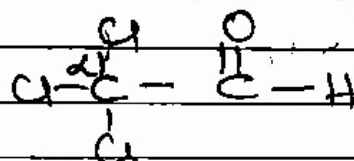


(E) Chemical Reaction ^{lec-9} due to α -hydrogen:
 Carbon atom which is nearest to the
 Carbonyl group ($>C=O$) is called α -Carbon
 and the hydrogen atom associated with
 α -Carbon is called α -hydrogen.

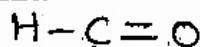
For example: $H-\overset{\overset{O}{||}}{C}-H$
 formaldehyde or Methanal.

It has no α -hydrogen atom



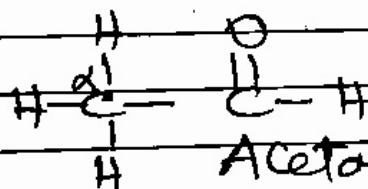
Trichloroacetaldehyde or chloral.

It has no α -hydrogen atom



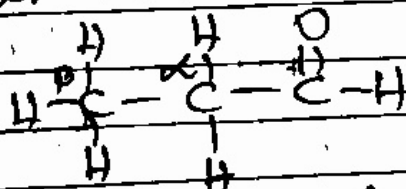
Benzaldehyde

It has no α -hydrogen.



Acetaldehyde or Ethanal

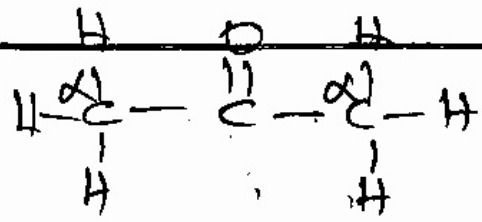
It has 3 α -hydrogen atom.



Propanal

It has two α -hydrogen atom

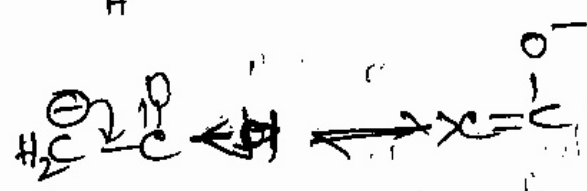
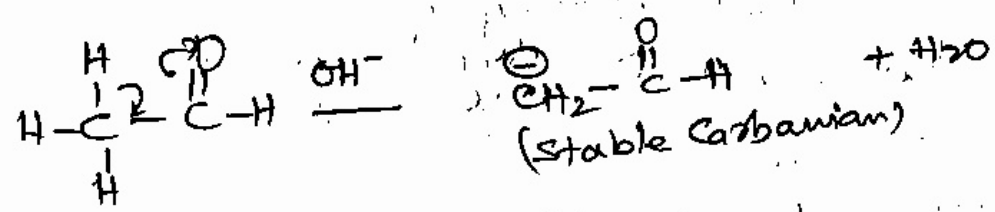
Teacher's Signature:



(Acetone or Propan-2-one)

It has 6 α -hydrogen atom.

All the α -hydrogen atom present in aldehyde or ketone are acidic in nature. Compound having α -hydrogen shows reaction in presence of strong dilute base like NaOH (aq) or KOH aq. In presence of basic medium or available OH^- ion H atom try to leave the molecule and form carbon anion, by resonance it is stable so it can release H^+ easily, & the released H^+ ion shows it is acidic in nature.



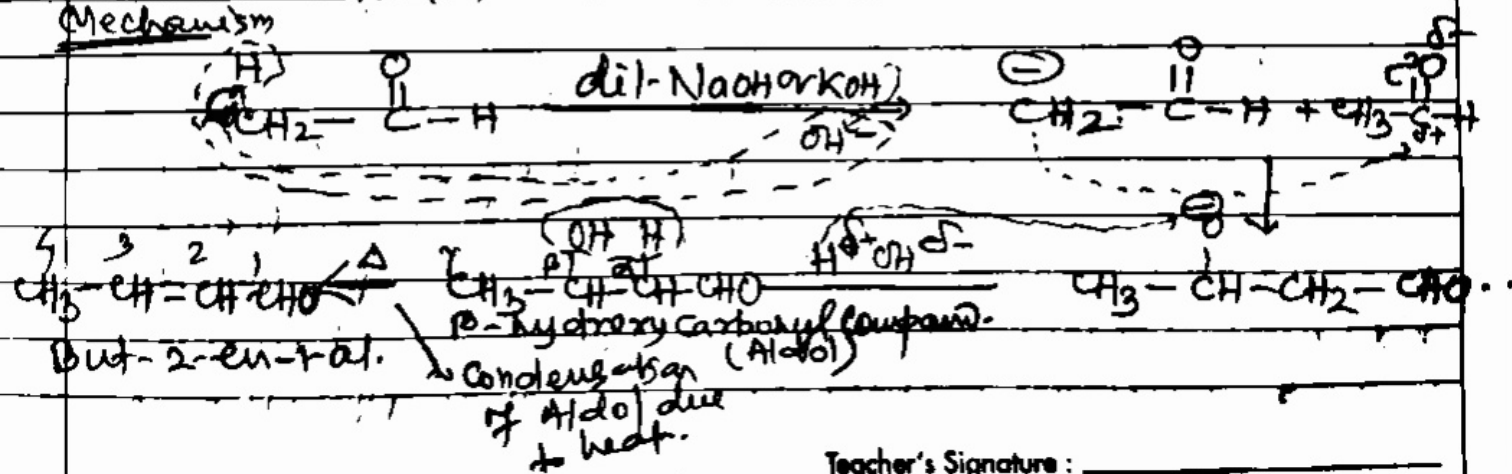
Carbonyl compound having α -hydrogen shows Aldol Condensation reaction.

Imp Aldol Condensation reaction $\rightarrow$
 For the reaction following conditions should be maintained:-

- i. Aldehyde or Ketone must possess α -hydrogen.
- ii. Same type of two moles of Aldehyde or Ketone should take part in reaction or having same no. of Carbon atom in both Aldehydes.
- iii. Reaction take place in presence of dil. NaOH or dil KOH.

During reaction two moles of Aldehyde or Ketone having α -hydrogen react in presence of dil KOH to give first Aldol (Ald: Aldehyde, ol-Alcohol), in Aldol OH is present on β position now when it is heated then it Condenses and it form H_2O by taking OH from β position and H from α -position, and final product it form i.e. enal. This reaction is called Aldol Condensation reaction.

Mechanism



Teacher's Signature : _____

