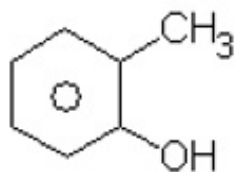


CBSE Test Paper-03

Class - 12 Chemistry (Alcohols, Phenols and Ethers)

- One mole of an organic compound 'A' with the formula C_3H_8O reacts completely with two moles of HI to form X and Y. When 'Y' is boiled with aqueous alkali forms Z. Z answers the iodoform test. The compound 'A' is _____.
 - methoxyethane
 - ethoxyethane
 - Propan – 2 – ol
 - Propan – 1 – ol
- The compound formed as a result of oxidation of ethyl benzene by $KMnO_4$ is
 - Acetophenone
 - Benzoic acid
 - Benzophenone
 - Benzyl alcohol
- Phenol on distillation with zinc dust gives
 - benzaldehyde
 - benzophenone
 - benzene
 - benzonic acid
- Primary alcohols are prepared by reduction of carboxylic acids. Though lithium aluminium hydride is a strong reducing agent, it is not used in the reaction. Because
 - yield is low
 - it is an expensive reagent
 - only used for secondary and tertiary alcohols
 - None of these
- $C_6H_5OCH_2CH_3$ is called
 - Ethyl phenyl ether
 - All of these
 - Ethoxybenzene
 - Phenetole
- What is Lucas reagent? For what purpose is it used?

7. What is the IUPAC Name of given compound?



8. What is wood spirit? Why is it so called?

9. Write structural formula and give IUPAC name:-

Ethylene Glycol

10. Phenol to Benzyl Alcohol

11. Draw the structures of 4-methyl pent-3-en-2-one

12. Name the reagents which are used in the following conversions:

i. A primary alcohol to an aldehyde

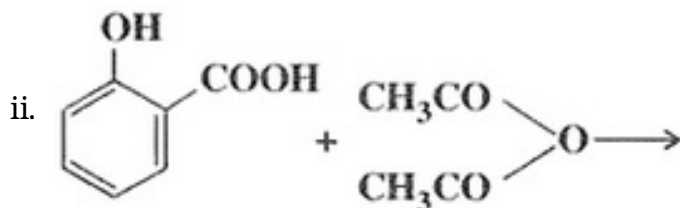
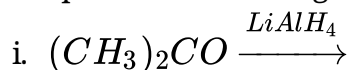
ii. Butan-2-one to butan-2-ol

iii. Phenol to 2, 4, 6-tribromophenol

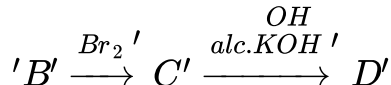
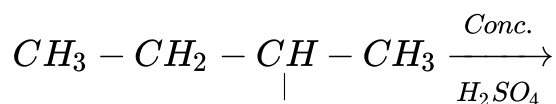
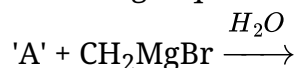
13. Phenol is acidic in nature.

14. What is fermentation? How is ethanol obtained by fermentation of molecules giving chemical equations?

15. a. Complete the following reactions:



b. Write the structure formulae of the organic compounds 'A', 'B', 'C' and 'D' in the following sequence of reactions:



CBSE Test Paper-03

Class - 12 Chemistry (Alcohols, Phenols and Ethers)

Solutions

1. (a) methoxyethane

Explanation: Ether react with HI to form alcohol and alkyl iodide. Alcohol on oxidation will give iodoform test.

2. (b) Benzoic acid

Explanation: Oxidation of aromatic alkanes with KMnO_4 to give carboxylic acids.

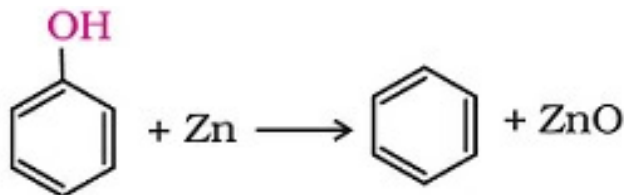
Description: Treatment of an alkylbenzene with potassium permanganate results in oxidation to give the benzoic acid.



Key bonds formed	Key bonds broken
C-O(π)	C-H
C-O	C-H
C-OH	C-H

3. (c) benzene

Explanation: Phenol is reduced to benzene when it is distilled with zinc dust or its vapour is passed over granules of zinc at 400°C .



4. (b) it is an expensive reagent

Explanation: Carboxylic acids are reduced to primary alcohols in excellent yields by lithium aluminium hydride, a strong reducing agent.

However, LiAlH_4 is an **expensive reagent**, and therefore, used for preparing

special chemicals only. Commercially, acids are reduced to alcohols by converting

them to the esters followed by their reduction using hydrogen in the presence of catalyst (catalytic hydrogenation).

5. (b) All of these

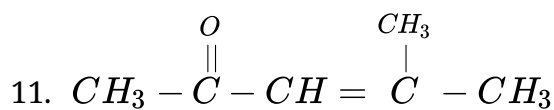
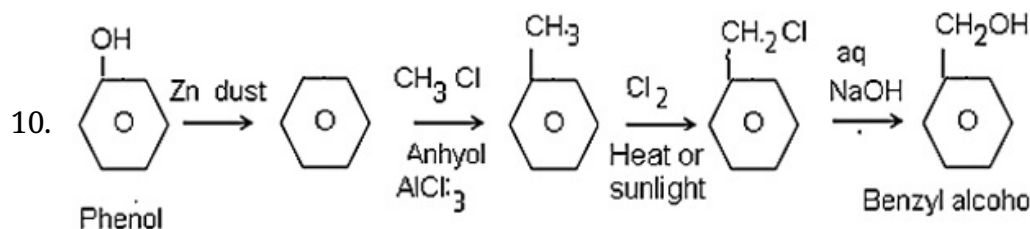
Explanation: $C_6H_5OCH_2CH_3$ is ethyl phenyl ether or phenetole is an organic compound that is an ether. Ethyl phenyl ether has the same properties as some other ethers, such as volatility, explosive vapors, and the ability to form peroxides.

IUPAC name : Ethoxybenzene

Other names : Phenetole, Ethyl Phenyl Ether

6. Lucas' reagent is a solution of anhydrous zinc chloride in concentrated hydrochloric acid. This solution is used to classify alcohols of low molecular weight. The reaction is a substitution in which the chloride replaces a hydroxyl group. It is used to distinguish between 1° , 2° , and 3° alcohols.
7. 2- Methyl phenol.
8. Methanol, also called methyl alcohol, wood alcohol, or wood spirit, the simplest of a long series of organic compounds called alcohols; its molecular formula is CH_3OH . It is so called because earlier it was obtained from destructive distillation of wood only.

9.
$$\begin{array}{c} CH_2 - OH \\ | \\ CH_2 - OH \end{array}$$
 Ethane - 1, 2 - diol



12. i. Reagent is pyridium chlorochromate (PCC), a complex of chromium trioxide with pyridine and HCl.
- ii. Reagent is $NaBH_4$, sodium borohydride



-
- The diagram illustrates the resonance structures of phenol. It shows five structures connected by double-headed resonance arrows. The first structure is phenol, with a lone pair on the oxygen atom moving to form a double bond with the ring, and the pi electrons from the ring moving to the ortho position. The subsequent structures show the negative charge moving to the para and then the other ortho position. The final structure is phenol again, with the pi electrons from the ring moving back to the oxygen atom, restoring the original lone pair. The structures are: 1. Phenol (lone pair on O), 2. Cyclohexadienone with negative charge at ortho (double bond to O), 3. Cyclohexadienone with negative charge at para (double bond to O), 4. Cyclohexadienone with negative charge at other ortho (double bond to O), 5. Phenol (lone pair on O).

- ii. The carbon attached to OH is sp^2 hybridized and is more electronegative, this decreases the electron density on oxygen, increasing the polarity of O-H bond and ionization of phenol. The phenoxide ion formed by loss of H^+ is more resonance stabilized than phenol itself.

14. The process of fermentation involves breaking down of large molecules into simpler ones in presence of enzymes.

In India, ethanol is mainly prepared by fermentation of molecules a dark brown coloured group left after crystallization of sugar.

