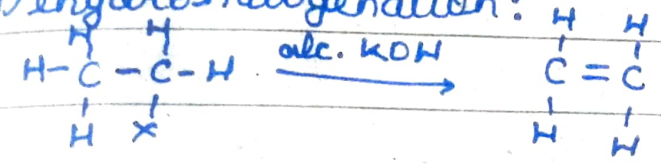
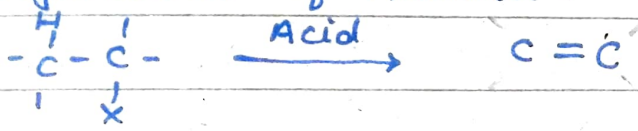
ELIMINATION REACTIONS- 303

I] Dehydrohalogenation:



Also known as: 1, 2 elimination, β elimination

II] Dehydration of Alcohol:



E₂ Reaction:

- IInd order Reaction
- depends on concen of Both reagents (alkyl halide and base) Single step reacn.
- strong base should be used

E₁ Reaction:

- Ist order Reaction
- depends only the concen of alkyl halide
- Two step Reacn.
- weak base is used.

10/3/18

* Kinetics of elimination Reaction:

A concentrated soln of strong base follows IInd order kinetics i.e. the rate of alkene formation depends upon the concentra of both substrate i.e. alkyl halide and base.

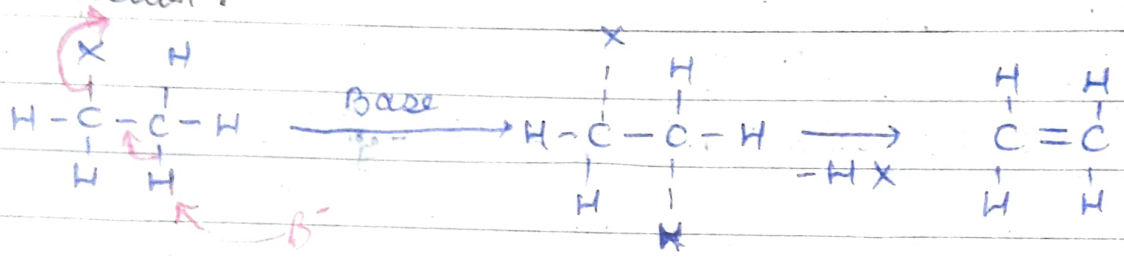
Rate = k [R-X] [B]

Base

If we reduce the strength / concentration of base, it follows first order kinetics. The rate of elimination depends only upon the conc^n of alkyl halide.

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

* E_2 Reaction:



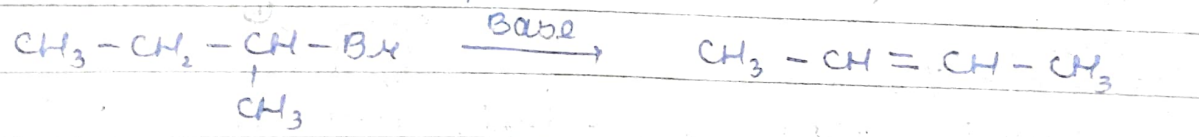
* Heterolytic bond dissociation energy: shows the strength of carbon ~~hydrogen~~ halogen bonds.

$$R\text{-}F > R\text{-}Cl > R\text{-}Br > R\text{-}I$$

* Reactivity of alkyl halide towards elimination: $R\text{-}I > R\text{-}Br > R\text{-}Cl > R\text{-}F$

Saytzeff's Rule: In dehydrohalogenation the preferred product is the alkene that has the greater no. of alkyl groups attached to the doubly bonded carbon atoms. OR

Poorer becomes more poorer.



The structure of more branched at ~~and~~ the carbon carrying the halogen provided a greater no. of β-hydrogen for attack by base and hence more favourable factor towards elimination.

Reactivity of alkyl halide towards elimination: (E_2)

$$3^\circ > 2^\circ > 1^\circ$$

Ease of formation of alkene -

The more stable the alkene, the faster it's formed.