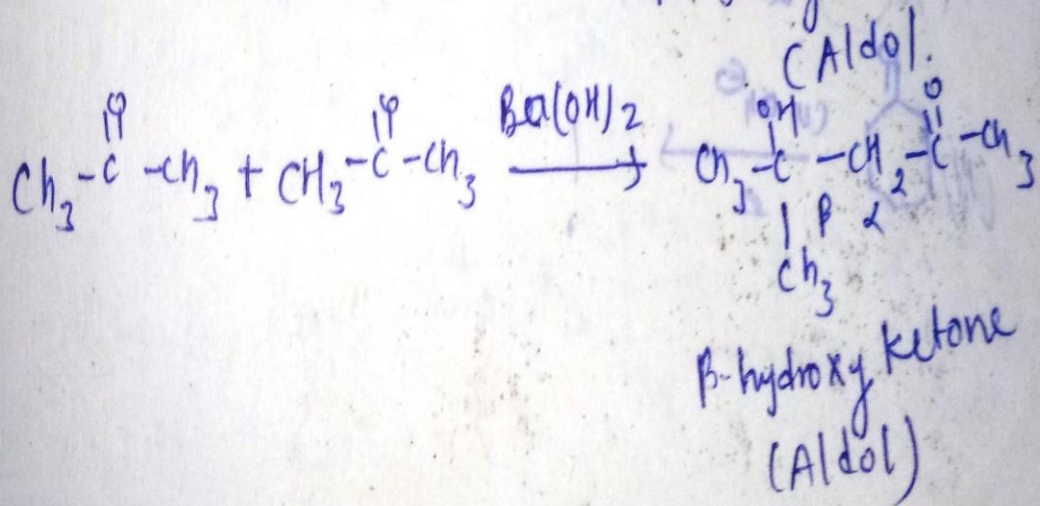
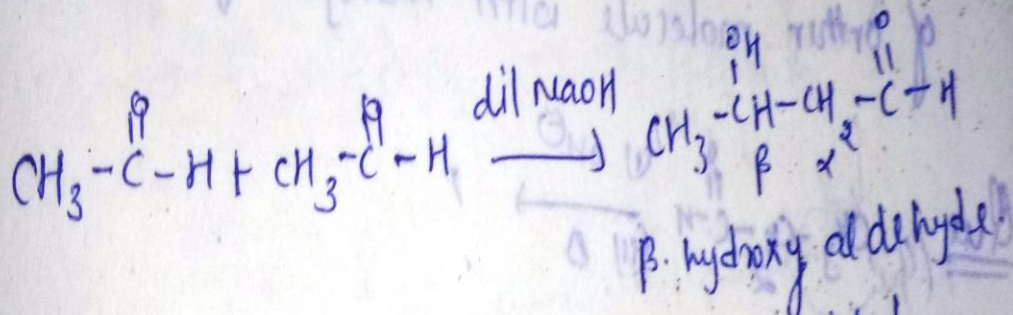


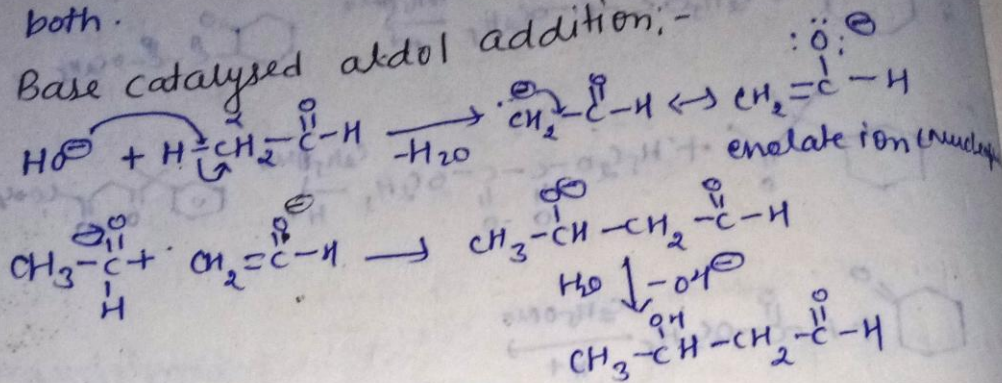
Aldol Condensation

Aldehyde & ketone having α H on treatment of dil base or acid undergoes condensation and form β -hydroxy aldehyde or ketone product is called aldol addition product & Rxn is called ~~add~~ aldol addition or condensation.

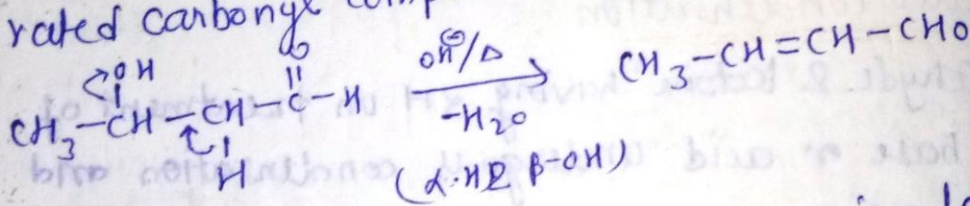


→ this is eg of nucleophilic addition rxn it is base catalysed as well as acid catalysed both.

Base catalysed aldol addition:-



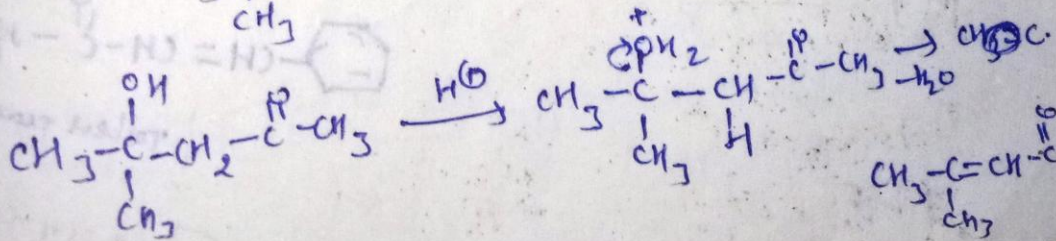
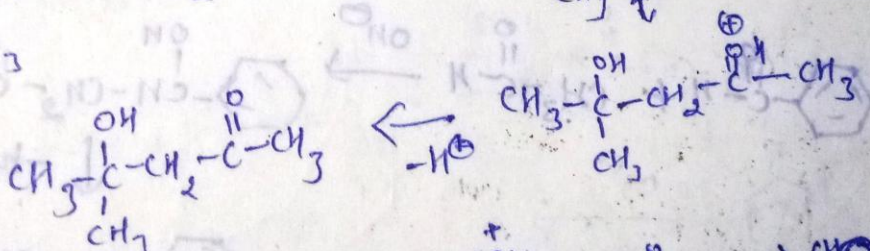
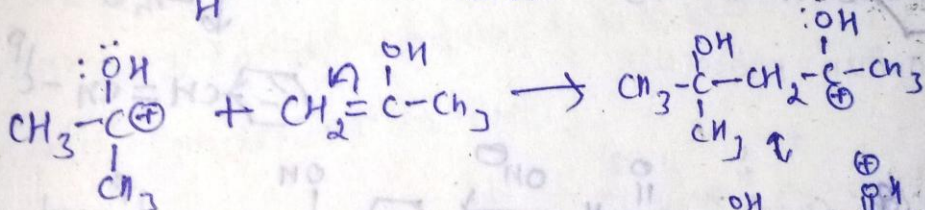
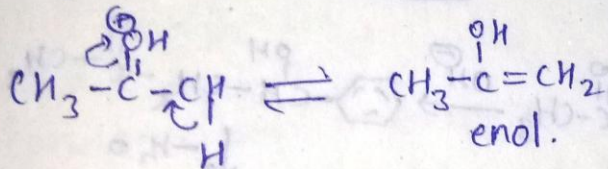
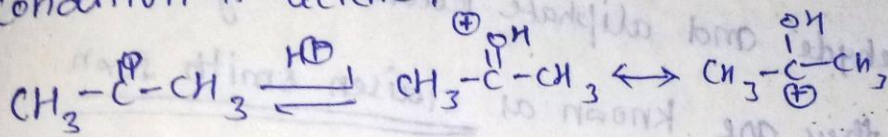
aldol product when heated alone or heated with base undergoes dehydration to form α - β unsaturated carbonyl compound.



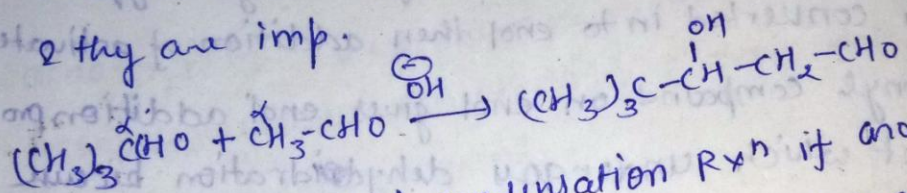
→ In this reaction a new C-C bond is formed between carbonyl carbon of 1 molecule and α -carbon of other molecule with transfer of α -H.

Acid catalysed aldol condensation:-

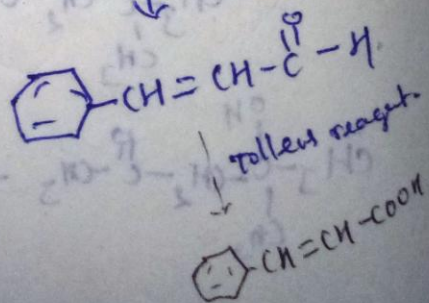
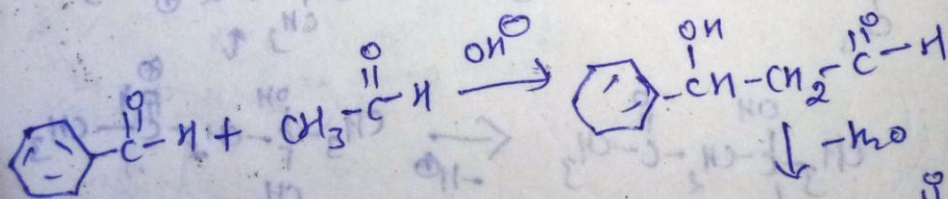
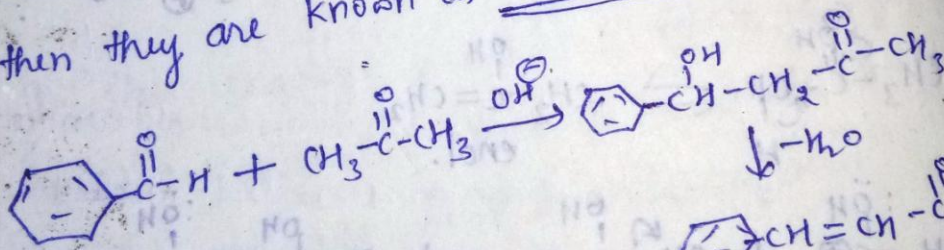
Acid catalysed aldol condensation carbonyl compound is activated by protonation of carbonyl oxygen & it is converted into enol then addition of activated carbonyl compound on enol gives enol addition product which undergoes dehydration because condition is acidic.



→ When condensation occurs between different carbonyl compound either aldehyde or ketone or aldehyde or ketone both it is called cross aldol condensation in cross aldol condensation if both molecule have α H mix. of product is obtain. and such cross aldol condensation are not synthetically imp. however cross aldol condensation in which one of carbonyl compound does not α H single product may be obtain & they are imp.



→ In such cross aldol condensation Rxn if aromatic aldehyde and aliphatic ketone having α H are then they are known as Claisen Smith Rxn



Note! - if
 at p.
 → in cla
 and a
 of c
 alken
 C₆H₅