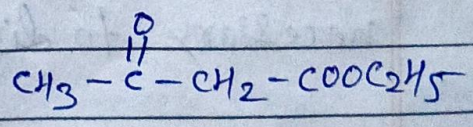
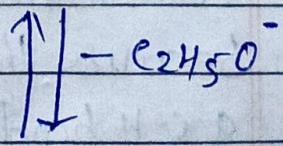
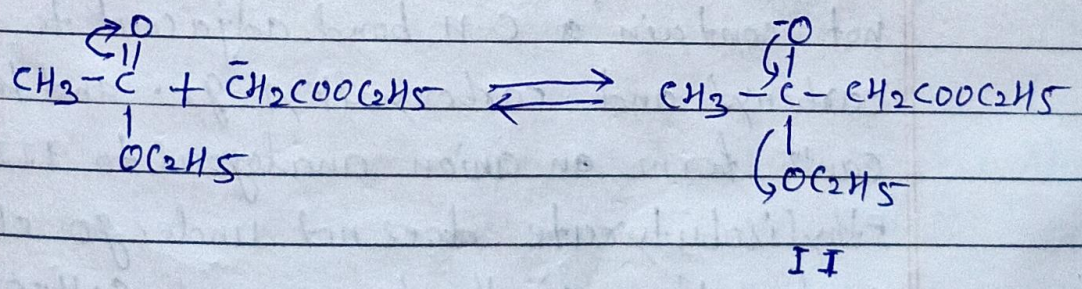
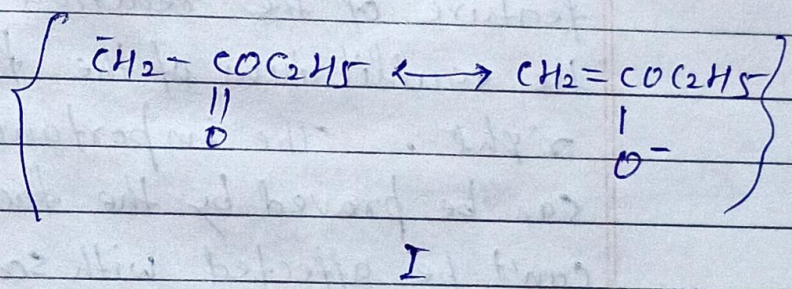
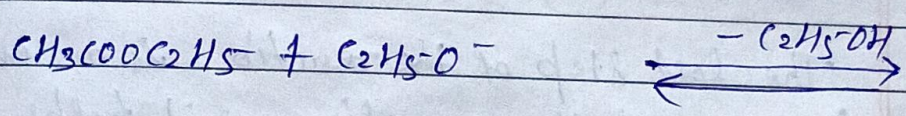
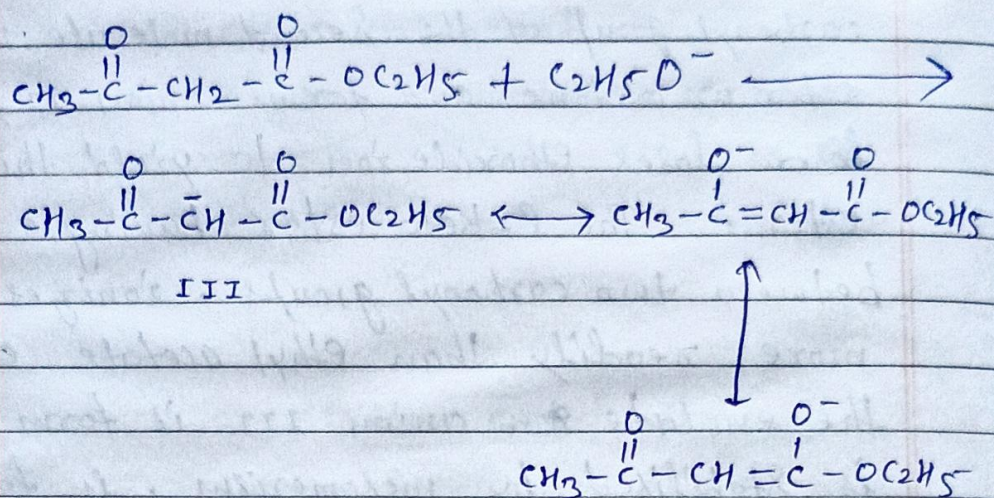
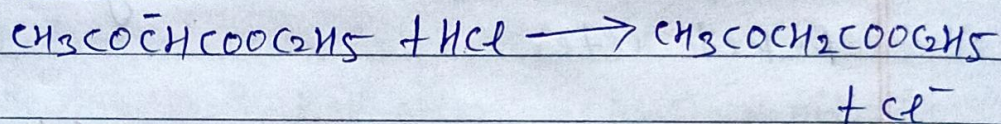


carbonyl group of the second molecule of the ester or ketone and forms anion II, which ~~loses~~ loses ethoxide ion to yield the β -keto ester. The β -keto ester having a CH_2 gr. between two carbonyl groups, ionizes even more readily than ethyl acetate and thus the enolate ~~anion~~ anion III is form which is stabilised by mesomerism, is formed. Acidification of anion III regenerates the β -keto ester.

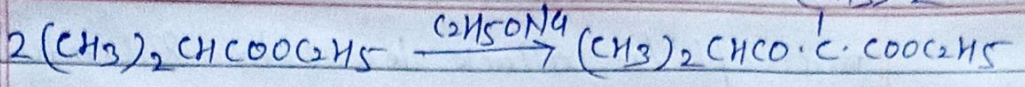




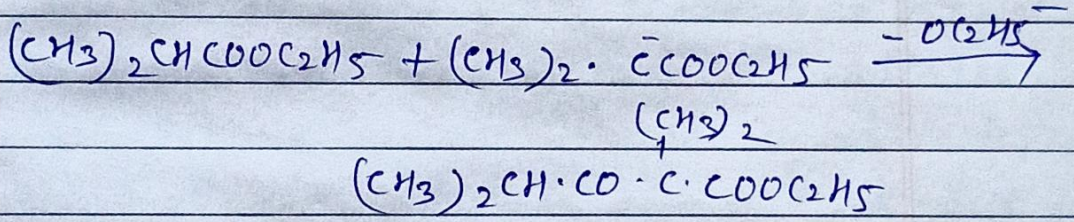
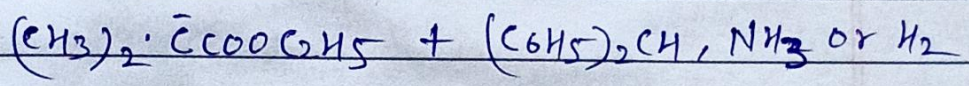
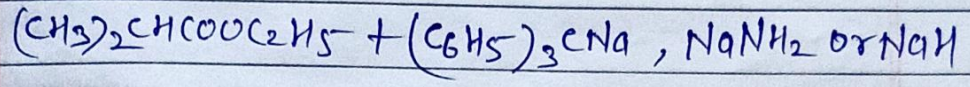
Acidification:



The last step of the reaction is an essential feature of the reaction as it helps to force the equilibrium of the first step to the right. The importance of this step can be proved by the fact that condensation can't be affected with sodium ethoxide when the expected product (β -keto ester) does not contain a C-H bond adjacent to both carbonyl and carboxylalkyl gr. and therefore can't form an anion analogous to III. e.g. ethylisobutyrate does not undergo claisen condensation in the presence of $\text{C}_2\text{H}_5\text{ONa}$ because the β -keto ester does not contain a C-H bond of the above mentioned type, necessary to displace the equilibrium to right.



However, ethylisobutyrate can also be made to undergo claisen condensation in presence of either a very strong base or a base that reacts irreversibly in place of $\text{C}_2\text{H}_5\text{ONa}$ because in the former case the second product of the acid-base reaction escapes as a gas and thus the first step of the condensation proceeds only to the right.



3-Ketopentanoate

The aldol condensation and claisen condensation resemble each other in the sense that both involve nucleophilic attack by a carbanion on an electron-deficient carbonyl carbon. However in aldol condensation nucleophilic attack leads to addition, the typical reaction of aldehydes and ketones while in the claisen condensation.

nucleophilic attack leads to substitution,
the typical reaction of acyl compounds.