

CLASS - B.Sc. 2nd semester

SUBJECT - chemistry

TOPIC - Important points to remember

S_N1 & S_N2 reactions from

alkyl & aryl halides

① Rate of reaction depends on both (the concentration of substrate as well as nucleophiles).

$$\text{Rate} = k [R-X]^1 [Nu]^{-1}$$

② Polar aprotic solvent is used like acetone.
↓
(Hydrogen is not given)

Important

③ If optically active substrate is used the product has inversion configuration is formed.

(Means if the substrate rotate PPL (Plane polarised light) in clockwise manner then the product rotate PPL into anticlockwise manner.)

④ Rate of reaction $\propto \frac{1}{\text{steric hinderance}}$

(steric hinderance means ~~crow~~ crowdliness)

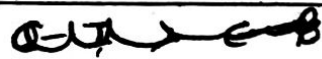
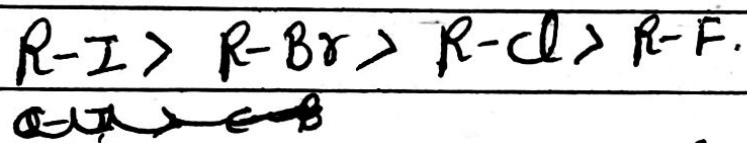
If larger group is attached to carbon atom then nucleophile (Nu^-) can not approach from backside so rate of reaction anti $\text{E}_{2\text{B}}$

The order of reaction



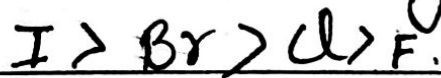
because steric hindrance is minimum into 0° compound.

(5) Rate of reaction also depends upon the leaving group. The order is



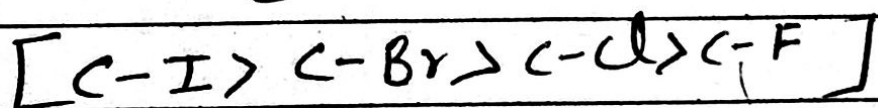
Rate of reaction & leaving gp.

The order of leaving gp. is



[Reasoning \rightarrow I_2 has larger in size its bond length is large than others.

I-I bond length 300 pm
 Br-Br bond length 220 pm
 Cl-Cl bond length 190 pm
Break anti $\text{E}_{2\text{B}}$



Important points of

S_N1 (Unimolecular nucleophilic substitution)

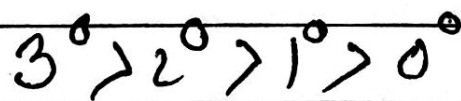
- ① Step 1st in mechanism is rate determining step. because only $[R-X]$ is participating.

$$\text{Rate} = k [R-X]^1$$

order of reaction = 1

- ② Racemic mixture is formed.

- ③ Rate of reaction & stability of carbocation.



(with respect to substrate)

(जितना stable होगा उतना forward reaction ही होगा)

- ④ Polar protic solvent is used to increase the rate of reaction.