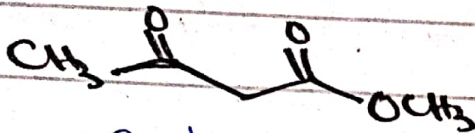
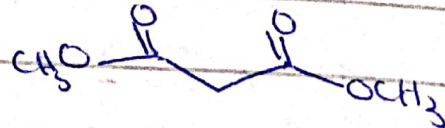


malonic ester



aceto acetate ester acid

aceto acetic ester

if ability of EWG high then strong weak base

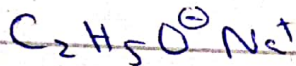
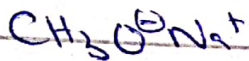
if ability of EWG less then strong base

weak EWG need strong base, strong EWG need weak base

with malonic ester we use bases



alkoxide



NaOH not used

bcz (its deals with water) produce water

so we not deal with it in

carbonion we deal with inert cond.

if we give protic condition then carbonion

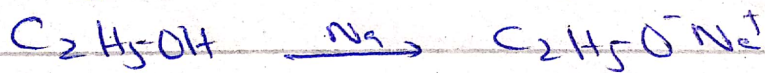
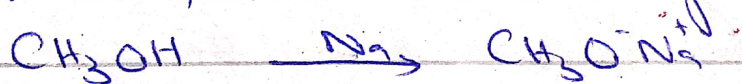
form gain proton

and again same reactant

form

so we don't give protic condition

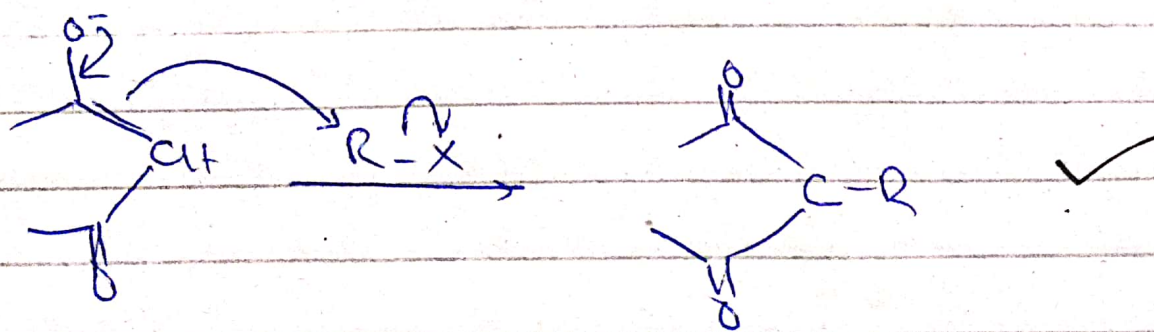
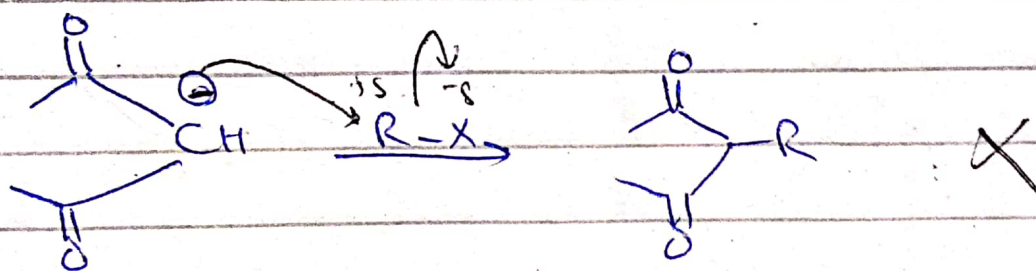
generation of alkoxide is easy & cheaper



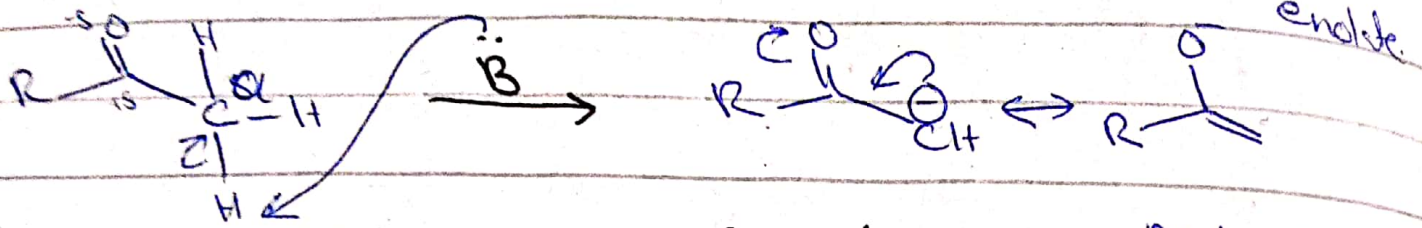
directly Ethanol & methanol not used firstly
dried it after their driers heating them with
Na & $\text{CH}_3\text{O}^-\text{Na}^+$, $\text{C}_2\text{H}_5\text{O}^-\text{Na}^+$ form then abruptly react
then for production of carbanion.

if at neighbour of carbonion not any EWG then $\ominus\text{CH}$ is hard.

But due to presence of EWG $\ominus\text{CH}$ (carbonion) soft due to delocalization of charge. directly carbonion not react first enolde form then reaction occ.

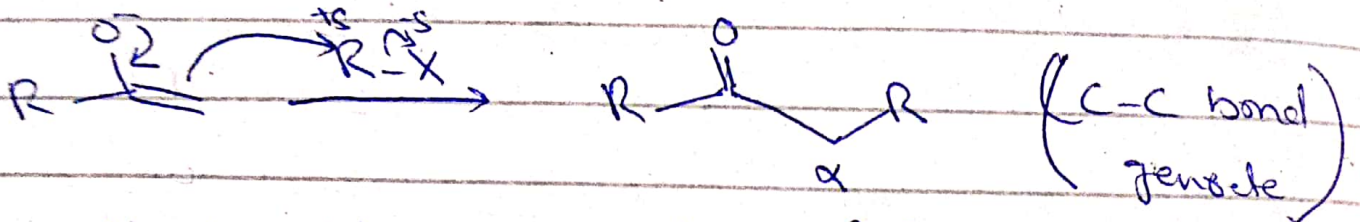


electrophile



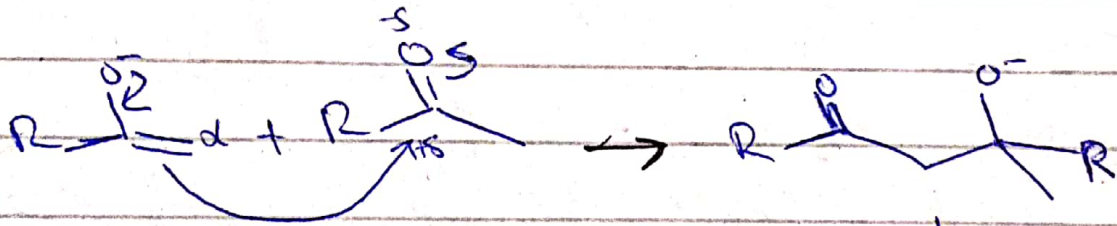
α -Alkylation

nucleophile



Nucleophilic Substitution (S_N2)

Carbonyl have ambident nature

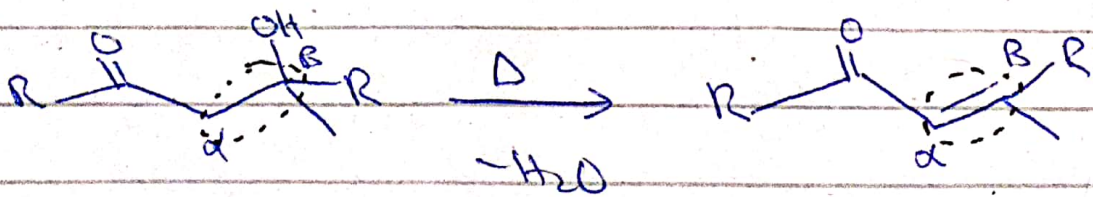


H^+

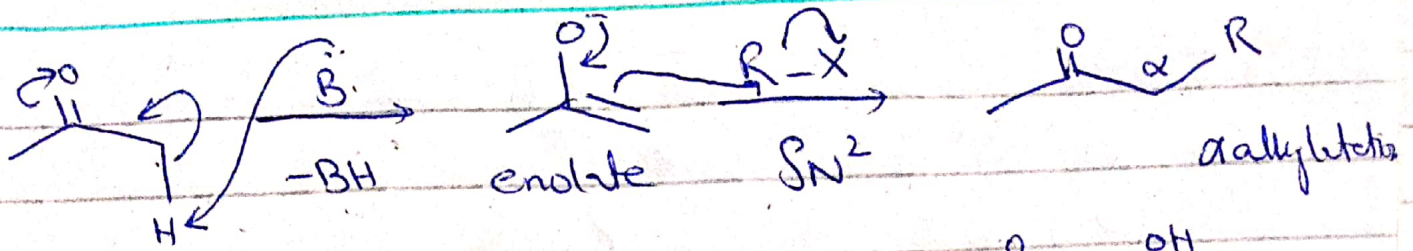
β -hydroxyl carbonyl

Aldol type

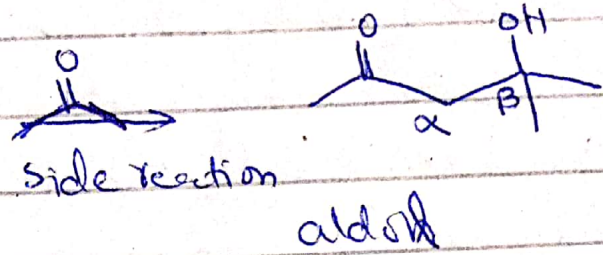
ester, carbonyl, aldehyde give aldol type



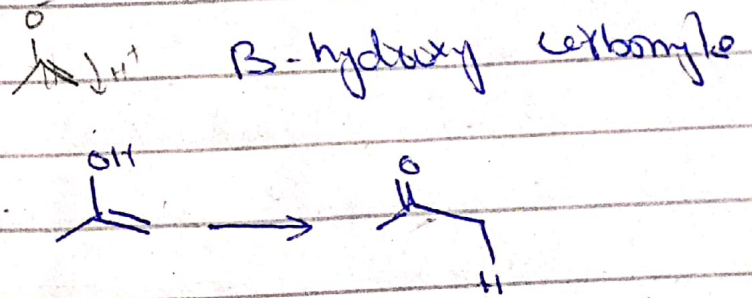
α - β unsaturated carbonyl



-BH conjugate acid of Base



if it is strong then this conjugate acid lead to reversibility of enolate



in which condition reaction forward or backward

Side reaction

Carbonyl before reacting external reagent (alkyl halide) start reacting undergoes self condensation and side reaction out.

Selection of Base is important

side reaction occur if Base given is not strong or quantity of Base is less so in this case enolate form start reacting with carbonyl and start producing β hydroxy carbonyl side product. instead of α -alkylation

Or if we want to prepare aldol then we either reduce amount of R-X or provide excess of carbonyl that all not converted to enolate remaining carbonyl with enolate give aldol.