

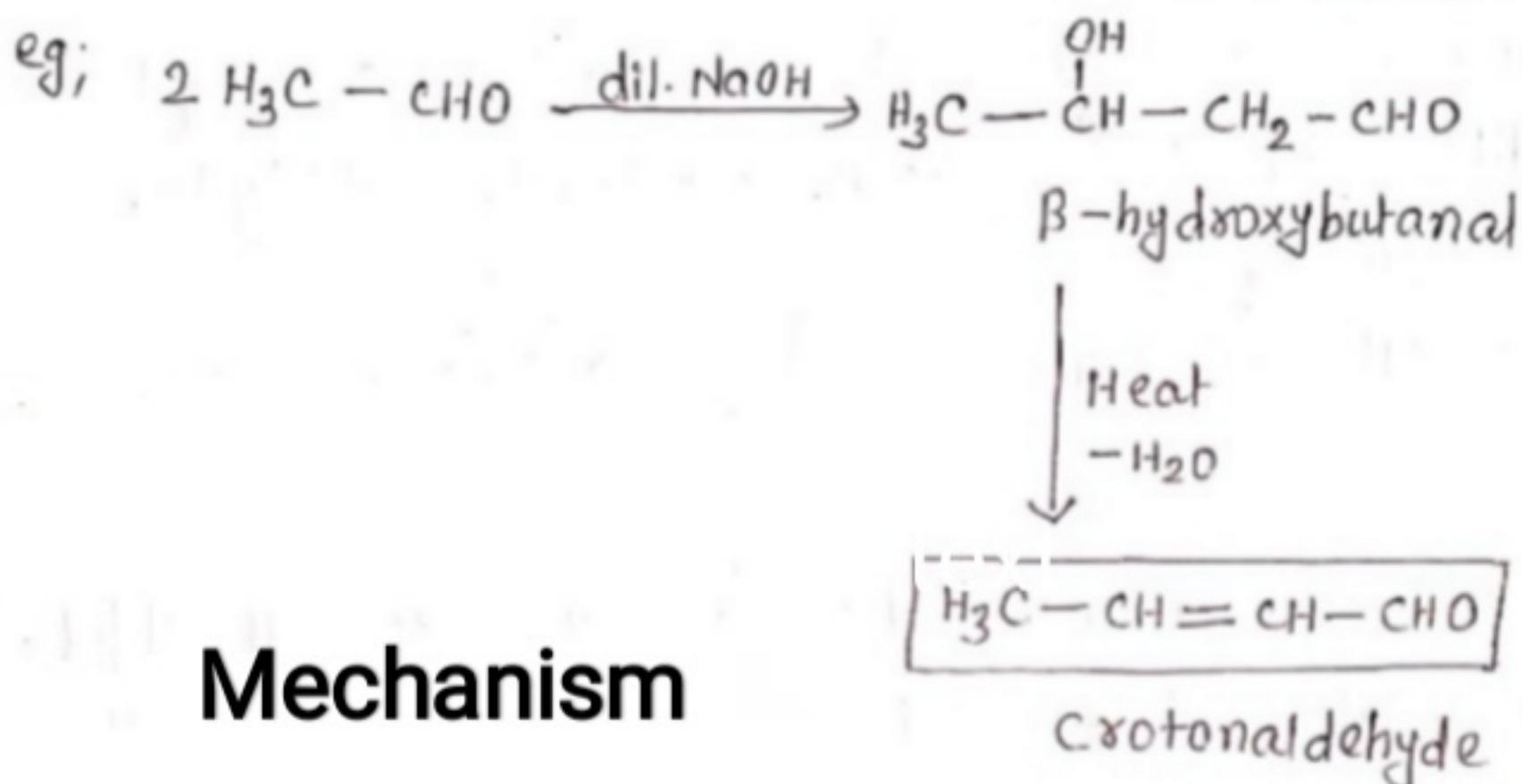
DEGREE-I(HONS.)

Aldol Condensation

28/10/2020

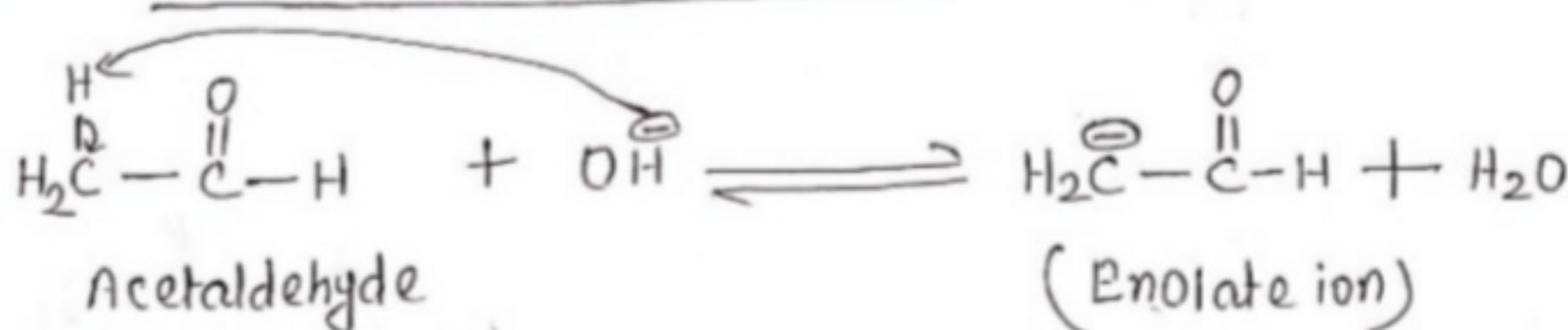
* Aldehydes containing α -hydrogen undergo self-addition in the presence of a dil. base to form products called Aldols.

The reaction is called Aldol condensation.



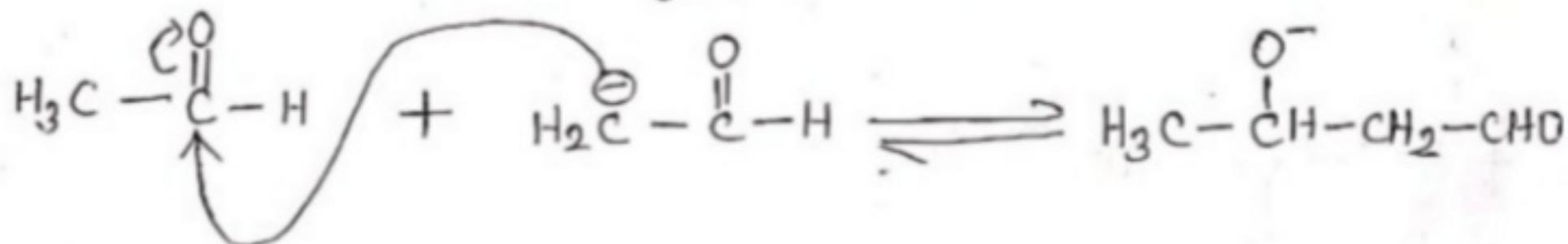
The reaction is reversible and involves the following steps:-

Step 1. The enolate ion is formed

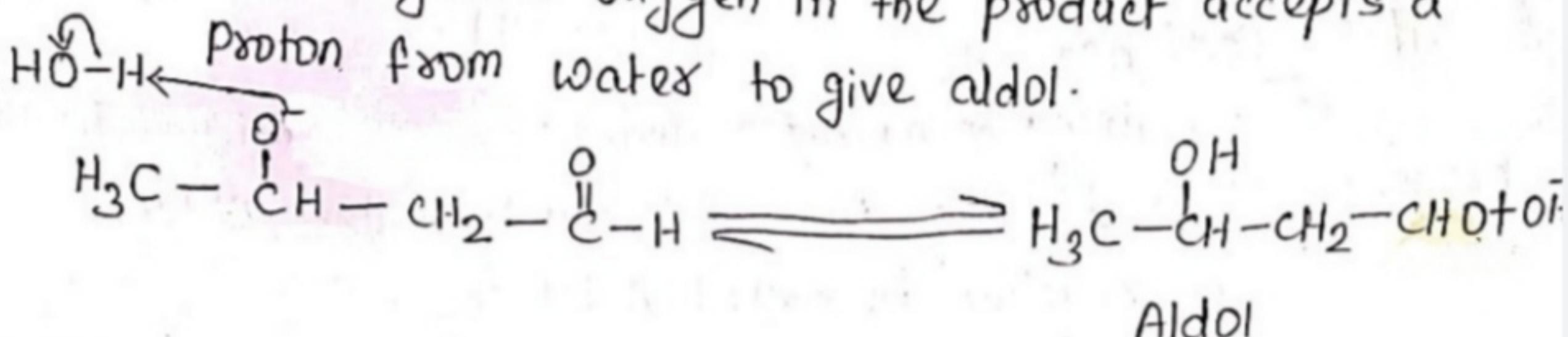


Step 2.

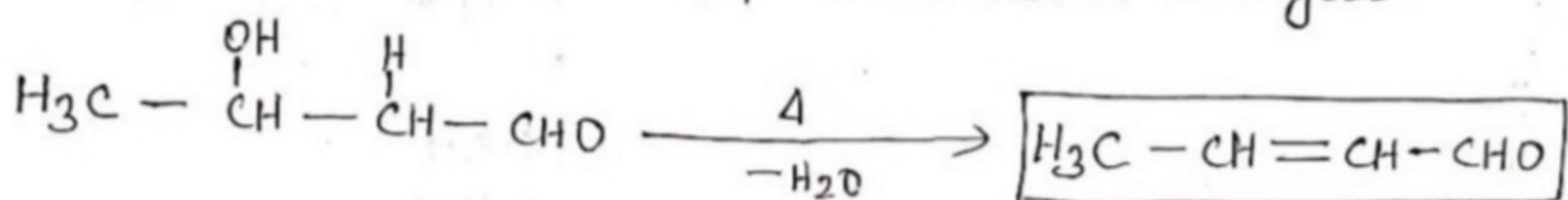
The enolate ion attacks the carbonyl carbon of another un-ionized aldehyde molecule.



Step 3. The negative oxygen in the product accepts a proton from water to give aldol.

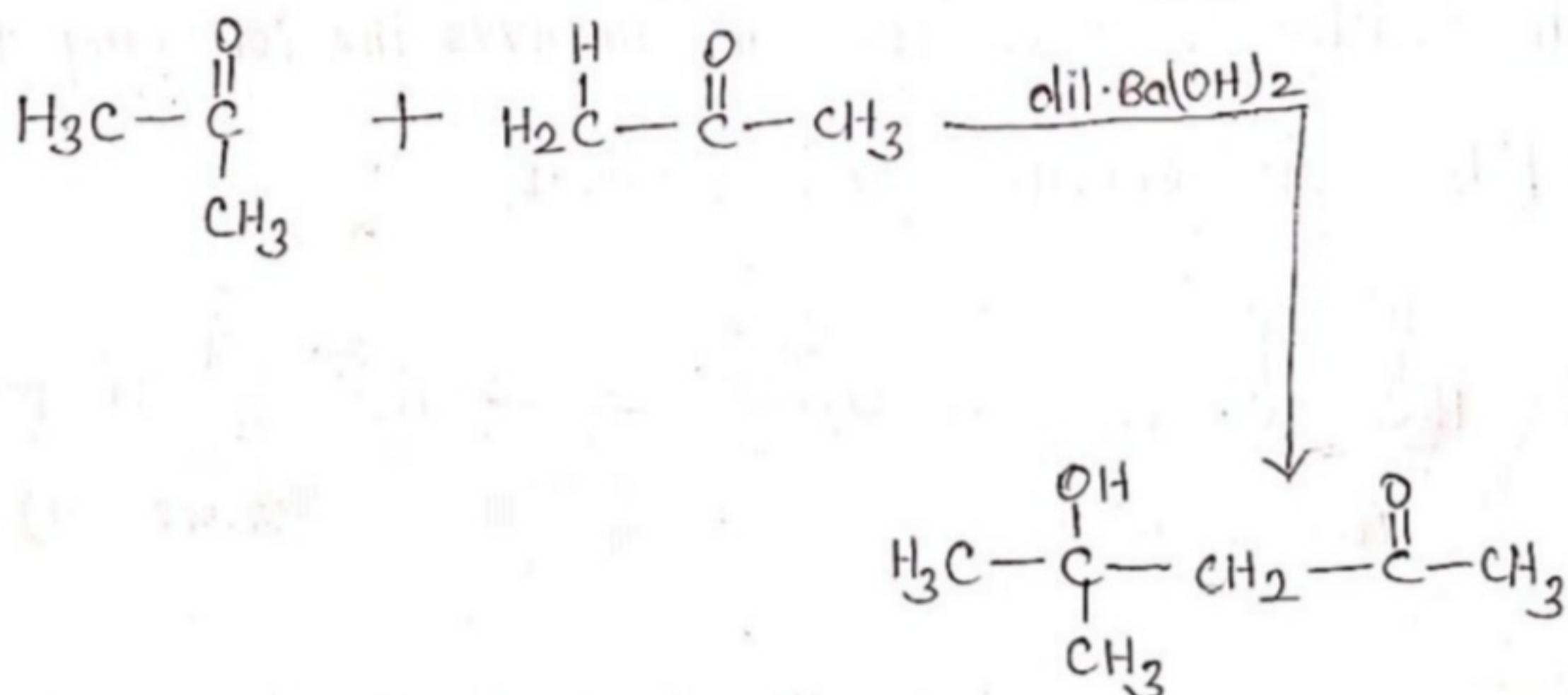


* Aldol are easily dehydrated either by heating or by treatment with dilute acid to form α, β -unsaturated aldehydes.

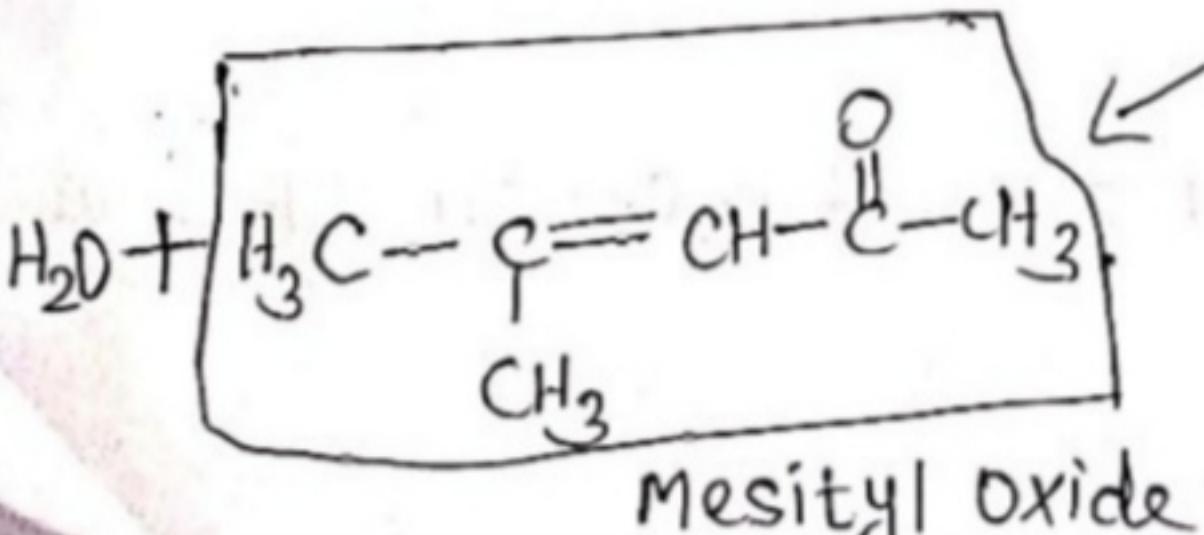


* Ketones containing α -hydrogen also undergo aldol condensation to form Ketols.

example :-



Diacetone alcohol



Heat

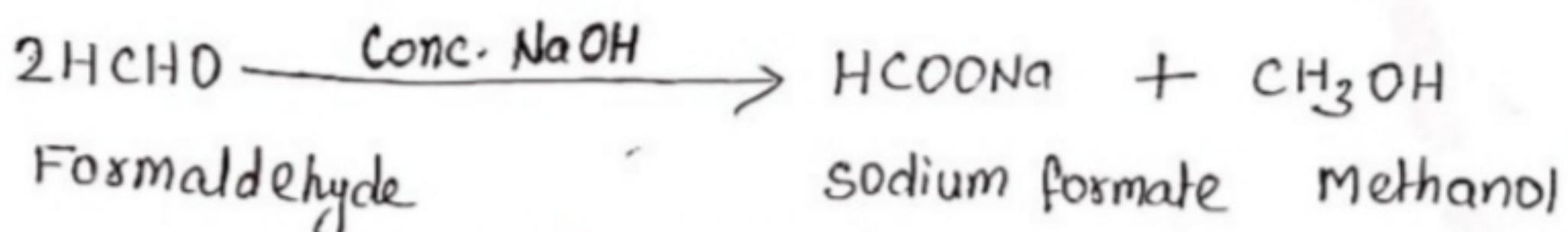
CANNIZZARO REACTION

3.

Aldehyde which lack an α -hydrogen, when heated with conc. NaOH, undergo a disproportionation reaction.

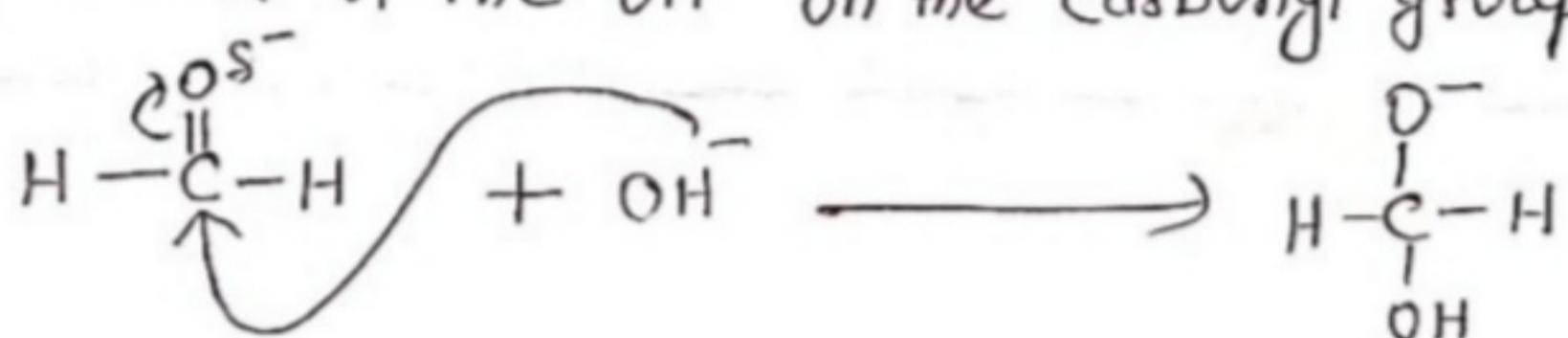
One half of the aldehyde molecules are oxidised to a carboxylic acid and one half are reduced to an alcohol. This reaction is known as Cannizzaro Reaction.

Example :-

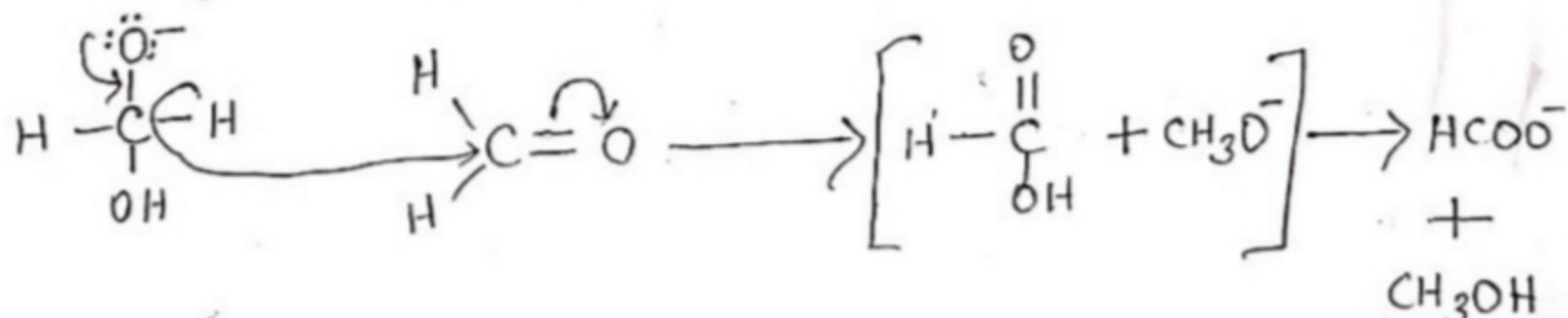


Mechanism

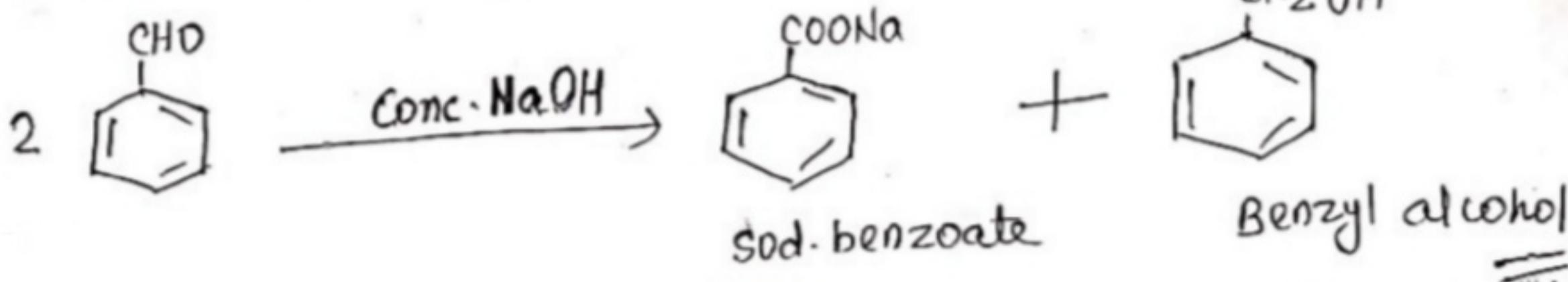
Step 1. Attack of the OH^- on the carbonyl group.



Step 2. Hydride Transfer



* Ketone do not give this reaction.



Completed