

PRAADIS EDUCATION

CHAPTER-10

HALOALKANES AND HALOARENES

CHEMISTRY-XII

Q. 1. Rearrange the compounds of each of the following sets in order of reactivity

towards SN^2 displacement :

(i) 2-bromo-2-methyl butane, 1-bromopentane, 2-bromopentane

(ii) 1-bromo-3-methylbutane, 2-bromo-2-methyl butane, 2-bromo-3-methyl

butane

(iii) 1-bromobutane, 1-bromo-2, 2-dimethyl propane, 1-bromo-2-methyl butane

Q. 2. Answer the following :

(i) Haloalkanes easily dissolve in organic solvents, why ?

(ii) What is known as racemic mixture ? Give example.

(iii) Of the two bromo derivatives, $C_6H_5CH(CH_3)Br$ and $C_6H_5CH(C_6H_5)Br$, which one is more reactive in SN^1 substitution reaction and why ?

Q. 3. Answer the following :

(i) What is meant by chirality of a compound ? Give an example.

(ii) Which one of the following compounds is more easily hydrolysed by KOH

and why ?

$CH_3CHClCH_3$ or $CH_3CH_2CH_2Cl$

(iii) Which one undergo SN

2 substitution reaction faster and why ?

Q. 4. Complete the following reactions :



Q. 5. How the following conversions can be carried out ?

(i) But-1-ene to n-butyl iodide

(ii) Tert-butyl bromide to isobutyl bromide

(iii) Ethanol to but-1-yne

Q. 6. Write short notes on :

(i) Wurtz-Fittig reaction

(ii) Fittig reaction

(iii) Dehydrohalogenation reaction

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Q. 7. An organic compound 'A' having molecular formula C_4H_8 on treatment with

dil. H_2SO_4 give another compound 'B'. B on treatment with conc. HCl and

anhy. ZnCl_2 gives 'C'. C on treatment with sodium ethoxide gives back 'A'.

Identify the compound. Write the equations involved.

Q. 8. What happens when :

(i) 1-bromopropane reacts with metallic sodium.

(ii) Bromoethane is treated with caustic potash.

(iii) Iodomethane is treated with ammonia.

Q. 9. Identify A, B and C :



Q. 10. Account for the following :

(i) A small amount of ethyl alcohol is added to CHCl_3 stored for use as an

anaesthetic.

(ii) After using CCl_4 as a fire extinguisher inside a closed space, the space is

thoroughly ventilated.

(iii) When 2-chloro-3-methylbutane is treated with alcoholic potash, 2-methyl-2-butene is the main product.

[Hint : (i) To convert harmful COCl_2 to ethyl carbonate.

(ii) To sweep out COCl_2 formed by CCl_4 vapour and H_2O vapour.

(iii) Saytzeff rule.

Q. 11. How will you distinguish between :

(i) Vinyl chloride and ethyl chloride

(ii) Chlorobenzene and cyclohexyl chloride

(iii) Ethyl chloride and ethyl bromide

Q. 12. Explain the following :

(i) The dipole moment of chloroethane is higher than that of chlorobenzene.

(ii) Although haloalkane are polar in character yet they are insoluble in water.

(iii) Vinyl chloride is unreactive in nucleophilic substitution reactions.

Q. 13. (i) Which will have a higher boiling point ?

1-chloroethane or 2-chloro-2-methyl butane. Give reason.

(ii) p-chloronitrobenzene undergoes nucleophilic substitution faster than

chlorobenzene. Explain giving resonating structure as well.

Q. 14. (i) What are ambident nucleophiles ? Explain with an example.

(ii) Convert ethyl bromide to diethyl ether.

(iii) What are freons ?

Q. 15. A hydrocarbon 'A' (C_4H_8) is added with HBr in accordance with Markonikov's

rule to give compound 'B' which on hydrolysis with aqueous alkali forms

tertiary alcohol 'C' ($C_4H_{10}O$). Identify A, B and C.

Q. 16. (i) Which isomer of C_4H_9Cl will have the lowest boiling point ?

(ii) Predict the alkenes that would be formed by dehydrohalogenation with

sodium ethoxide and ethanol. Predict major alkenes :

(a) 2-chloro-2-methylbutane

(b) 3-bromo-2, 2, 3-trimethylpentane

Q. 17. Write the structure of major product in each of the following



18. Q. 18. Write the main products when :

(i) n-butyl chloride is treated with alcoholic KOH

- (ii) 2, 4, 6-trinitrochlorobenzene is subjected to hydrolysis.
- (iii) Methyl chloride is treated with AgCN.

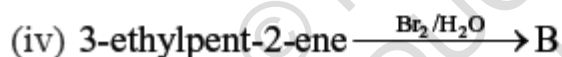
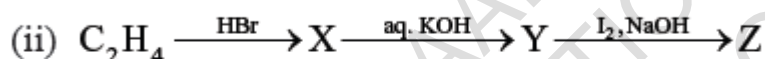
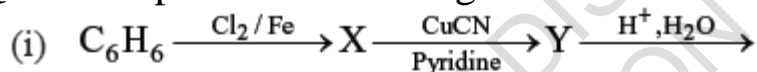
19. 1. How would you bring about the following conversions :

- (i) Propene to 2-bromopropane
- (ii) Bromoethane to propanoic acid
- (iii) 1-chloropropane to 1-propanol
- (iv) Ethanol to chloroethane
- (v) 1-iodopropane to propene

Q. 2. What happens when : (Give chemical reactions)

- (i) Cyclohexanol is treated with thionyl chloride
- (ii) p-hydroxybenzyl alcohol is heated with HCl.
- (iii) Ethyl bromide is refluxed with NaI in acetone.
- (iv) Ethyl bromide is treated with mercurous fluoride.
- (v) Chlorobenzene is subjected to hydrolysis.

Q. 3. Complete the following reactions :



Q. 4. Account for the following :

- (i) Sulphuric acid is not used during the reaction of alcohols with KI.
- (ii) p-methoxybenzyl bromide reacts faster than p-nitrobenzyl bromide with sodium ethoxide to form an ether product.
- (iii) Organic halogen compounds used as solvents in industry are chlorides rather than bromides and iodides.
- (iv) Wurtz reaction fails in case of tert-alkyl halides.
- (v) Alkyl halides are insoluble in water though they contain a polar C – X bond.
- (vi) Use of CHCl₃ as anaesthetic is not preferred.

Q. 5. (i) A primary alkyl halide (A), C₄H₉Br reacted with hot alcoholic KOH to give

compound (B). Compound (B) reacted with HBr to give (C), which is an isomer of (A). When (A) was reacted with sodium metal, it gave a compound (D), C_8H_{18} which was different than the compound when n-butyl bromide was reacted with sodium. Give the structural formula of (A) and write equations of all the reactions.

(ii) Iodoform gives a precipitate with $AgNO_3$ on

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