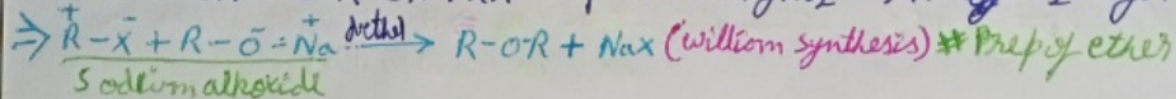
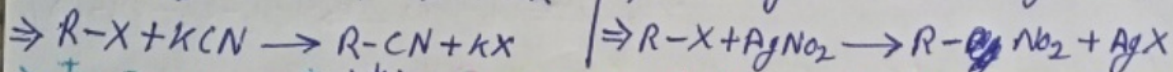
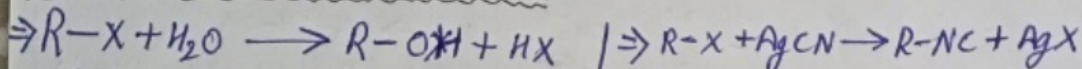


Nucleophilic Substitution Reaction



Types of Nucl. Substi. Rex. a) SN^1 b) SN^2

[Nucleophilic substitution unimolecular] [Nucleophilic substitution Bimolecular]

** A compound is optically active if it rotates plane polarized light*

SN^1 reaction

- First order Reaction occurs in Polarized Solvent
- The formation of C^+ in RDS of SN^1 reaction occurs in 2 steps
↳ rate determining step
- Rate $\propto [R-X]$ $\propto$ stability of C^+
- SN^1 react is exothermic in nature $\Rightarrow$ low temp $\rightarrow$ rate $\uparrow$
- * Compounds having chiral compound are optically active
- * Compound having 2 or more chiral compound is optically active if it is not superimposable on its mirror image.

** Mixture of two enantiomers is called Racemic Mixture [Denoted by $(\pm)$]*

SN^2 reaction

- Second order reaction occurs in Polar Solvent
- Formation of Transition state occurs in 1 step.
- Rate $\propto [Na^+][R-X]$, No formation of C^+
- SN^1 reaction is exothermic $\Rightarrow$ Low Temp $\rightarrow$ rate $\uparrow$
- Only inversion takes place no Retention.