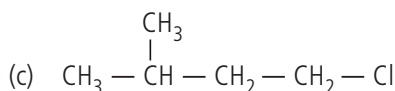
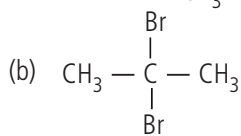
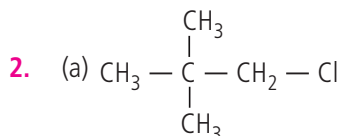


# Haloalkanes and Haloarenes



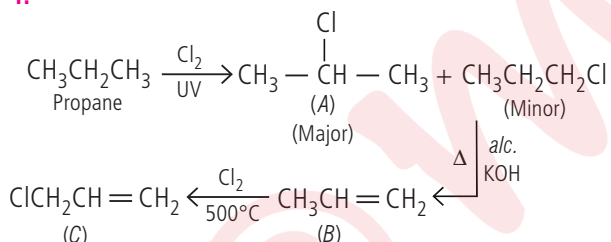
## TRY YOURSELF

- (a) 1-Bromo-4-fluoro-2-iodobenzene  
(b) 1-Bromo-2-chloro-4-iodobenzene  
(c) 1, 4-Dibromobenzene  
(d) 1-Chloro-2-methylbenzene



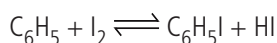
- The X in an alkyl halides is bonded to an  $sp^3$  hybridised carbon of an alkyl group. In allyl halides, there is a C = C bonded to the C bearing the X. In vinyl halides, X is bonded to an  $sp^2$  hybridised C of an alkene.

4.



This reaction is called allylic halogenation reaction because halogenation occurs at the allylic position of an alkene.

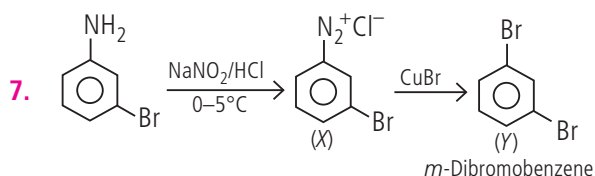
- Direct reaction of benzene with  $\text{I}_2$  is slow ( $\text{F}_2 > \text{Cl}_2 > \text{Br}_2 > \text{I}_2$ ) and reversible in nature.



- It is a method to prepare alkyl iodide by reacting alkyl chloride or bromide with NaI in acetone.

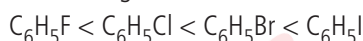


NaCl and NaBr are less soluble in acetone and precipitate to prevent the backward reaction.



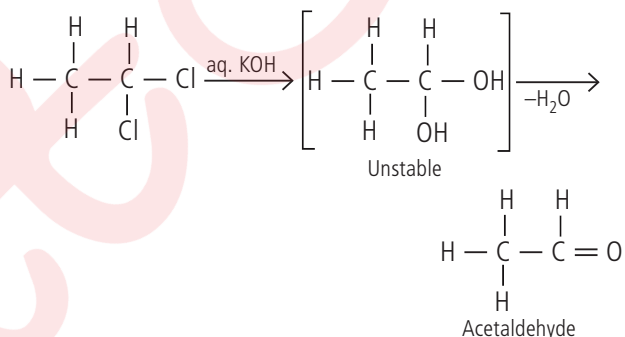
## ANSWERS

- Boiling point of haloarenes increases as we go from fluoro to iodo compounds. This is because magnitude of van der Waals' forces increases with the increase in size and mass of the halogen atom.



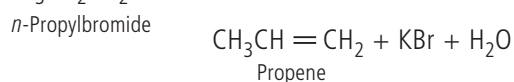
- Haloalkanes dissolve in organic solvents because the intermolecular attractions between haloalkanes and organic solvent molecules have the same strength as in the separate haloalkanes and solvent molecules.

10.



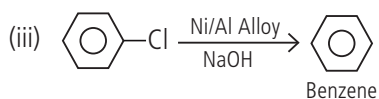
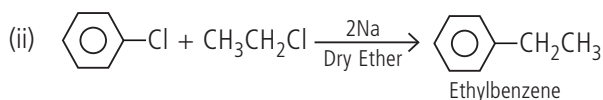
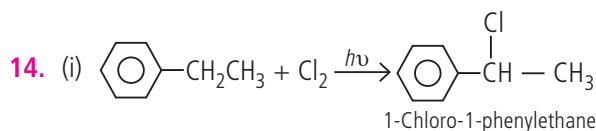
- $\text{CH}_3\text{CH}_2\text{I}$  offers least hinderance to the approaching nucleophile. So, it will react most rapidly in  $\text{S}_{\text{N}}2$  reaction.

- $\text{CH}_3\text{CH}_2\text{CH}_2\text{Br} + \text{alc. KOH} \rightarrow$



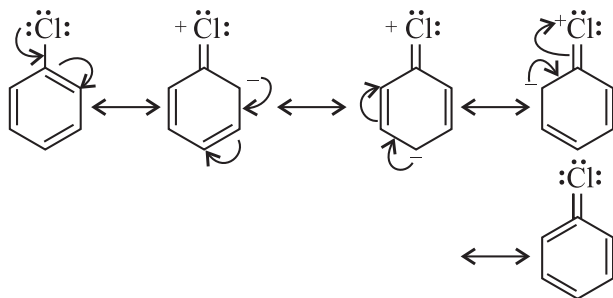
- (a) Tertiary halide reacts faster than secondary halide because of the greater stability of *tert.* carbocation.

- (b) Because of greater stability of secondary carbocation than primary.



15. Haloarenes are much less reactive than haloalkanes towards nucleophilic substitution reactions due to the following reasons.

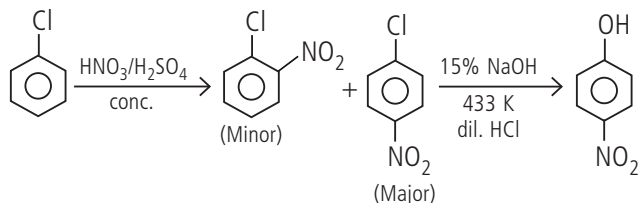
(i) Resonance effect : In haloarenes the electron pairs on halogen atom are in conjugation with  $\pi$ -electrons of the ring and the following resonating structures are possible.



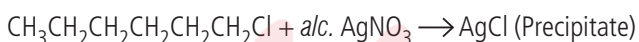
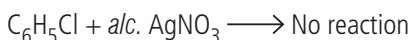
C — Cl bond acquires a partial double bond character due to resonance. As a result, the bond cleavage in haloarene is difficult than haloalkane and therefore, are less reactive towards nucleophilic substitution reaction.

(ii) In haloarenes, halogen is attached to  $sp^2$ -hybridised carbon while in haloalkanes, halogen is attached to  $sp^3$ -hybridised carbon.

16.

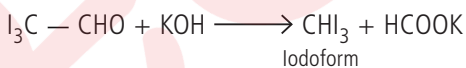
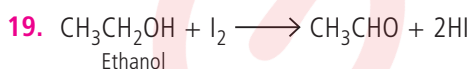


17. *n*-Hexyl chloride reacts with alcoholic  $\text{AgNO}_3$  solution to give a precipitate of  $\text{AgCl}$  while chlorobenzene does not .



18. Trade name : Gammaxene

IUPAC name : 1, 2, 3, 4, 5, 6-Hexachlorocyclohexane



20. Because of its low boiling point and low inflammability.

