

Class: 12
Subject: chemistry
Topic: Halo alkanes
No. of Questions: 20
Duration: 60 Min
Maximum Marks: 60

1. Molecular formula of a dihalide is $C_2H_4Br_2$. This dihalide when treated with aqueous KOH, acetaldehyde is formed. Dihalide may be
- Ethylene dibromide
 - Ethylidene bromide
 - Acetylene bromide
 - None of these

Sol: B

A dihalogen derivative, ethylidene dibromide (CH_3CHBr_2) on hydrolysis gives a dihydric alcohol. Since the two -OH groups are found on the same carbon atom, the molecule is unstable. Hence it eliminates a molecule of water giving an aldehyde. $CH_3CHBr_2 \xrightarrow{KOH} CH_3CH(OH)_2 \xrightarrow{-H_2O} CH_3CHO$

2. Isopropyl chloride can be obtained by the action of
- HCl on acetone
 - Chlorine on acetaldehyde
 - PCl_5 on 1-propanol
 - PCl_5 on 2-propanol

Sol: D

3. n-Propyl bromide on treating with ethanolic potassium hydroxide produces
- propane
 - propene
 - propyne
 - propanol

Sol: B



4. Anisole can be prepared by the action of methyl iodide on sodium phenate. The reaction is known as
- Reimer-Tiemann's reaction
 - Williamson's reaction
 - Etard's reaction
 - Schotten-Baumann reaction

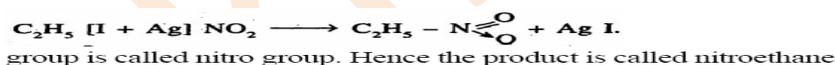
Sol: B fact

5. Vinyl chloride can be prepared by the action of alcoholic KOH on
- Ethylene dichloride
 - Ethyl chloride
 - Allyl chloride
 - Benzyl chloride

Sol: A fact

6. Ethyl iodide reacts with AgNO_2 to give
- Nitroethane
 - Ethane
 - Ethyl nitrite
 - Ethylene

Sol: A



7. Which of the following compounds will produce an isocyanide on treatment with alkyl halide?
- NaCN
 - KCN
 - AgCN
 - All

Sol: C

NaCN and KCN give cyanides while AgCN gives the isocyanide



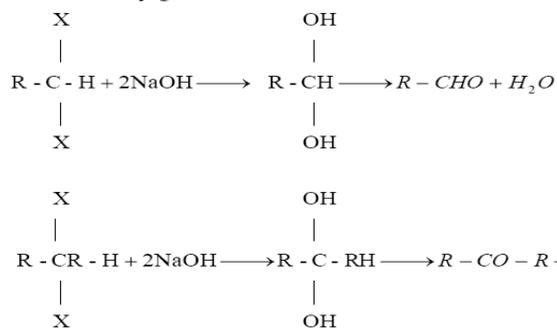
-N≡C group is called isocyanide

8. Gem dihalides on hydrolysis gives
- Only aldehydes
 - Only ketones
 - Aldehydes or ketones

d. Acids

Sol: C

Gem dihalides are dihalo alkanes where both the halogen atoms are attached to the same carbon atom. If halogen is attached to terminal carbon atom. On hydrolysis they give aldehydes. If halogens are not attached to the terminal carbon atoms, they give ketones



9. The alkyl halide having highest boiling points is

- CH₃F
- CH₃Br
- CH₃I
- CH₃Cl

Sol: C

For the given alkyl group higher the atomic mass of halogen more is the boiling point

10. Which among the following alkyl halide is hydrolysed by S_N1 mechanism

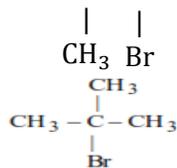
- Methyl bromide
- Propyl iodide
- Neo- Pentyl chloride
- Tertiary butyl bromide

Sol: D

The order of reactivity for S_N1 mechanism is 3° > 2° > 1°. Among a compound given except the 4th one remaining all are 1° alkyl halide. Hence option 4 is correct

11. Which among the following isomeric alkyl halides have least boiling point

- CH₃-CH₂-CH₂-CH₂-CH₂-Br
- CH₃-CH-CH₂-CH₂-Br
- $$\begin{array}{c} | \\ \text{CH}_3 \\ \text{CH}_3 - \text{CH} - \text{CH} - \text{CH}_3 \end{array}$$



Sol: D Higher the branching, lesser is the boiling point

12. Darzen's process is not applicable for the preparation of alkyl bromide because

- Darzen's process involves PCl_5
- SOBr_2 is unstable
- HBr is unstable
- None of these

Sol: B fact

13. Catalyst used during antimarkonwnikoff's addition of HBr to alkene is

- Ni
- Benzoyl peroxide
- Pt
- AlCl_3

Sol: B fact

14. Which of the following does not react with benzene in the presence of anhydrous AlCl_3 ?

- $\text{C}_6\text{H}_5\text{Cl}$
- $\text{C}_6\text{H}_5\text{CH}_2\text{Cl}$
- CH_3COCl
- $\text{C}_2\text{H}_5\text{Br}$

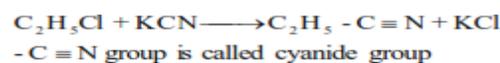
Sol: A

Chlorobenzene is very inactive. Hence it does not answer the Friedel-Crafts reaction mentioned in the question. CH_3COCl reacts with benzene to form acetophenone. This reaction is called Friedel-Crafts acylation

15. Ethyl bromide reacts with KCN to form

- Ethyl cyanide
- Ethyl isocyanide
- Ethyl isocyanate
- Ethyl cyanate

Sol: A



16. 1, 2-dichloroethane when boiled with alcoholic potash gives
- Acetic acid
 - Formic acid
 - Potassium acetate
 - Vinyl chloride

Sol: D

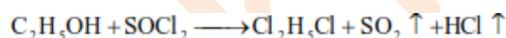
Alcoholic potash is a dehydrohalogenating agent. In the first stage vinyl chloride is formed. In the next stage ethyne is formed

17. Which statement is not true regarding benzyl chloride
- it is an aromatic compound with substitution in the side chain
 - it gives a white precipitate with alcoholic AgNO_3
 - it is less reactive than vinyl chloride
 - it undergoes nucleophilic substitution reactions

Sol: C fact

18. The best reagent for converting ethanol to chloroethane is
- PCl_5
 - PCl_3
 - SOCl_2
 - HCl in the presence of ZnCl_2

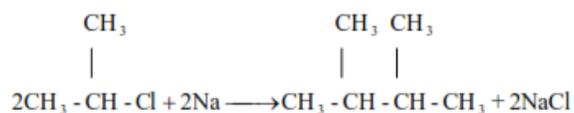
Sol: C



By products, SO_2 and HCl are gases and can be easily separated. In other cases at least one of the products is a liquid. Hence purification is difficult

19. Isopropyl chloride is heated with sodium in dry ether. The product is
- 2, 3-dimethylbutane
 - Pentane
 - Hexane
 - methyl pentane

Sol: A



20. Monohalogen derivatives may be prepared by treating alcohols with
- thionyl chloride
 - phosphorus halides
 - hydrohaloacids in the presence of anhydrous ZnCl_2
 - any one of the above reagents

Sol: D

