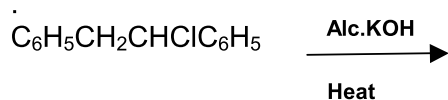


**UNIT - 10**  
**HALOALKANES AND HALOARENES**

- 1 Iodoform gives the precipitate with  $\text{AgNO}_3$  on heating while chloroform does not. Give reasons
- 2 The following reaction give 2 products. Write their structures

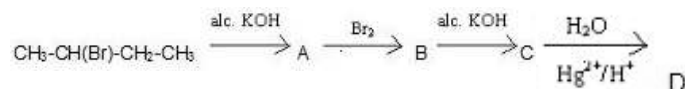


[hint: the 2 are geometrical isomers]

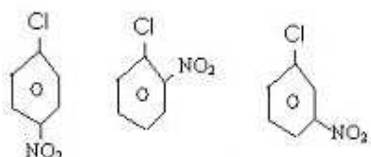
- 3 Predict the products of the following reactions:
- a.  $\text{HCl}$  with  $\text{CH}_3\text{CCl}=\text{CH}_2$
- b.  $\text{HBr}$  with  $\text{CH}_3\text{CH}=\text{C}(\text{CH}_3)_2$
- 4 Monochlorination of ethane to ethyl chloride is more practical than chlorination of n-pentane. Give reasons
- 5 An optically active compound having molecular formula  $\text{C}_7\text{H}_{15}\text{Br}$  reacts with aq.  $\text{KOH}$  to give racemic mixture of products. Write the mechanism involved in the reaction. [hint: a carbocation being planar, allows attack of nucleophile from either direction.]
- 6 a. Which of the following 2 compounds would react faster by  $\text{S}_{\text{N}}2$  pathway:- 1-bromobutane or 2-bromobutane and why?
- b. Allyl chloride is more reactive than n-propyl chloride towards nucleophilic substitution reaction. Explain why?
- c. Haloalkanes react with  $\text{KCN}$  to give alkyl cyanides as main product while with  $\text{AgCN}$ , they form isocyanide as the main product. Give reasons.
- 7 In each of the following pairs of organic compounds, identify the compound which will undergo  $\text{S}_{\text{N}}1$  reaction faster. Also give reason with related structures.



- 8 p-nitrobenzene undergoes nucleophilic substitution faster than chlorobenzene. Explain giving the resonating structures as well.
- 9 the structural formulas of the organic compounds. A, B, C, D in the following sequence of reactions



- 10 Rearrange the following in order of increasing ease of dehydrohalogenation:  $\text{CH}_3\text{CH}_2\text{CH}_2\text{Cl}$ ,  $\text{CH}_3\text{CHClCH}_3$ ,  $\text{CH}_3\text{CCl}(\text{CH}_3)_2$ . Give reasons.
- 11 Write formulae for structural and geometrical isomers of  $\text{C}_3\text{H}_4\text{Cl}_2$ . [HINT: total 7 structures]
- 12 When toluene is chlorinated:  
 a. in presence of sunlight  
 b. in dark, in the presence of lewis acid, two separate compounds are obtained. Explain with suitable mechanism.
- 13 Predict the order of reactivity of the following compounds in  $\text{S}_{\text{N}}1$  and  $\text{S}_{\text{N}}2$  reactions, giving reasons-  
 a.  $\text{C}_6\text{H}_5\text{CH}_2\text{Br}$ ,  $\text{C}_6\text{H}_5\text{CH}(\text{C}_6\text{H}_5)\text{Br}$ ,  $\text{C}_6\text{H}_5\text{CH}(\text{CH}_3)\text{Br}$ ,  $\text{C}_6\text{H}_5\text{C}(\text{CH}_3)(\text{C}_6\text{H}_5)\text{Br}$   
 The 4 isomeric bromobutanes
- 14 Arrange the following isomeric substituted haloarenes in ascending order of their reactivity towards NaOH to form corresponding substituted phenols.



- 15 Arrange the following halocompounds in decreasing order of reactivity towards  $\text{S}_{\text{N}}1$  nucleophilic substitution reaction, Vinyl chloride, Benzyl chlorides, iso propyl bromide.