CARBOXYLIC ACID & DERIVATIVES
(Lecture - 3)

Deg-I(Hons.&Sub.)

Chapter-6
paper-II
Group -B

Chapter -3
Group-C
(Organic Portion)

Preparation Continued...

4. By Hydrolysis Of Nitriles (-CN)

Nitriles give the corresponding carboxylic acids on hydrolysis in either acidic or Basic solution.

ACIDIC HYDROLYSIS

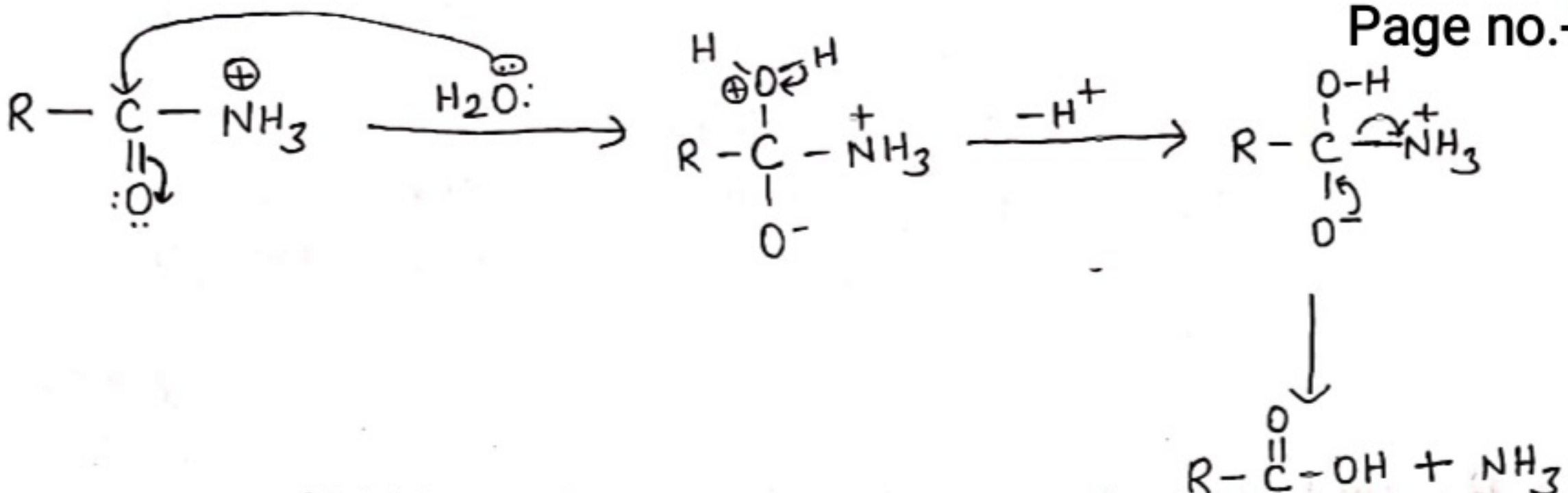
$$R-C\equiv N \xrightarrow{H_2O\,/\,H^+} R-\overset{O}{\overset{\|}{C}}-OH + \overset{+}{N}H_4$$

BASIC HYDROLYSIS

$$R-C\equiv N \xrightarrow{H_2O\,/\,OH^-} R-\overset{O}{\overset{\|}{C}}-O^- + NH_3 \xrightarrow{H_2O/H^+} R-\overset{O}{\overset{\|}{C}}-OH$$

Mechanism of Acidic Hydrolysis

Intermediate amide

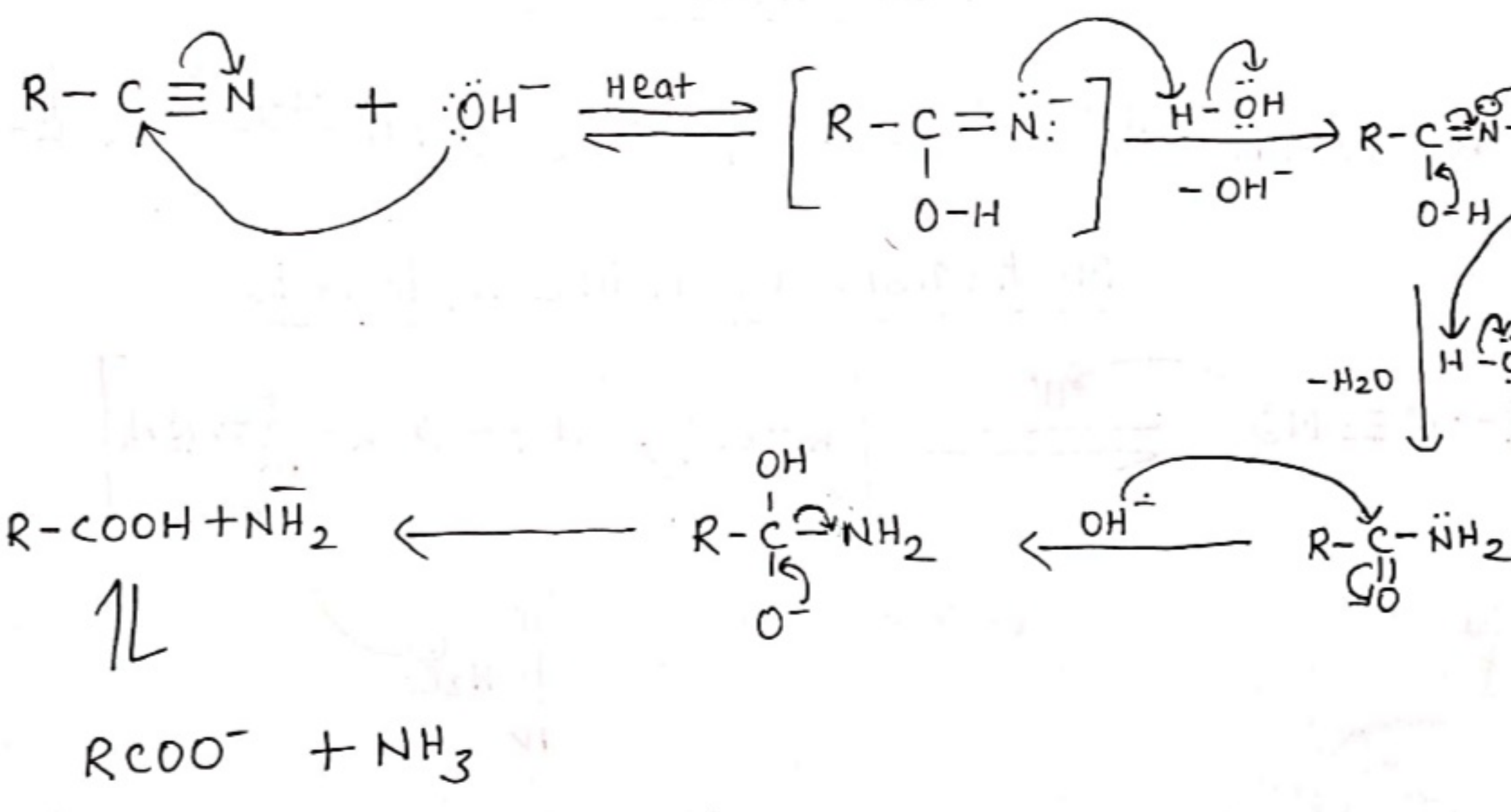


ALKALINE HYDROLYSIS

Alkaline Hydrolysis occurs by nucleophilic attack on the partially +ve carbon of the nitrile group.

The reaction again results in an amide, which is further hydrolysed to the carboxylate ion and ammonia.

The free acid is obtained when the solution is acidified.

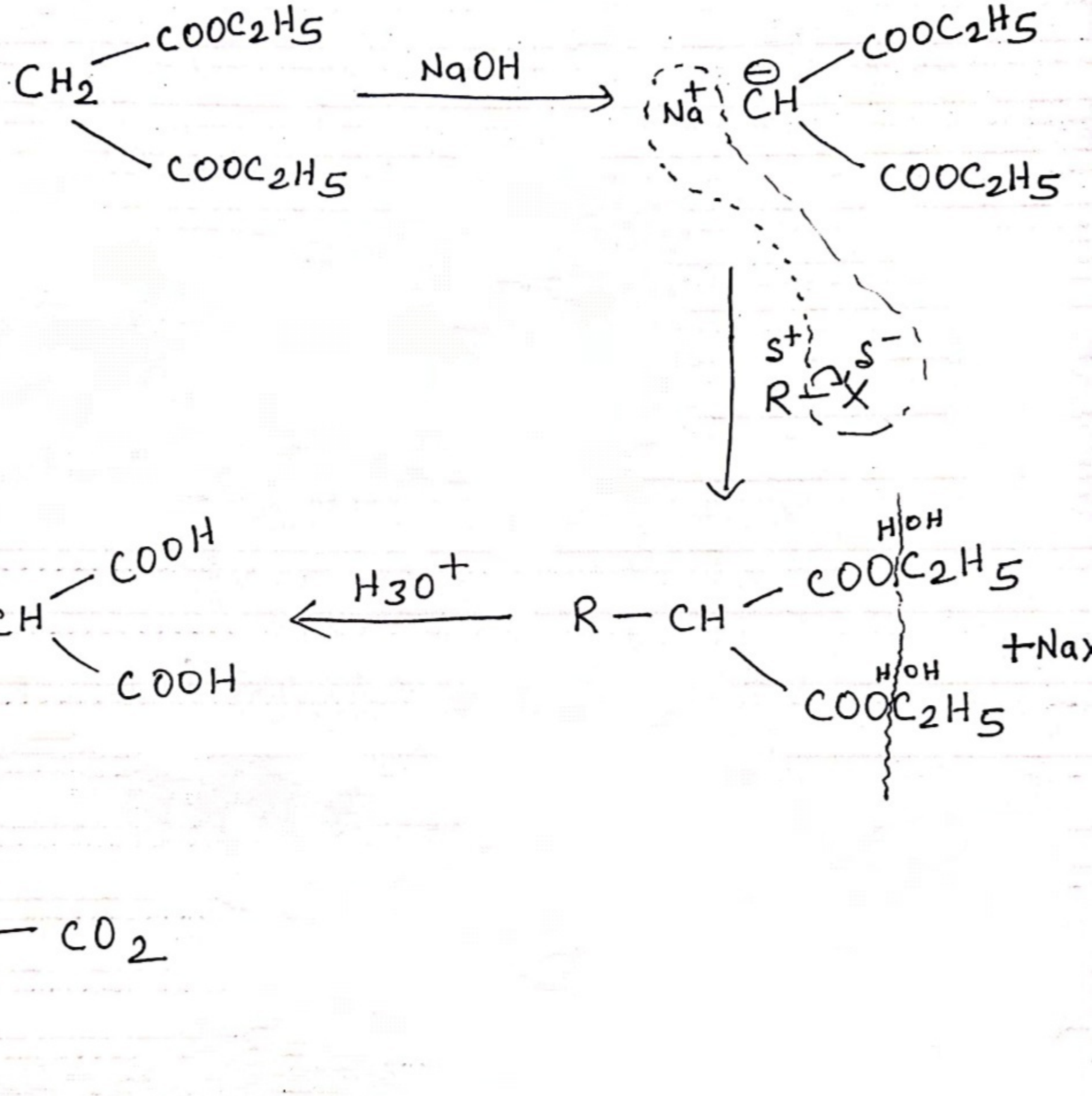


* $R-X + KCN \longrightarrow R-CN \xrightarrow{H_2O/H^+} R-COOH$

Alkyl halide: Carboxylic Acid

ex- $H_3C-Br \xrightarrow{KCN} H_3C-CN \xrightarrow{H_2O/H^+} H_3C-COOH$ ~end~

5. From Malonic Ester :::::



Preparation completed.....
22-04-2020