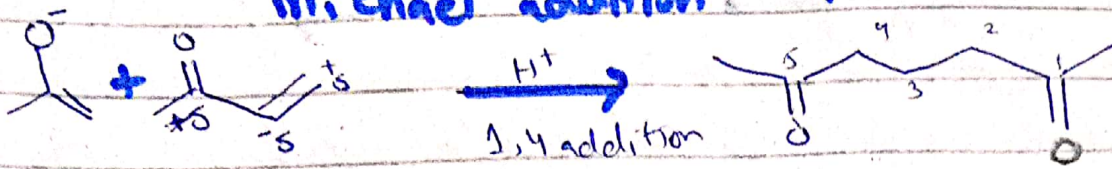
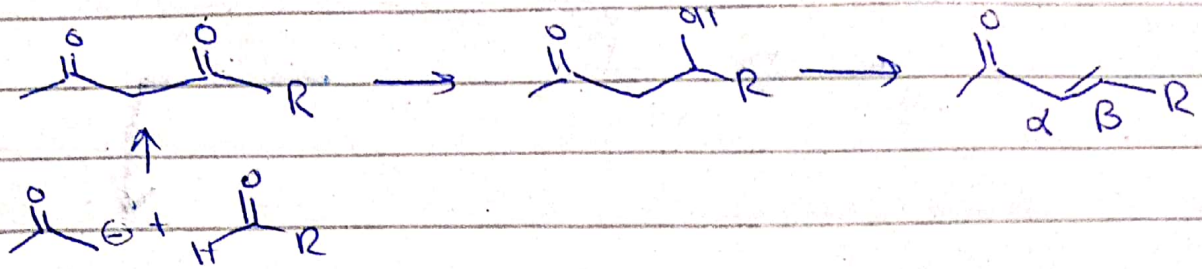


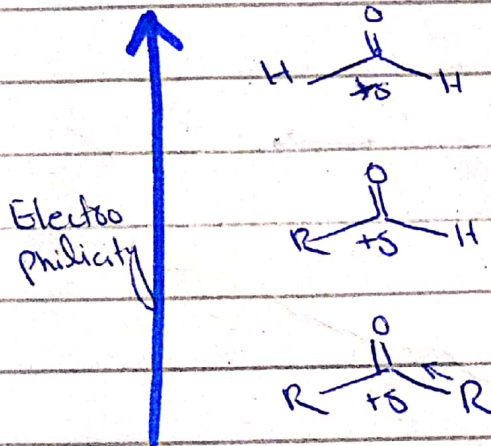
Michael addition



Mic donor
Michael acceptor



Theoretically starting material of $\text{H}_2\text{C}=\text{C}=\text{O}$ is $\text{H}_2\text{C}=\text{O}$
 formaldehyde
 But practically its not done.



formaldehyde is so much reactive so not available & highly reactive mostly it does not react with any thing

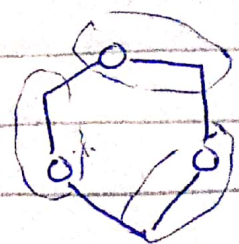
Formalene \rightarrow soln of formaldehyde

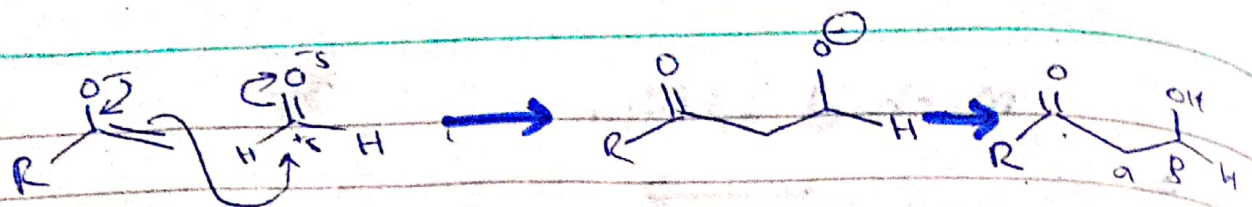
so formaldehyde is over reactive

when we want to react them

with enolate then again again

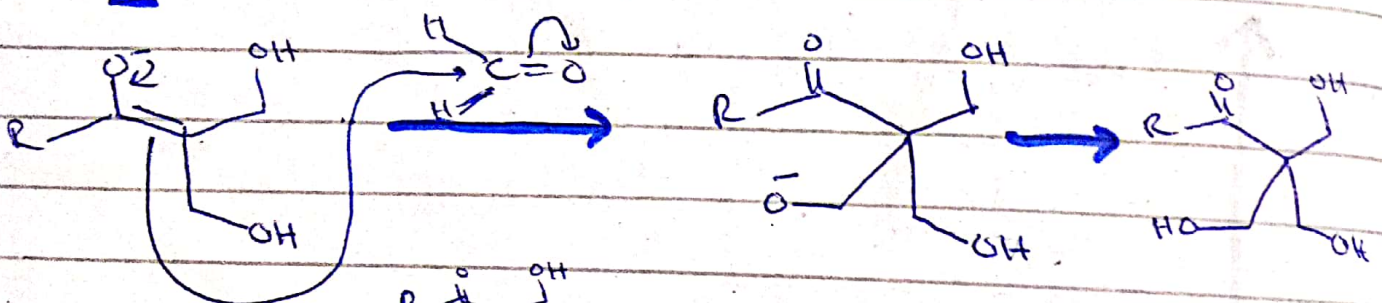
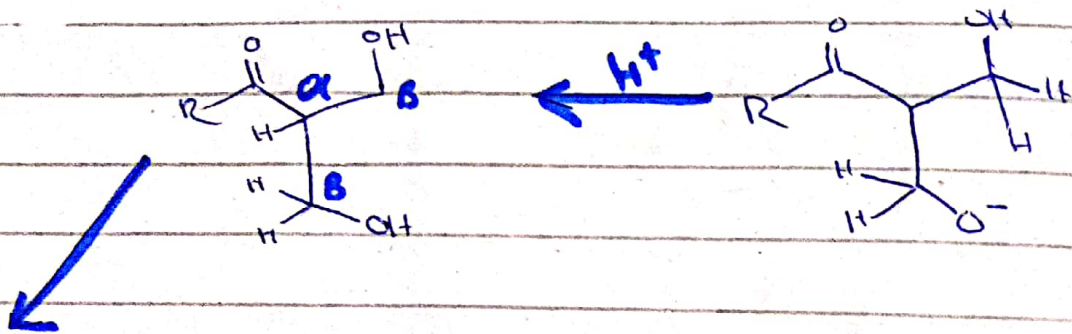
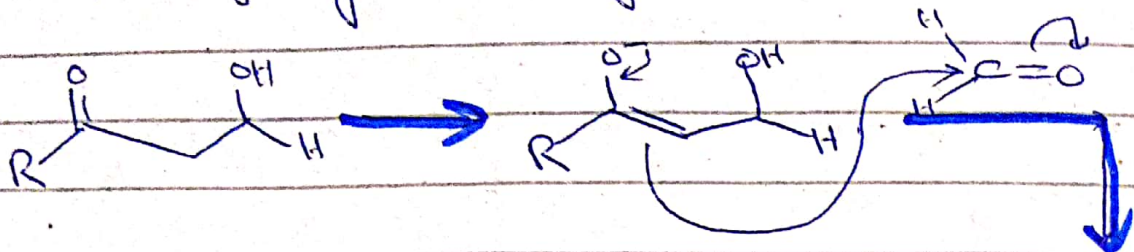
enolization occ-





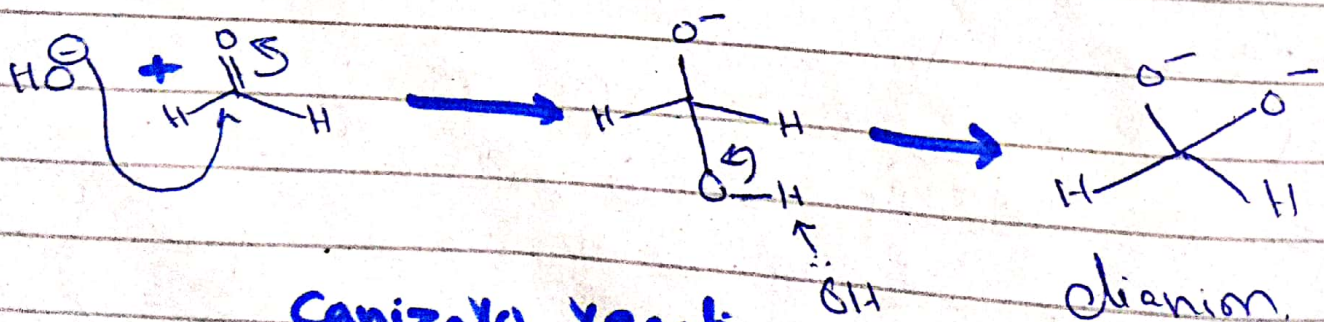
at that stage it does not stop & undergoes further further enolization.

* B-hydroxy keton again form enolate.



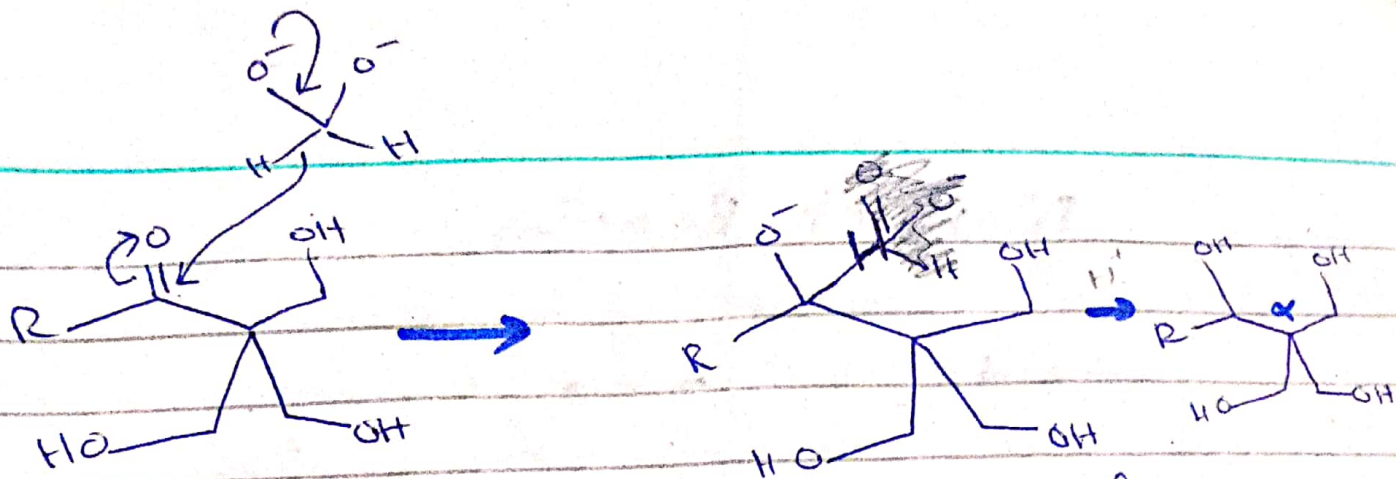
Now in this R-C(O⁻)=CH(OH)-CH(OH)-CH₃ not any α -hydrogen available to form enolate & further undergo enolization. But by side reaction dianion form which cause reduction & convert C=O to OH .

Side Reaction:



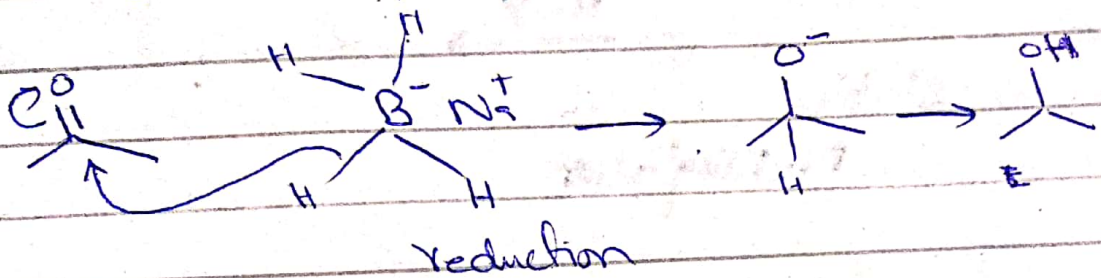
Cannizzaro Reaction

dianion.



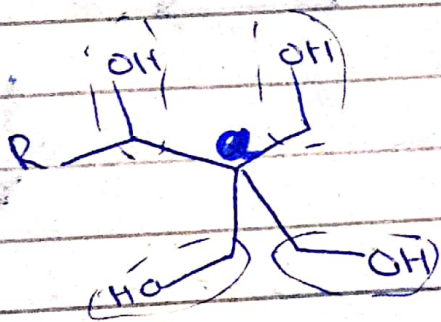
1,2 addition, Nucleophilic addition

dichromate give hydride ion and cause reduction just like NaBH_4



reduction

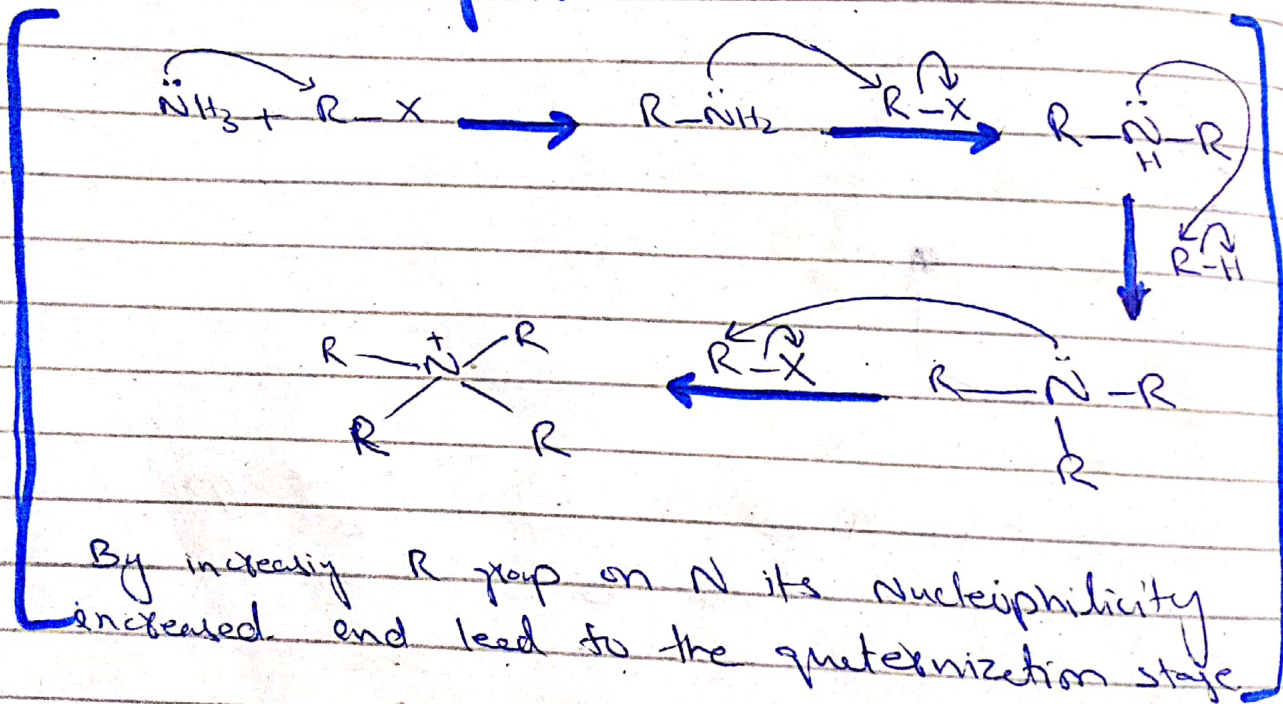
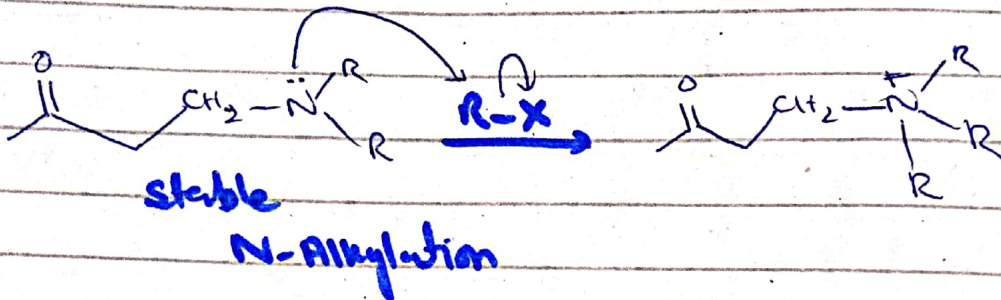
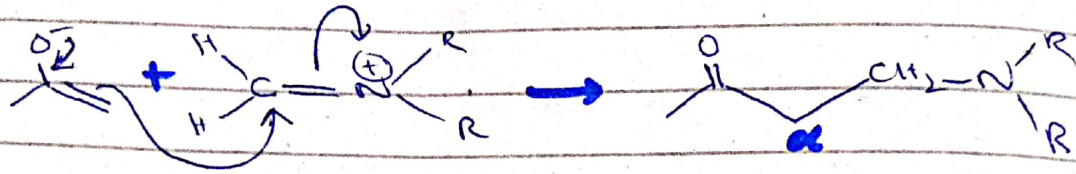
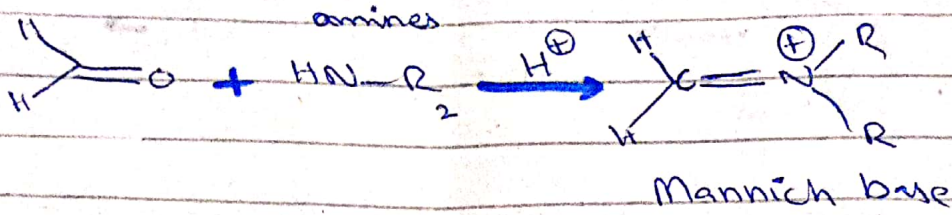
①



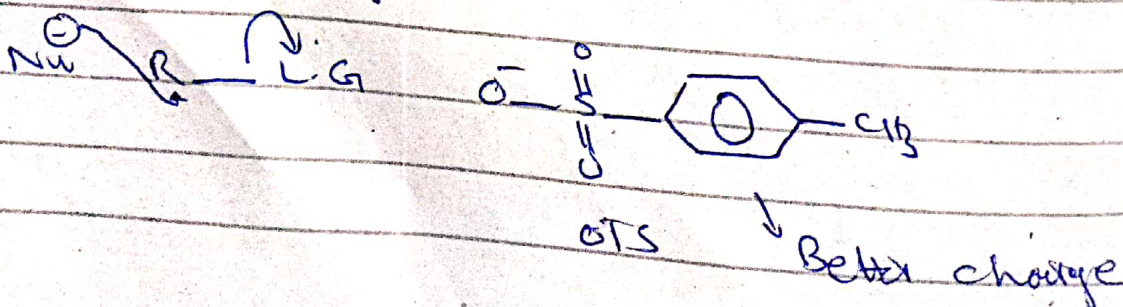
$\text{CH}_2\text{-OH}$ group attach to α Carbon

so by Aldol condensation R-CO-CH_2 this specie can't form & lead bcz formaldehyde is over reactive & form ① product

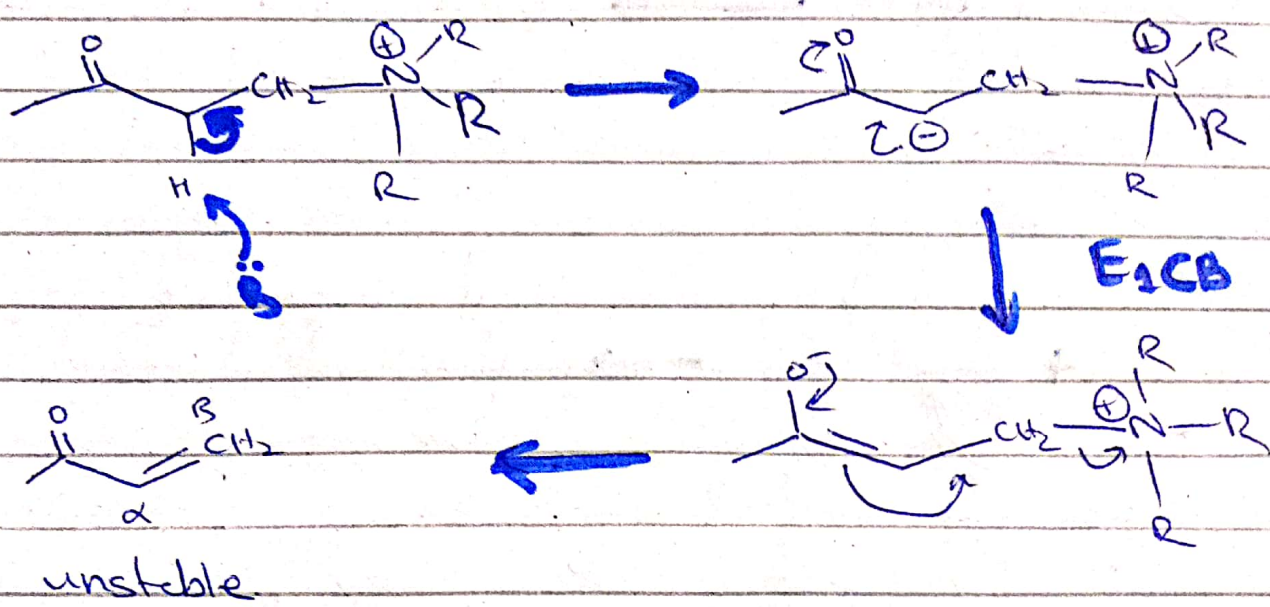
Mannich Reaction



Good LG are those which better charge accommodate. e.g. OTS in TSCI

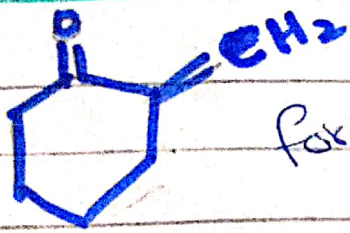


But those L.G which have +ve charge and require electrons to neutralize are more better just like N^+ bcz neutral specie is more stable.



$\text{CH}_2=\text{CH}-\text{C}(=\text{O})\text{R}$ it is unstable can not be store

But they need to synthesize quickly to need. $\text{R}_3\text{N}^+\text{CH}_2\text{CH}_2\text{C}(=\text{O})\text{R}$ is stable and can be store after this by diff reactions $\text{CH}_2=\text{CH}-\text{C}(=\text{O})\text{R}$ can form



Form the product by Mannich Reaction

