

Factors affecting Mechanisms:-

a) Conc. of Base:- Change in conc. of base affect E_2 & SN^2 rxns

but E_1 & SN^1 remain unaffected.

As conc. of base $\downarrow$ se, E_2 & SN_2 rx rate $\downarrow$ se.

As conc. of base $\uparrow$ se, E_2/SN_2 will be main rx.

b) Nature & strength of Base $\rightarrow$

$H_2O < I^- < Cl^- < CH_3COO^- < SH^- < OH^-$ (Basic order)

$H_2O < CH_3COO^- < Cl^- < OH^- < I^- < SH^-$ (Nucleophilicity order)

As the base strength $\downarrow$ ses, E_2 rx $\downarrow$ ses.

As conc. of base & strength $\uparrow$ ses, E_1 rx converts to E_2 rx. but elimination/sub. ratio remains same because factors that $\uparrow$ se E_2 also $\uparrow$ se SN^2 .

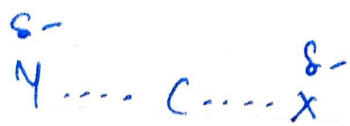
c) Polarity of solvent:-

As polarity of solvent $\uparrow$ ses

$SN^2 \xrightarrow{\text{more to}} SN^1$ $\uparrow$ se

$E_2 \rightarrow E_1$ $\uparrow$ se

For E_2 & SN^2 Rxns, the effect of polarity of solvent will $\uparrow$ se more SN^2 than E_2 .



S_N2 TS

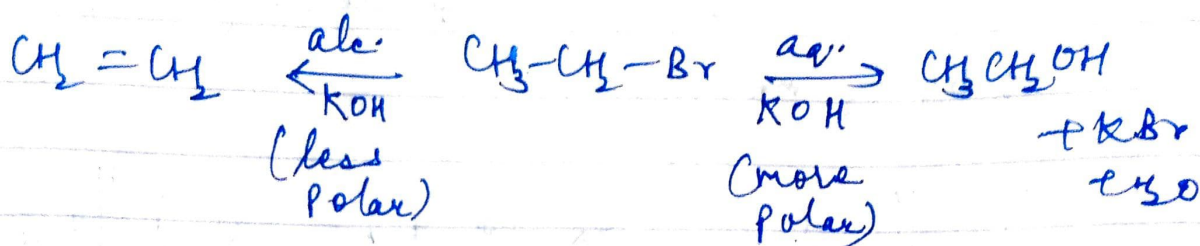
(Charge spread on 3 atoms)



E_2 T.S

(Charge spread on 5 atoms)

In more polar solvents, sub. product more form than elimination product.

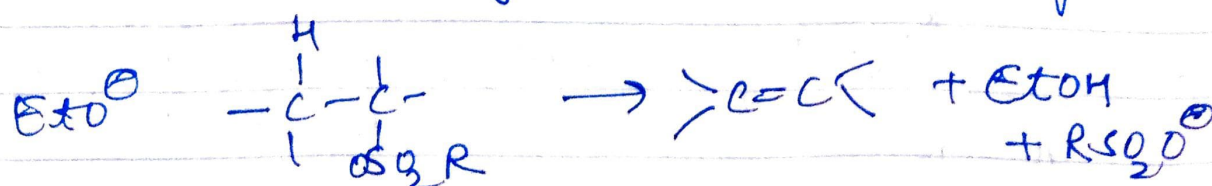


iv) Nature of Leaving gp.

If gp. easily removes $\rightarrow E_1$ will be given priority b'coz carbonium ion form easily.

If leaving gp. get +ve charged, then mech. $E1cB$ b'coz probability of formation of carbanion $\uparrow$ i.e. which is intermediate of $E1cB$... Rx will be thru $E1cB$.

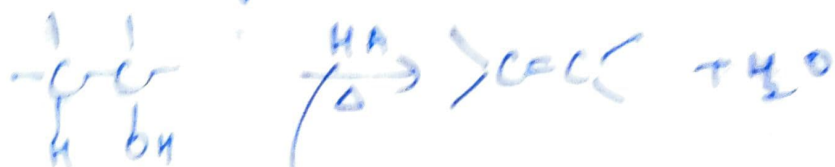
Alcoholic sulfonate give elimination easily.



v) Effect of temp:- As temp $\uparrow$ i.e., elimination or E_2

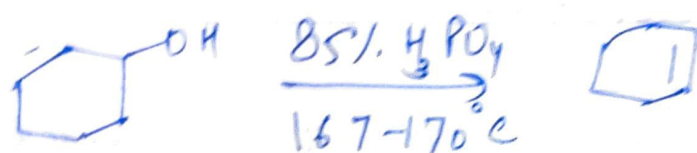
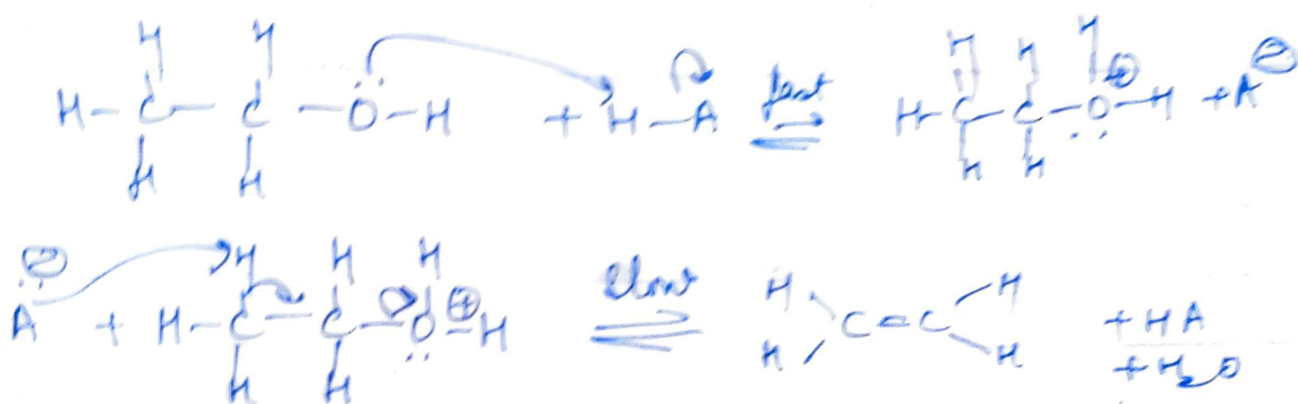
Method 2

Dehydration of alcohols:

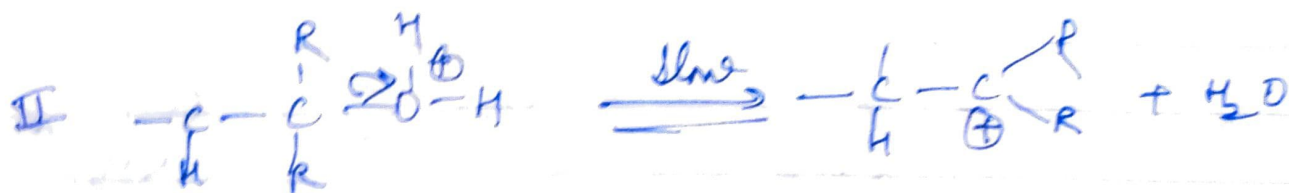
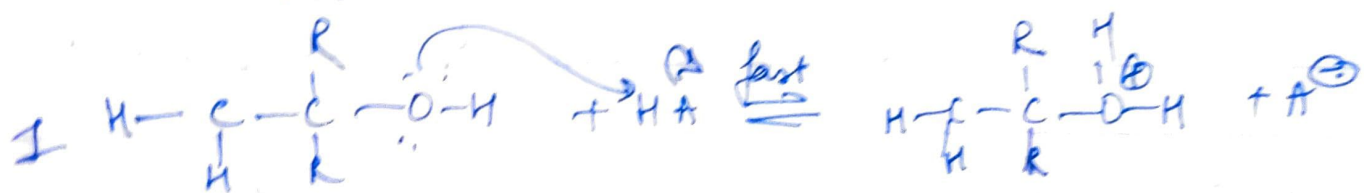


anh. ZnCl_2 , H_2SO_4 , H_3PO_4 , etc

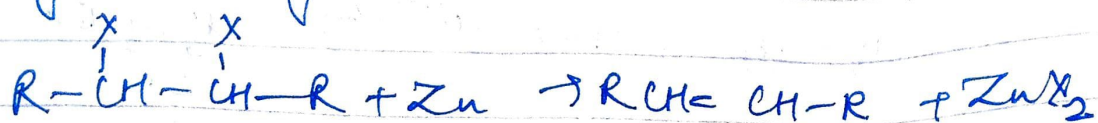
$3^\circ > 2^\circ > 1^\circ$ tendency of dehydration
 $\rightarrow$ by E_2 mech.



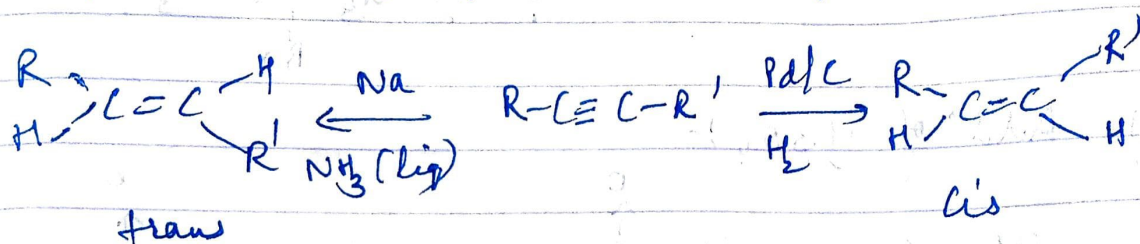
In case of 3° alcohols, dehydration by E_1 .



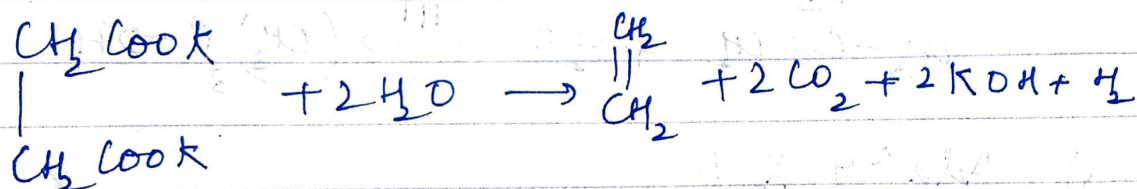
3) By dehalogenation:-



4) By partial hydrogenation of alkynes:-

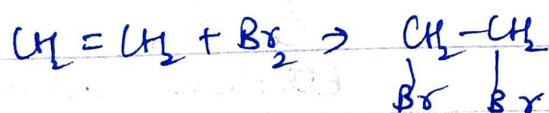


5) Kolbe's Method:-

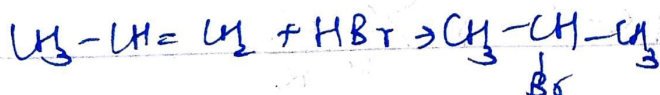
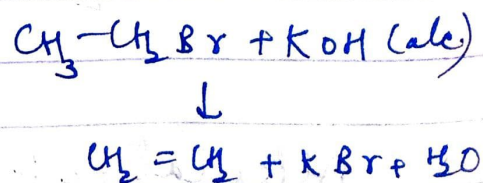


Reactions of alkenes:-

1) Addition Rxns

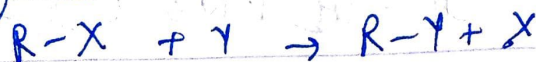


2) Elimination Rxns



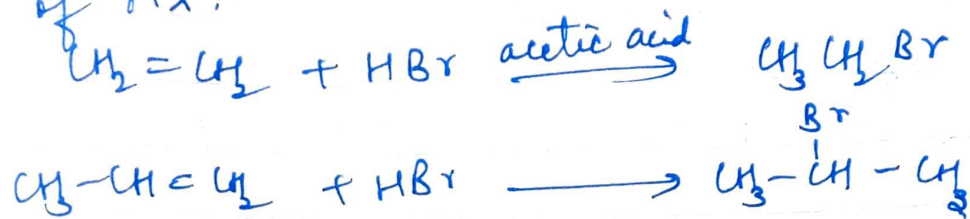
3)

Sub- Rxns:-

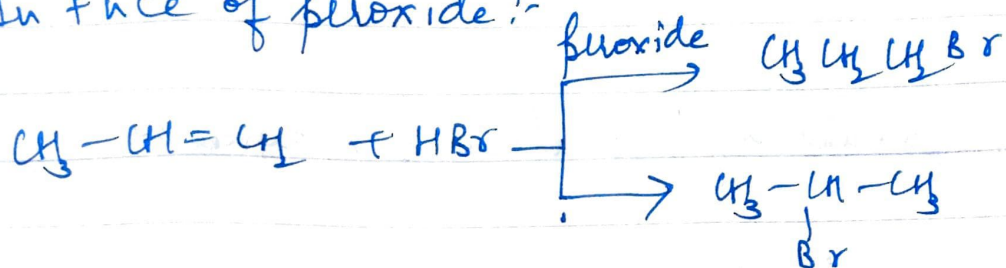


Electrophilic Addⁿ Rxn:-

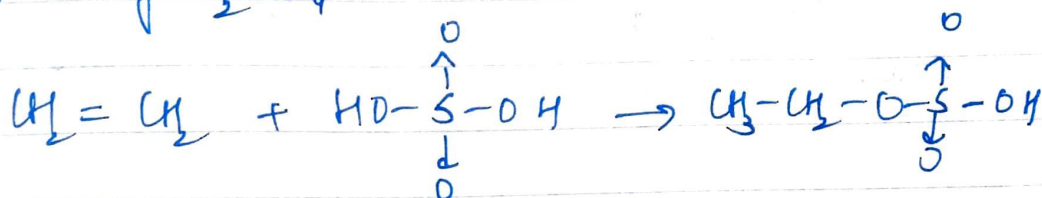
1) Addⁿ of HX:-



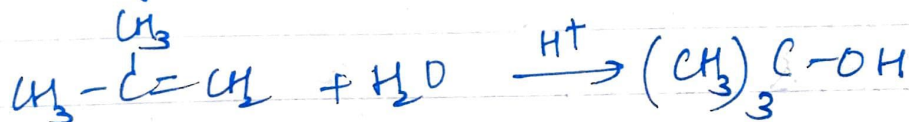
2) In + nce of peroxide:-



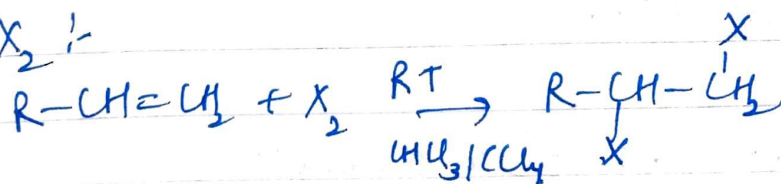
3) Addⁿ of H_2SO_4 :-



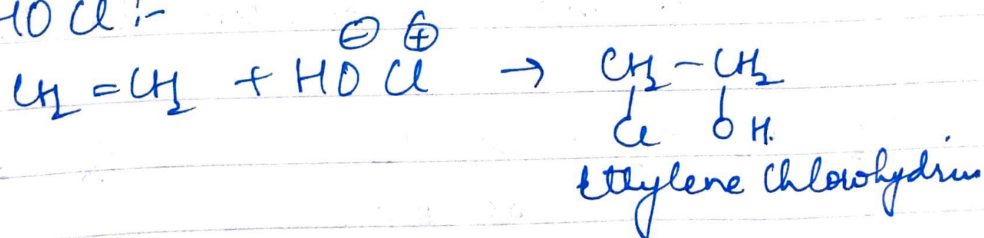
4) Addⁿ of H_2O :-



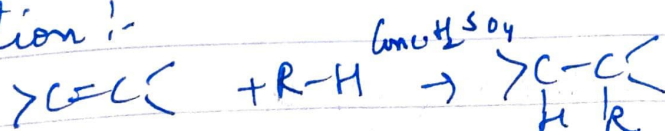
5) Addⁿ of X_2 :-



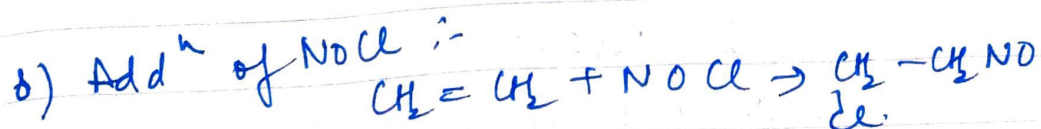
6) Addⁿ of HOCl :-



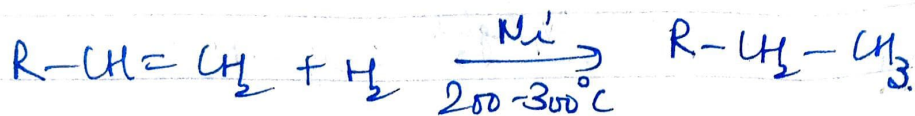
7) Alkylation:-



8) Addⁿ of NOCl :-

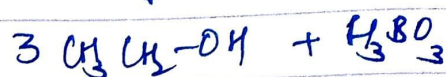
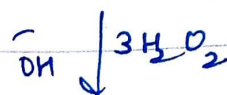
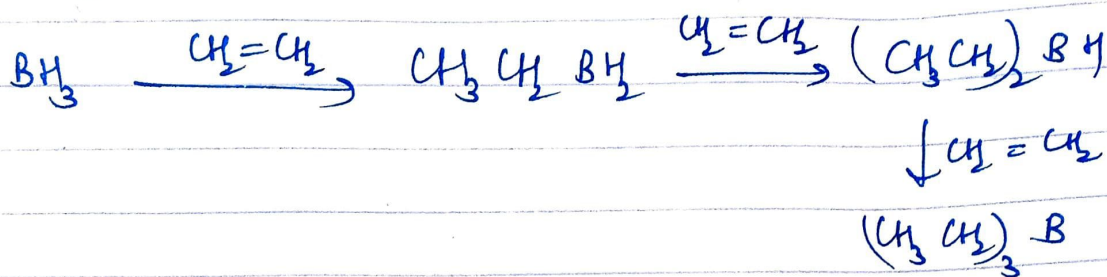


9) Addⁿ of H₂ :- (in addⁿ)

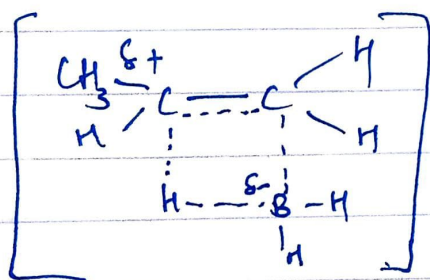


As steric hind. ↑, hydrogenation rate ↓

10) Hydroboration :- (Syn addⁿ)



four center T.S.



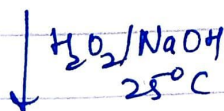
addⁿ opp to M. Rule

11) Hydroboration-Oxidation :-

I step

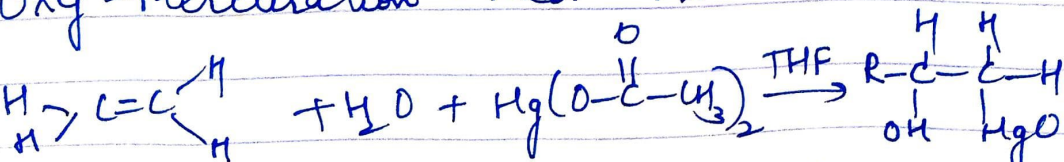


II step



12) Oxy-Mercuration-Redⁿ Rxn :-

I step



II

As per M. rule

