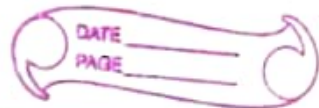
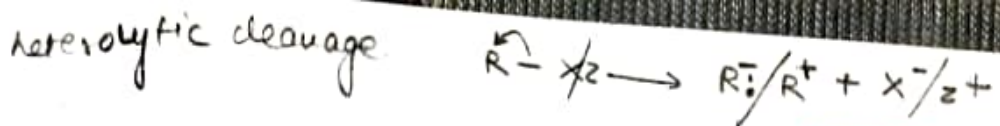


Heterolytic cleavage



- Carbocation $\rightarrow$ formed from heterolytic cleavage.
- * Organic reactions which proceed through heterolytic bond cleavage are called ionic or heteropolar or polar reactions.

- * homolytic cleavage $\rightarrow R-\overset{\cdot\cdot}{X} \xrightarrow[\text{light}]{\text{heat}} R^\cdot + X^\cdot$
 $\hookrightarrow$ generation of free radical $\rightarrow$ half-headed (fish hook) arrows which are neutral species. STABILITY $\rightarrow CH_3 < 1^\circ < 2^\circ < 3^\circ$

- Organic reaction which proceed by homolytic fission $\rightarrow$ free radical or homopolar or non polar reactions.

* Nucleophiles and Electrophiles

they are reagent

Brings e^- pair

takes away e^- pair

$\rightarrow$ in a polar organic reaction, nucleophile attack electrophilic centre of substrate (e^- deficient) & electrophile attack nucleophilic centre (e^- rich) $\rightarrow$ current flow notation: movement of e^- pair from nucleophile to electrophile.

Eg. of nucleophile $\rightarrow HO^-, NC^-, RC_2^-,$ & if neutral $\rightarrow H_2O, R_3N, R_2NH$ due to presence of lone pair

Eg. of electrophile $\rightarrow$ Carbocation, neutral molecule having functional group as carbonyl group, alkyl halide.

- * Carbon in Carbocation has sextet configuration hence it is e^- deficient. & in neutral molecules due to polarity, partial +ve charge is generated on carbon hence it becomes electrophilic.

Electron displacement effects

e^- displacements due to the influence of an atom or a substituent group present in molecule cause permanent polarisation of bond.
Eg- Inductive effect & resonance effect