

WORKSHEET
Class XII - CHEMISTRY
CHAPTER - HALOALKANES AND HALOARENES

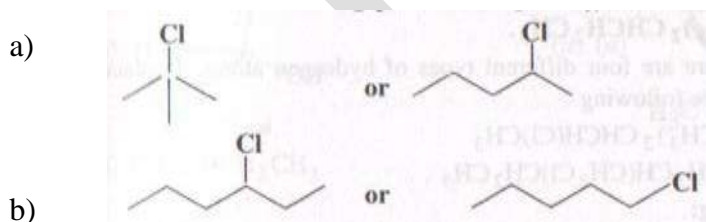
- Why is sulphuric acid not used during the reaction of alcohols with KI?
- Arrange each set of compounds in the order of increasing boiling points.
 - Bromomethane, Bromoform, Chloromethane, Dibromomethane.
 - 1-Chloropropane, Isopropyl chloride, 1-chlorobutane.
- Which alkyl halide from the following pairs would you expect to react more rapidly by an S_N2 mechanism? Explain your answer.
 - $CH_3CH_2CH_2CH_2Br$ or $CH_3CH_2CH(Br)CH_3$
 $\begin{array}{c} | \\ Br \end{array}$
 - $CH_3CH_2CH(Br)CH_3$ or $\begin{array}{c} CH_3 \\ | \\ H_3C-C-Br \\ | \\ CH_3 \end{array}$
 - $CH_3CH_2CH(CH_3)CH_2Br$ or $CH_3CH_2CH(CH_3)CH_2Br$
 $\begin{array}{c} | \\ CH_3 \end{array}$ $\begin{array}{c} | \\ CH_3 \end{array}$
- Which of the following has the highest dipole moment?
 - CH_2Cl_2
 - $CHCl_2$
 - CCl_4
- What are ambident nucleophiles? Explain with an example.
- Which compound in each of the following pairs will react faster in S_N2 reaction with OH^- ?
 - CH_3Br or CH_3I
 - $(CH_3)_3CCl$ or CH_3Cl
- Explain why (i) the dipole moment of chlorobenzene is lower than that of cyclohexyl chloride? (ii) alkyl halides, though polar, are immiscible with water? (iii) Grignard reagents should be prepared under anhydrous conditions?
- Arrange the compounds of each set in order of reactivity towards S_N2 displacement:
 - 2-Bromo-2-methylbutane, 1-Bromopentane, 2-Bromopentane.
 - 1-Bromo-3-methylbutane, 2-Bromo-2-methylbutane, 2-Bromo-3-methylbutane.

- c) 1-Bromobutane, 1-Bromo-2, 2-dimethylpropane, 1-Bromo-2-methylbutane, 1-Bromo-3-methylbutane.
9. p-Dichlorobenzene has higher melting point and lower solubility than o- and m-isomers. Discuss
 10. The treatment of alkyl chlorides with aqueous KOH leads to the formation of alcohols but in presence of alcoholic KOH, alkenes are the major products.
 11. Which is a better nucleophile, a bromide ion or an iodide ion?
 12. What are chiral and achiral objects?
 13. What is plane polarized light?
 14. What do you understand by the term optical activity of compounds?
 15. Explain why thionyl chloride method is preferred for preparing alkyl chlorides from alcohols?
 16. What is an asymmetric carbon?
 17. Explain as to why haloarenes are much less reactive than haloalkanes towards nucleophilic substitution reactions.

Or

Which compound in each of the following pairs will react faster in S_N2 reaction with $-OH^-$? Why?

- a) CH_3Br or CH_3I
- b) $(CH_3)_3CCl$ or CH_3Cl
18. Which ones in the following pairs of substances undergoes S_N2 substitution reaction faster and why?
19. Which one in the following pairs undergoes S_N1 substitution reaction faster and why?



20. What are enantiomers? Draw the structures of the possible enantiomers of 3-methylpent 1-ene.
21. Although chlorine is an electron withdrawing group, yet it is ortho, para-directing in electrophile aromatic substitution reactions. Why?

22. Answer the following:

- a) Haloalkanes easily dissolve in organic solvents, why?
- b) What is known as a racemic mixture? Give an example.
- c) Of the two bromoderivatives, $C_6H_5CH(CH_3)Br$ and $C_6H_5CH(C_6H_5)Br$, which one is more reactive in S_N1 substitution reaction and why?

23. Give reasons:

- a) tert-Butyl chloride reacts with aqueous sodium hydroxide by S_N1 mechanism while n-butyl chloride reacts by S_N2 mechanism.
- b) Alkyl halides, though polar, are immiscible with water.
- c) Vinyl chloride is unreactive in nucleophilic substitution reactions.
- d) Neo-pentyl bromide undergoes nucleophilic substitution reaction very slowly.
- e) 3-Bromocyclohexene is more reactive than 4-bromocyclohexene in hydrolysis with aqueous NaOH.
- f) Iodoform is obtained by reaction of acetone with hypiodite ion but not iodide ion.