HALOALKANES AND HALOARENES

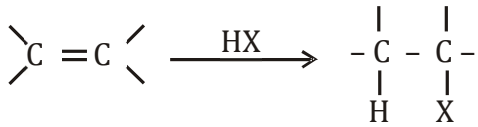
METHOD OF PREPARATION OF HALOALKANES

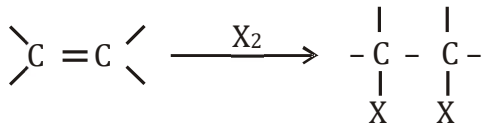
PREPARATION OF ALKYL HALIDE

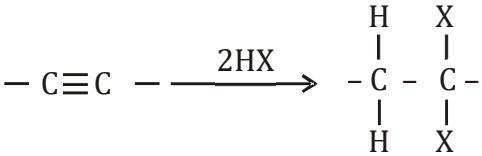
From alkane

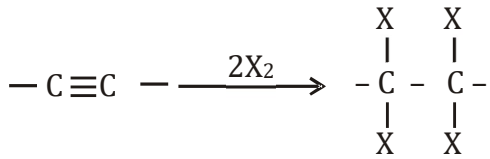
$$R-H \xrightarrow{X_2/hv} R-X + HX$$

From alkenes and alkynes (Detail in alkene and alkyne)

(a) 

(b) 

(c) 

(d) 

From alcohol (Detail in the alcohol)

$$R-OH \xrightarrow{HX, PX_3, PX_5, SOX_2} R-X$$

From other halides

$$R-X + I^- \xrightarrow{acetone} R-I + X^-$$

$$R-Cl + KF \xrightarrow{18-crown-6} R-F$$

FINKELSTEIN REACTION

1. $CH_3-CH_2-Cl \xrightarrow{NaI/acetone} CH_3-CH_2-I$

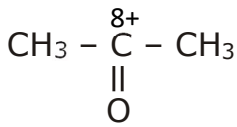
Nucleophility – in Polar Protic solvent – $F^{\ominus} < Cl^{\ominus} < Br^{\ominus} < I^{\ominus}$

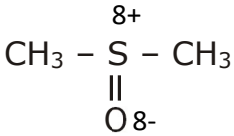
Polar Aprotic solvent – $F^{\ominus} > Cl^{\ominus} > Br^{\ominus} > I^{\ominus}$

Covalent Nature:

$$NaF < NaCl < NaBr < NaI$$

Solubility in polar solvent ↓





Acetone → Solubility in acetone is soluble

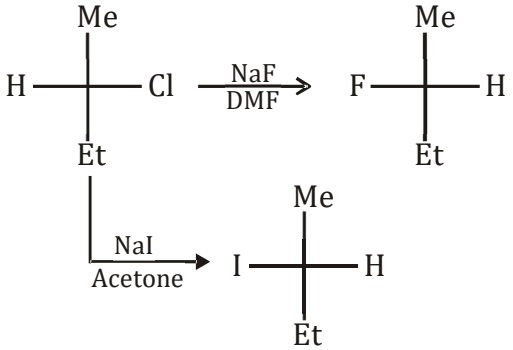
NaF < NaCl < NaBr < NaI

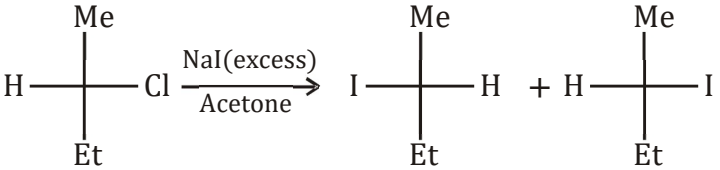
2. C – C – Br $\xrightarrow[\text{Acetone}]{\text{NaBr}}$ C – C – Br

3. C – C – Cl $\xrightarrow[\text{Acetone}]{\text{NaCl}}$ C – C – Cl

4. C – C – Cl $\xrightarrow[\text{Acetone}]{\text{NaF}}$ C – C – F

5. C – C – Cl or $\xrightarrow[\text{DMF DMSO}]{\text{KF}}$ C – C – F (swart reaction)

6. 

7. 

(racemisation)