

# Study Notes On Claisen Reaction (Claisen Schmidt Reaction)



## CLAISEN REACTION (CLAISEN SCHMIDT REACTION)

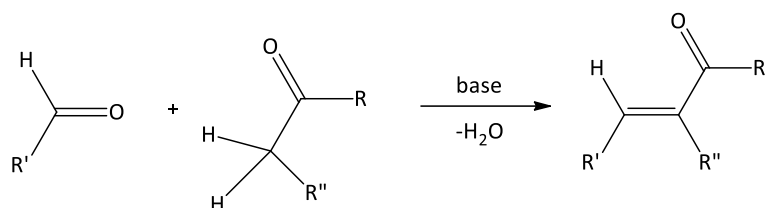
It is a carbon-carbon bond formation reaction. Claisen condensation reaction occurs between an aldehyde or ketone having  $\alpha$ -hydrogen with aromatic carbonyl compound without  $\alpha$ -hydrogen.

This reaction takes place in absence of solvent. Dilute alkali, such as sodium hydroxide, is used as a base.

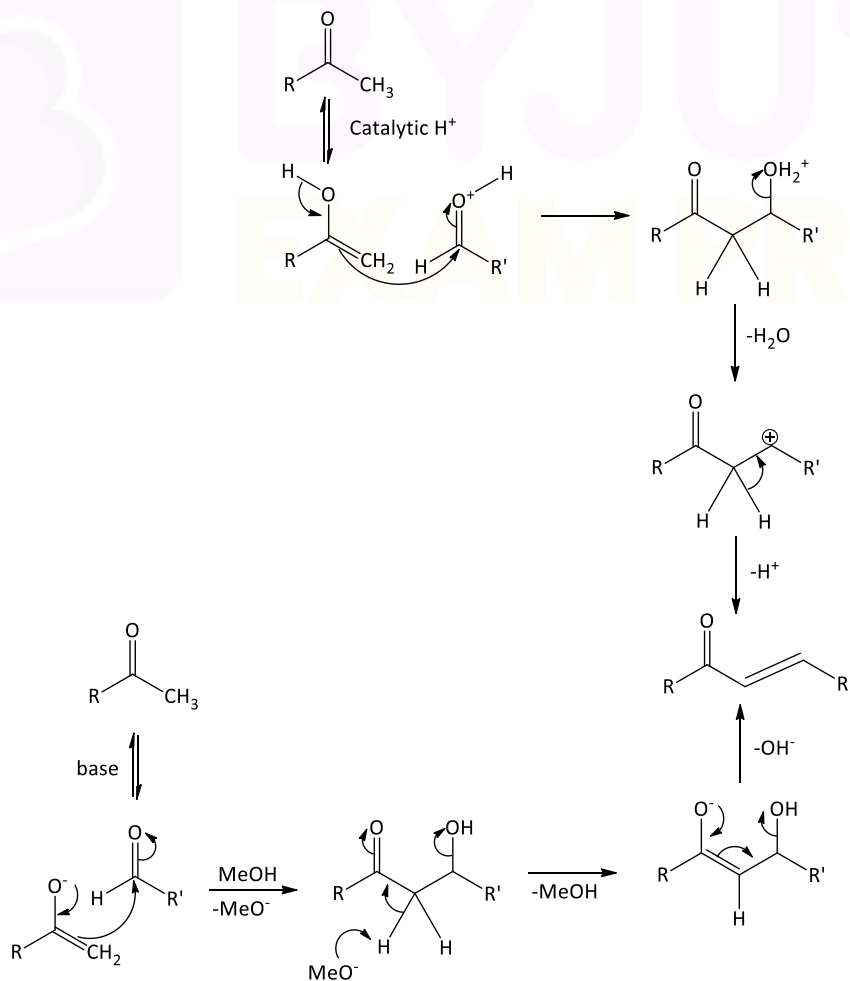
Claisen Schmidt condensation is an example of crossed Aldol process.

In this reaction, a carbon-carbon bond is formed via enolate addition and loss of water to form an  $\alpha, \beta$ -unsaturated carbonyl compound.

### General Reaction-

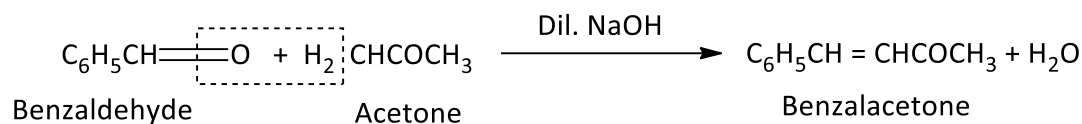
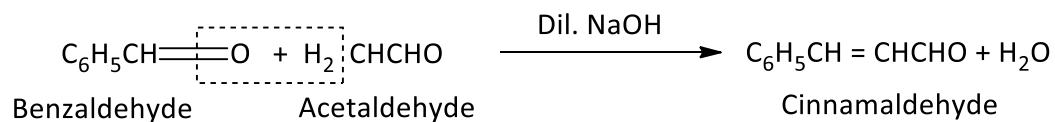


### Reaction Mechanism-



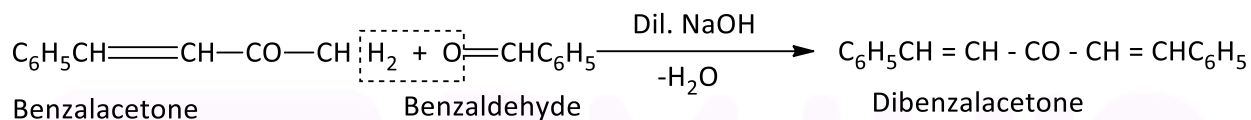
**Note 1:**

It involves the condensation between an aromatic aldehyde (or a ketone) with an aliphatic aldehyde or a ketone in presence of dilute alkali to form  $\alpha, \beta$ -unsaturated compounds. Example-



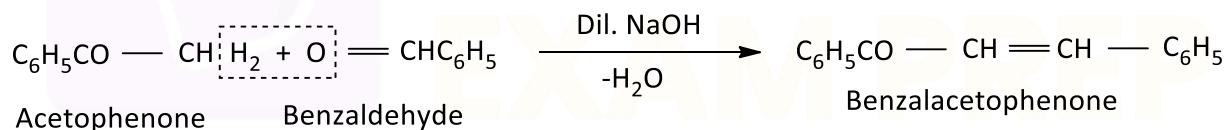
**Note 2:**

If benzaldehyde is used in excess, the benzalacetone formed reacts further with another molecule of benzaldehyde to form dibenzalacetone.



**Note 3:**

Acetophenone condenses with benzaldehyde in presence of dilute alkali to form benzalacetophenone or phenyl styryl ketone.



Such  $\alpha, \beta$ -unsaturated ketones are also called chalcones.

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