

Class 12 Chemistry Chapter 11 Alcohols, Phenols, and Ethers MCQs

1. To get carboxylic acids directly from alcohol, which of the following oxidising agents is used?

- a) Alkaline KMnO_4
- b) Aqueous KMnO_4
- c) Acidified KMnO_4
- d) Anhydrous CrO_3

Answer: c

Explanation: Strong oxidizers, such as acidified potassium permanganate or acidified potassium dichromate, convert alcohol to carboxylic acid immediately. Using CrO_3 as the oxidising agent in an anhydrous media, however, only aldehyde can be produced.

2. When phenol reacts with bromine water, what is the result?

- a) Brown liquid
- b) Colourless gas
- c) White precipitate
- d) No reaction

Answer: c

Explanation: When phenol is treated with bromine water, a white precipitate is formed, which is 2,4,6-Tribromophenol.

3. The Lucas test was carried out on three different compounds: A, B, and C. Compounds A and B were turbid at ambient temperature, while compound C did not become turbid until it was heated. Which one of the compounds is tertiary in structure?

- a) A
- b) Cannot be determined

- c) C
- d) A and B

Answer: b

Explanation: It is stated that A and B exhibit turbidity at room temperature, however it is not stated whether the turbidity appears immediately or over a period of time. So compounds A and B may be tertiary or secondary depending on whether turbidity appears immediately or after 5 minutes respectively. Compound C may be primary.

4. Which of the following compounds is formed when secondary alcohols are oxidised by [O]?

- a) Ether
- b) Aldehyde
- c) Ketone
- d) Amine

Answer: c

Explanation: The oxidation of secondary alcohols by a nascent oxygen atom [O] yields the ketone molecule.

5. Which of the following processes does not result in the production of alcohol?

- a) Acid catalysed hydration of alkenes
- b) Free radical halogenation of alkanes
- c) Reduction of aldehydes
- d) Hydroboration-oxidation of alkenes

Answer: b

Explanation: When alkanes are halogenated by free radicals, they form a mixture of haloalkanes rather than alcohols. Alcohols can be made from alkenes through acid catalysed hydration and hydroboration-oxidation, or from aldehyde reduction.

6. The conversion of trialkyl borane to an alcohol does not require which of the following?

- a) Sodium hydroxide
- b) Water
- c) Diborane
- d) Hydrogen peroxide

Answer: c

Explanation: In the presence of aqueous NaOH, trialkyl boranes are oxidised by hydrogen peroxide to produce alcohol. This conversion does not require diborane, although it is required for the creation of trialkyl boranes.

7. Ethers may be used as solvents because they react only with which of the following reactants?

- a) Oxidising agent
- b) Bases
- c) Acids
- d) Reducing agents

Answer: c

Explanation: Nucleophiles and bases cannot attack ether. However, because of their capacity to solve cations by giving an electron pair from an oxygen atom, they are excellent solvents in many chemical reactions. Ethers are less reactive than alcohols and react only with acids.

8. An aryl carbon can be found in which of the following compounds?

- a) Ethanol
- b) Phenol
- c) Vinyl alcohol
- d) Benzyl alcohol

Answer: b

Explanation: An aryl carbon is the sp^2 hybridised carbon of an aromatic ring to which the hydroxyl group is connected. The OH group is connected to an aryl carbon in phenol.

9. It's called ether when the alkyl groups connected to either side of the oxygen atom in an ether are different.

- a) mixed
- b) symmetrical
- c) simple
- d) diethyl

Answer: a

Explanation: A mixed or unsymmetrical ether is one in which the alkyl or aryl groups on either side of the O atom differ.

10. Which of the following alcohols is not polyhydric?

- a) Propylene glycol
- b) Ethylene glycol
- c) Cyclohexanol
- d) Benzene-1,2-diol

Answer: c

Explanation: Polyhydric alcohols include two or more hydroxyl groups and are classified as glycols in the common system or diols and triols in the IUPAC system.