Q7. Match the following items of column 1 with column 2 and choose the correct answer:

Column 1	Column 2
1) Isopropyl alcohol	a) C_3H_6O
2) Vinyl alcohol	b) C_3H_7OH
3) Allyl alcohol	c) C_2H_4O
4) Propargyl alcohol	d) C_3H_4O

Answer:

Column 1	Column 2
1) Isopropyl alcohol	b) C_3H_7OH
2) Vinyl alcohol	c) C_2H_4O
3) Allyl alcohol	a) C_3H_6O
4) Propargyl alcohol	d) C_3H_4O

Q8. Match the following named reactions of column 1 with appropriate functional group in column 2 and choose the correct answer:

Column 1	Column 2
1) Dow Reaction	a) Alcohol

2) Williamson Synthesis	**b) Ether**
3) Pinacol Pinacolone Rearrangement	**c) Phenol**

Answer:

Column 1	**Column 2**
1) Dow Reaction	**c) Phenol**
2) Williamson Synthesis	**b) Ether**
3) Pinacol Pinacolone Rearrangement	**a) Alcohol**

Q9. What is the common name of 2,4,6 trinitro phenol?

Answer: Picric acid is the common name of 2,4,6 trinitro phenol.

Q10. Why are ethers more volatile than alcohol?

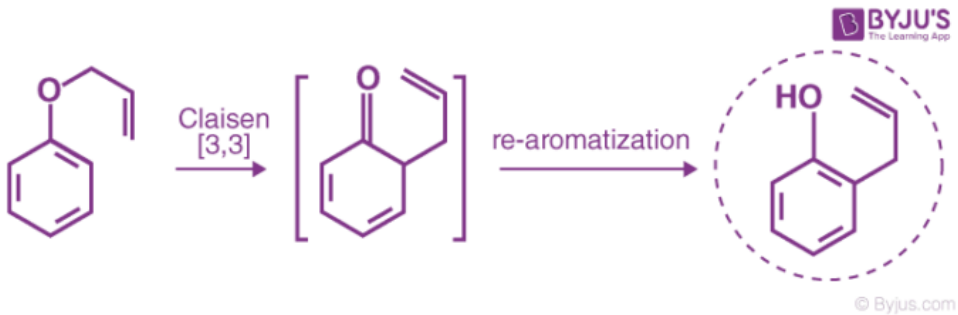
Answer: Ethers are more volatile than alcohol because ethers do not have intermolecular hydrogen bonding whereas alcohols are involved in intermolecular H-bonding. Thus, more energy is required to break the H-bonding in alcohols which leads to increase in their boiling point, making them less volatile.

Q11. Why do ethers make good solvents?

Answer: Ethers are good solvents because they are resistant to attack of nucleophiles and bases.

Q12. What is Claisen Rearrangement?

Answer: Claisen rearrangement is a [3,3] sigmatropic reaction where allyl vinyl ether is converted to an unsaturated carbonyl compound in the presence of heat (200°C - 250°C) or in the presence of a lewis acid.



Q13. Among the following, the compound with functional group -O- is

(a) Acetone
(b) Methyl alcohol
(c) Acetic acid
(d) Ethyl methyl ether

Answer: (d)
Ethyl methyl ether (C_2H_5 - O - CH_3) is a compound with functional group -O-

Q14. Oxidation of alcohol to aldehyde can be done by

(a) Treatment with $LiAlH_4$
(b) Treatment with $NaBH_4$
(c) Treatment with $LiBH_4$
(d) Treatment with PCC

Answer: (d)
Pyridinium Chlorochromate (PCCC) oxidises alcohol to aldehyde.

Q15. What is the IUPAC name of m-cresol?

(a) Benzene-1,3-diol
(b) 3-methylphenol
(c) 3-chlorophenol
(d) 3-methoxyphenol

Answer: (b).

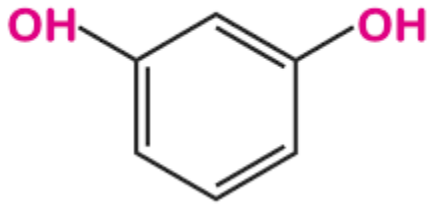
Practice Questions on Alcohol Phenol Ether

Q1. Among the following, which compound has 2 -OH groups

(a) Phenol
(b) o-Cresol
(c) Picric acid
(d) Resorcinol

Answer: (d)
Resorcinol is an organic compound with 2 -OH groups.

RESORCINOL CHEMICAL STRUCTURE



Q2. Ethylene on reaction with Baeyer's reagent gives

(a) Ethyl alcohol
(b) Ethane
(c) Ethyl methyl ether
(d) Ethylene glycol

Answer: (d)

$$3CH_2 = CH_2 + 2KMnO_4 + 4H_2O \rightarrow 3\underset{\text{Glycol}}{\begin{matrix} CH_2 - OH \\ | \\ CH_2 - OH \end{matrix}} + 2KMnO_2 + 2KOH$$

Q3. Oxidation of secondary alcohols gives

(a) Ketone
(b) Aldehyde
(c) Carboxylic acid
(d) Ester

Answer: (a)

Q4. $LiAlH_4$ reduces primary alcohols to

(a) Aldehyde
(b) Ketone
(c) No reaction
(d) Ether

Answer: (a)

Q5. Why is ethanol miscible with water?

Answer: Due to hydrogen bonding character, ethanol is miscible with water.