

## Class 12 Chemistry Chapter 10 Haloalkanes and Haloarenes MCQs

1. What is the class of the substitution product of  $\text{LiAlH}_4$  and an alkyl halide reaction?

- a) Haloalkane
- b) Alkyl nitrite
- c) Nitroalkane
- d) Hydrocarbon

**Answer:** d

**Explanation:** The H atom in  $\text{LiAlH}_4$  acts as a nucleophile, attacking and substituting the halogen in the alkyl halide to generate the basic hydrocarbon.

2. Which of the following statements about  $\text{S}_\text{N}^2$  mechanisms is incorrect?

- a) The transition state is stable
- b) The complete mechanism takes place in a single step
- c) The rate of the reaction depends on the concentration of both reactants
- d) There is inversion of configuration

**Answer:** a

**Explanation:** The carbon atoms are concurrently attached to the entering nucleophile and the existing group in the transition state of  $\text{S}_\text{N}^2$  processes, and are thus connected to five atoms at the same time. It is impossible to isolate such a geometry since it is unstable.

3. A mono haloarene is an example of \_\_\_\_\_

- a) aliphatic halogen compound
- b) side chain substituted aryl halide
- c) alkyl halide
- d) aromatic halogen compound

**Answer:** d

**Explanation:** A mono haloarene is a halogenated benzene ring with the halogen linked straight to it. Aromatic halogen compounds with the halogen not directly linked to the benzene ring are side chain substituted aryl halides.

4. What is 3-Bromopropene's common name?

- a) Allyl bromide
- b) Vinyl bromide
- c) Tert-Butyl bromide
- d) Propylidene bromide

**Answer:** a

**Explanation:** The parent chain of 3-Bromopropene has three C atoms, with a double bond at C-1 and Br at C-3. As a result, it is an allylic halide because Br is connected to the C adjacent to the C-C double bond.

5. Which of the following is the right name for the compound  $\text{H}_3\text{C}-\text{CHCl}_2$ ?

- a) 1,2-Dichloroethane
- b) Ethylene dichloride
- c) Ethylidene chloride
- d) Vic-dichloride

**Answer:** c

**Explanation:** Both halogens are on the same carbon atom in the given molecule, making it a dihaloalkane. These are also known as alkylidene halides or gem-dihalides.

6. What is the catalyst in the chloroalkane reaction of a primary alcohol with HCl?

- a) red phosphorous
- b) concentrated  $\text{H}_2\text{SO}_4$
- c) anhydrous  $\text{ZnCl}_2$
- d) pyridine

**Answer:** c

**Explanation:** The presence of anhydrous  $\text{ZnCl}_2$  in alcohols is supposed to disrupt the C-O bond.  $\text{ZnCl}_2$  is a Lewis acid that reacts with the alcohol group's oxygen.

7. When ethanol combines with  $\text{PCl}_5$ , it produces three products: chloroethane, hydrochloric acid, and chloroethane. What is the third item on the list?

- a) Phosphorus acid
- b) Phosphoryl chloride
- c) Phosphorus trichloride
- d) Phosphoric acid

**Answer:** b

**Explanation:**  $\text{CH}_3\text{CH}_2\text{OH}$  reacts with  $\text{PCl}_5$  to produce  $\text{CH}_3\text{CH}_2\text{Cl}$ ,  $\text{POCl}_3$  (phosphoryl acid), and  $\text{HCl}$ . This is a procedure for making chloroalkanes from alcohols.

8. Which of the following substances has the highest melting point?

- a) Chloromethane
- b) Tetrachloromethane
- c) Trichloromethane
- d) Dichloromethane

**Answer:** b

**Explanation:** As the molecule masses and the number of halogen atoms grow, the boiling points and intermolecular forces of attraction increase as well.

9. Which sequence should isomeric dichlorobenzenes be boiled in?

- a) para>ortho>meta
- b) meta>ortho>para
- c) ortho>meta>para
- d) para>meta>ortho

**Answer:** a

**Explanation:** In comparison to meta and ortho isomers, para isomers have the highest melting temperatures due to their symmetry and ease of fitting into a crystal lattice.

10. Which of the following statements about the interaction between  $C_2H_4$  and  $Cl_2$  in  $CCl_4$  is incorrect?

- a) It results in the formation of a vicinal dihalide
- b) It results in the discharge of a reddish-brown colour
- c) It results in the formation of a colourless compound
- d) It results in the breaking of the C-C double bond

**Answer:** b

**Explanation:** When  $Br_2$  interacts with an alkene to generate a vic-dihalide, it gives off a reddish-brown colour. As a result, it's a crucial test for detecting a double bond.

