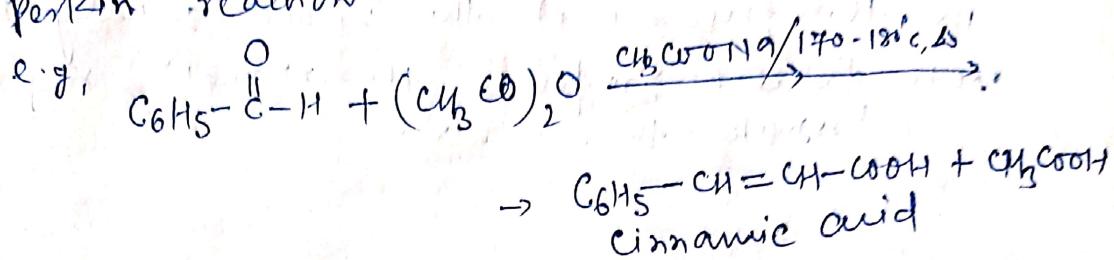
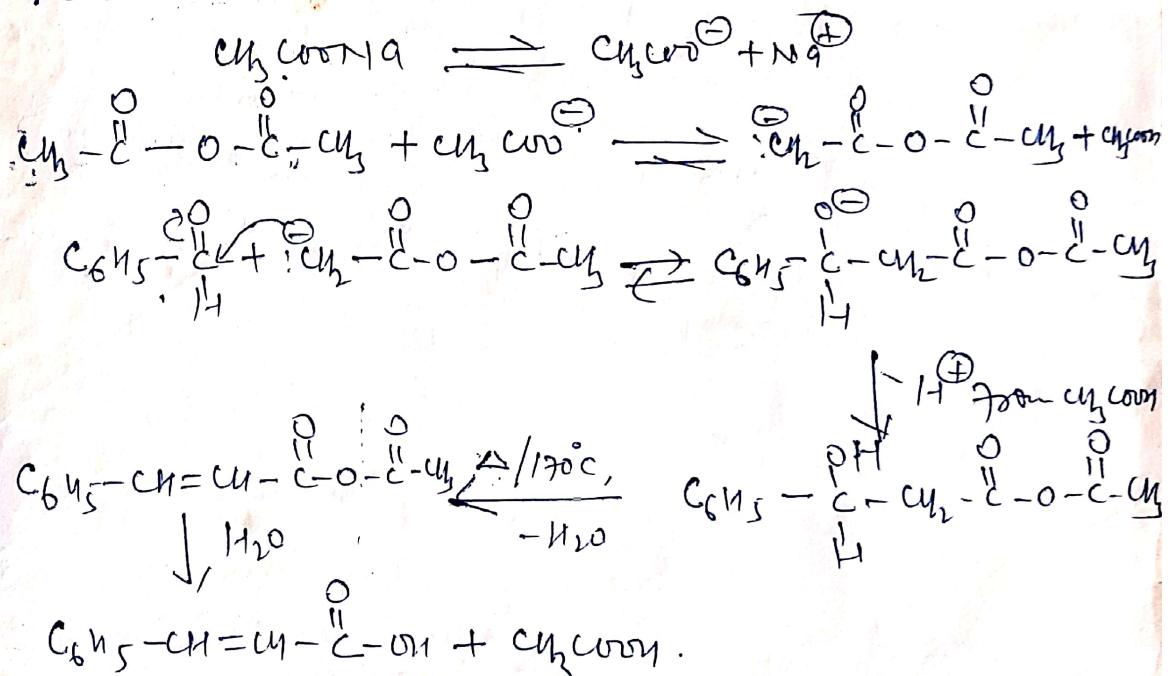


(3)

Perkin reaction:— The condensation of an aromatic aldehyde and aliphatic acid anhydrides containing at least two α -hydrogens (viz RC_2O_2) in the presence of the sodium or potassium salt of the corresponding to the anhydride to give α, β -unsaturated aromatic acid is called Perkin reaction.



Mechanism:— Anhydride provides the carbanion under the influence of the basic carboxylate ion. The carbanion produced then attacks the carbonyl group of the aldehyde, to form an anion, which then abstracts a proton from the acid to form adduct type compound. Removal protonation of this anion followed by the removal of water produces an unsaturated anhydride which is finally hydrolysed to form the component acid on being boiled into water at the end of the reaction.



Prolonged heating & high temp. is required, since a weak base has to react with a weak acid (anhydride).

The anhydride adds to the aldehyde is proved by the fact that when benzaldehyde, acetic anhydride and trimethylamine or pyridine

are heated, cinnamic acid is obtained, but when Benzaldehyde, sodium acetate & iodine are heated, it is not obtained. Thus, the alkali salt acts only as the catalyst.

The salt is specific for aromatic aldehydes, which can't undergo self-condensation in the presence of the basic catalyst. Meta-disub groups in the aromatic ring promotes the reaction.