

CARBOXYLIC ACID & DERIVATIVES

01-05-2020

(Lecture-8)

Deg-I (Hons.)

P-II, Ch-6, G-'B'

TOPIC - PREPARATION & PROPERTIES

of

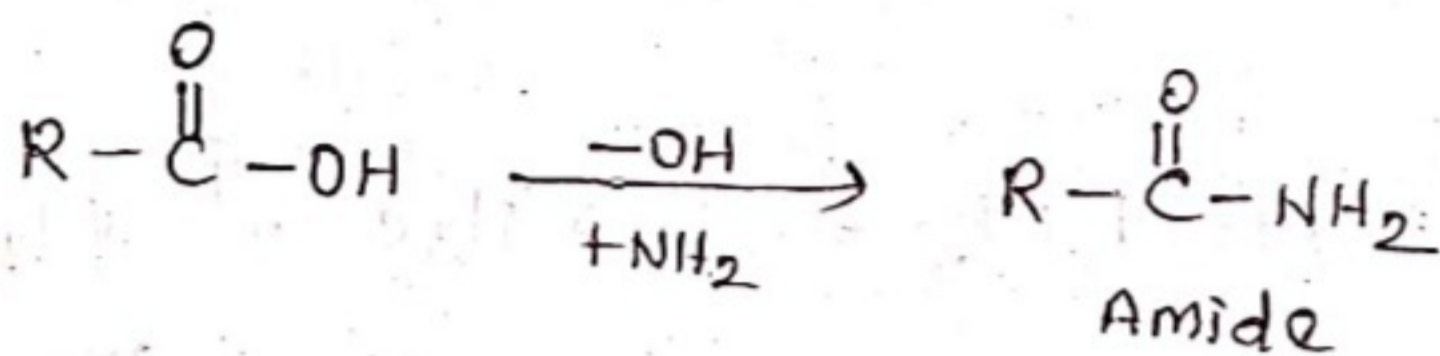
"ACID AMIDES"

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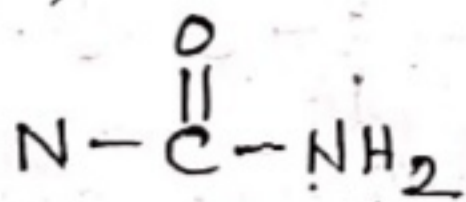
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The derivatives of carboxylic acids in which the -OH group of -COOH group has been replaced by an amino group, -NH₂ are called Amides or Acid amides.

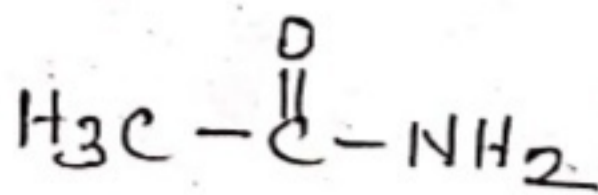


* Amide are named by replacing the ending -oic acid by the word amide.

example;



Methanamide



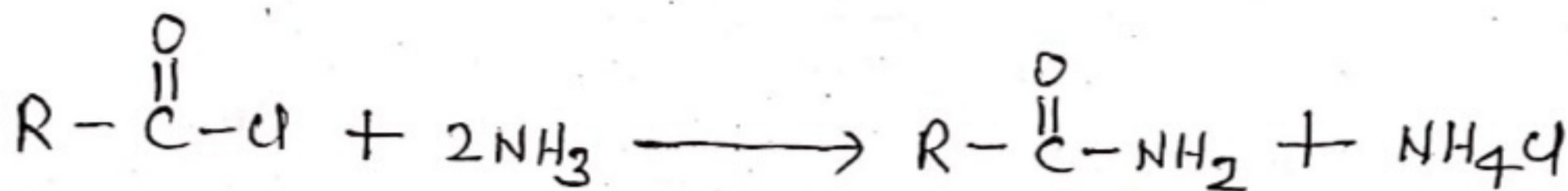
Ethanamide

etc.

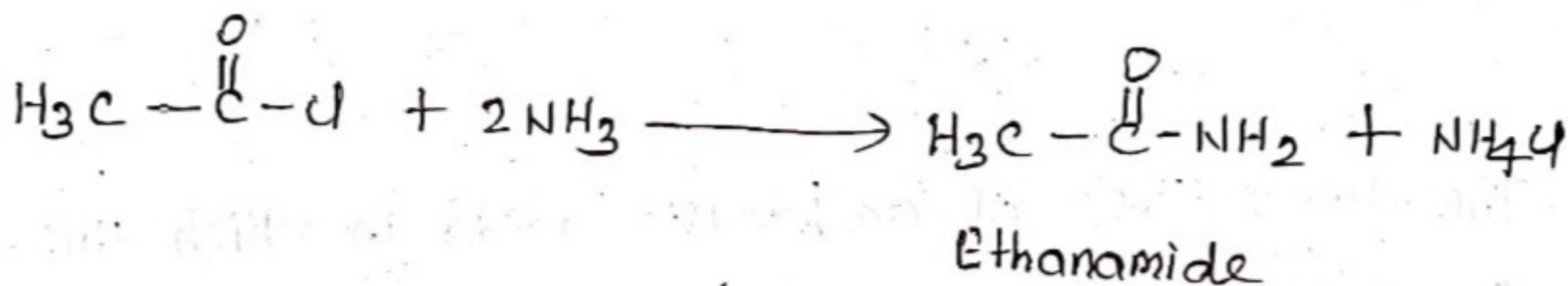
METHODS OF PREPARATION

2.

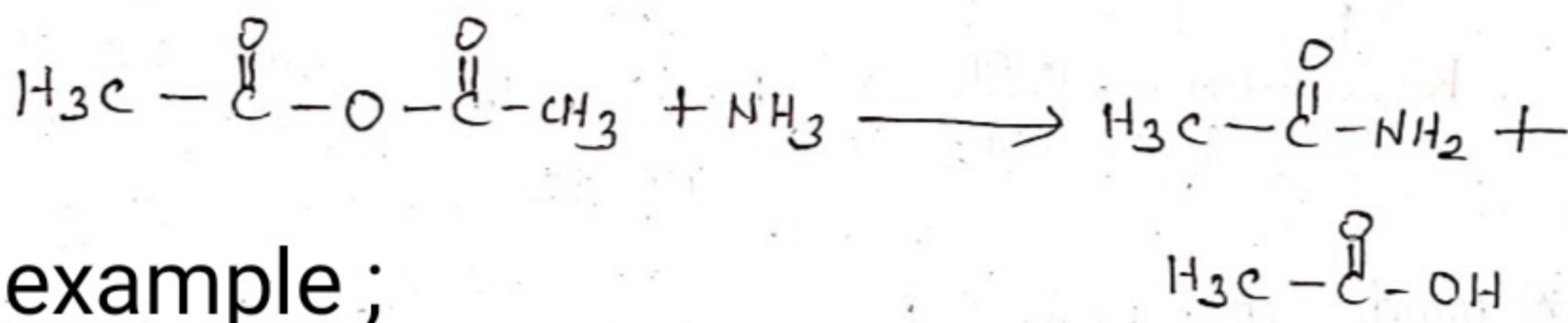
1. By the action of ammonia on acid chlorides:



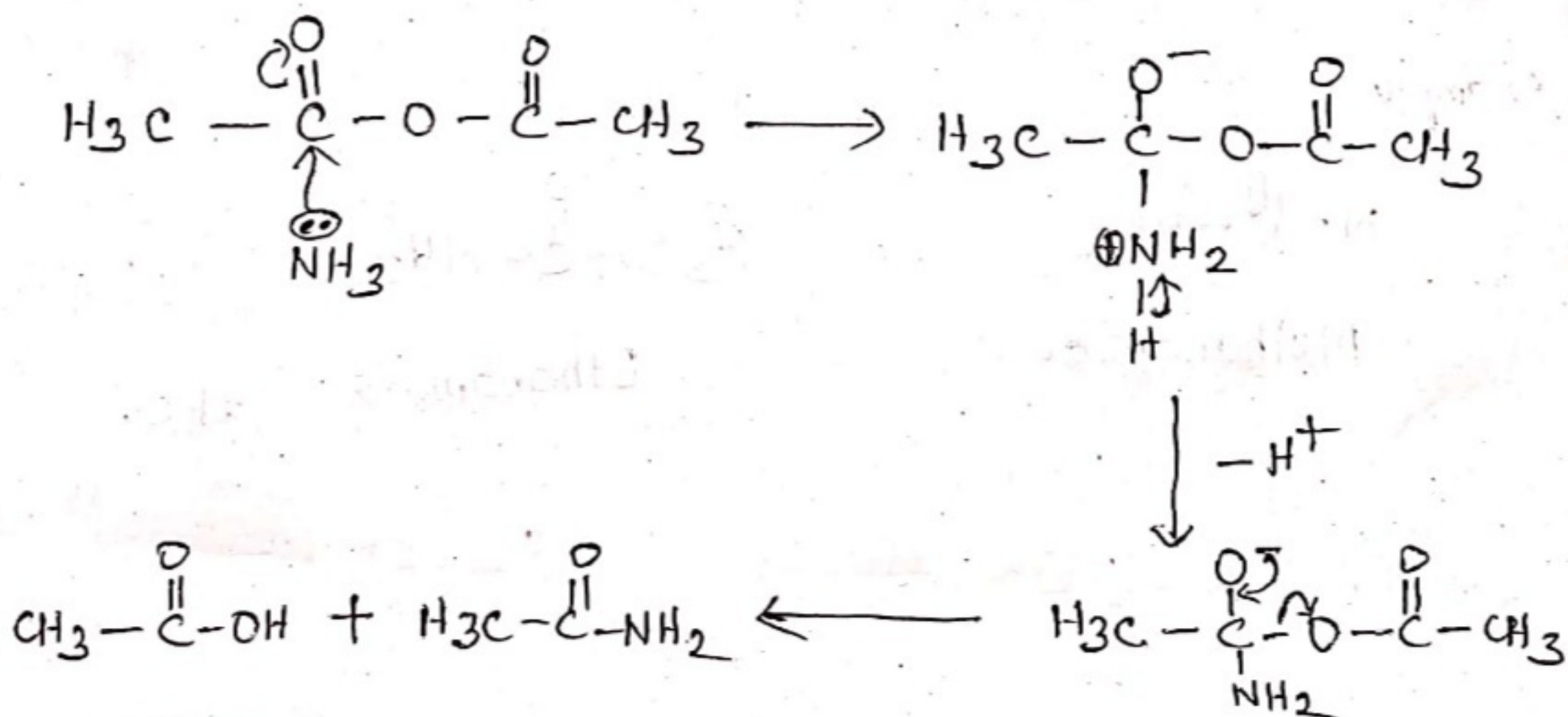
example;



2. By the action of ammonia on anhydrides:



example;

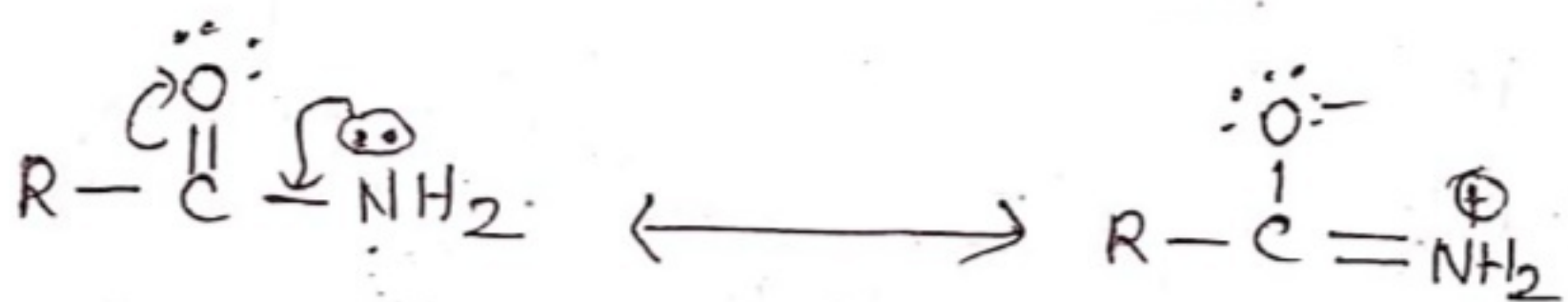


PHYSICAL PROPERTIES

3.

1. Amides are white, odourless, crystalline solids.
2. They have sharp melting points that are higher than those of corresponding acids, owing to intermolecular hydrogen bonding.
3. Simple amides upto six carbons are very soluble in water but the water solubility declines as we ascend the series.

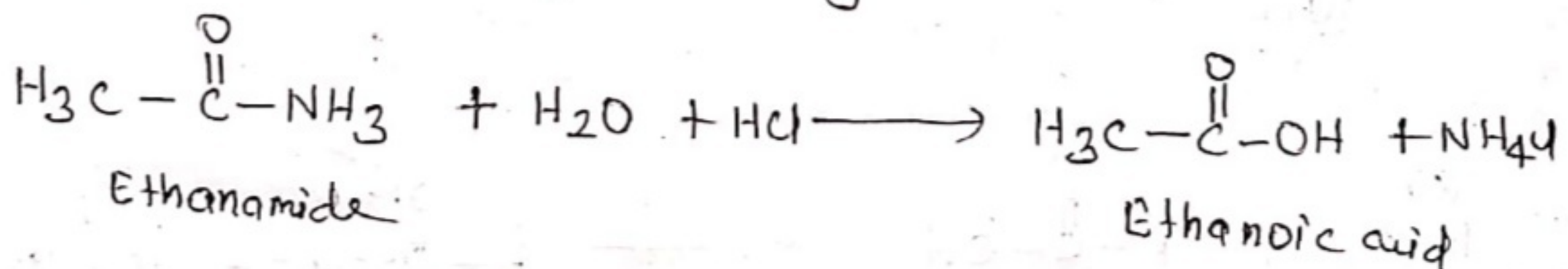
CHEMICAL PROPERTIES

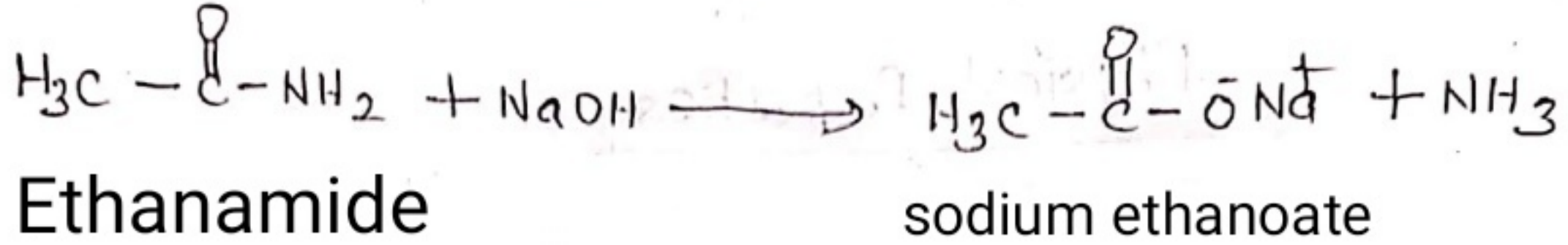


Due to resonance stabilization, amides are least reactive of acid derivatives.

1. HYDROLYSIS :-

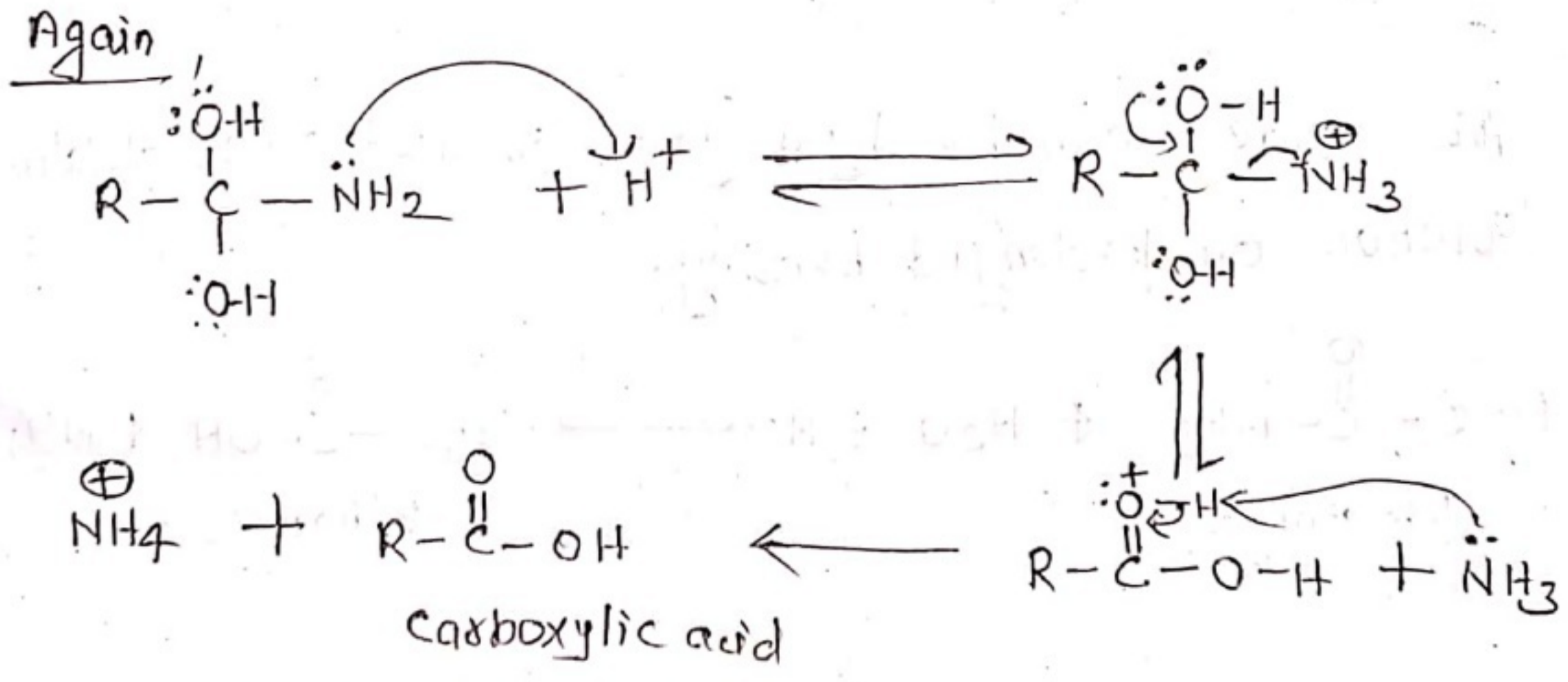
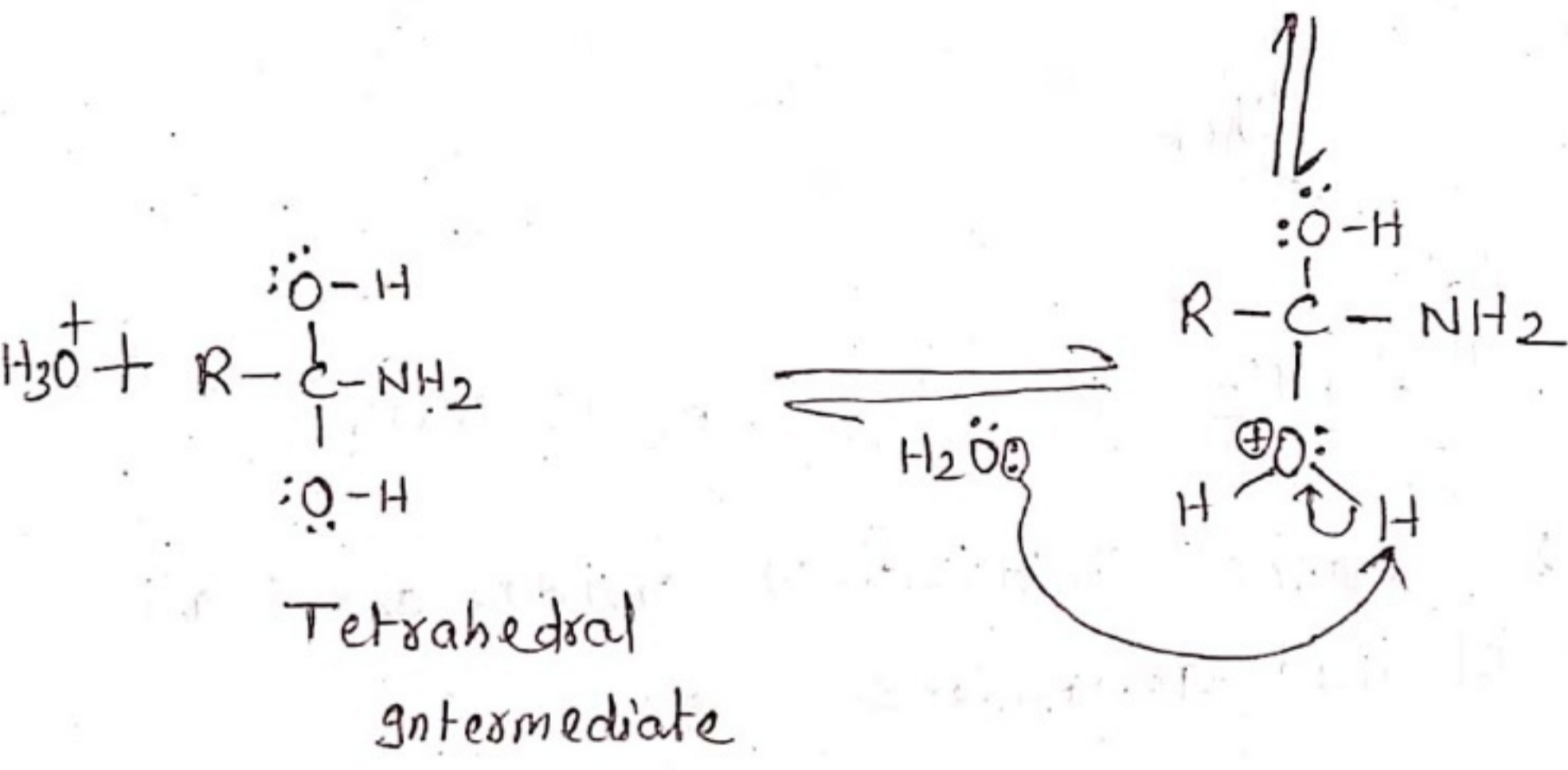
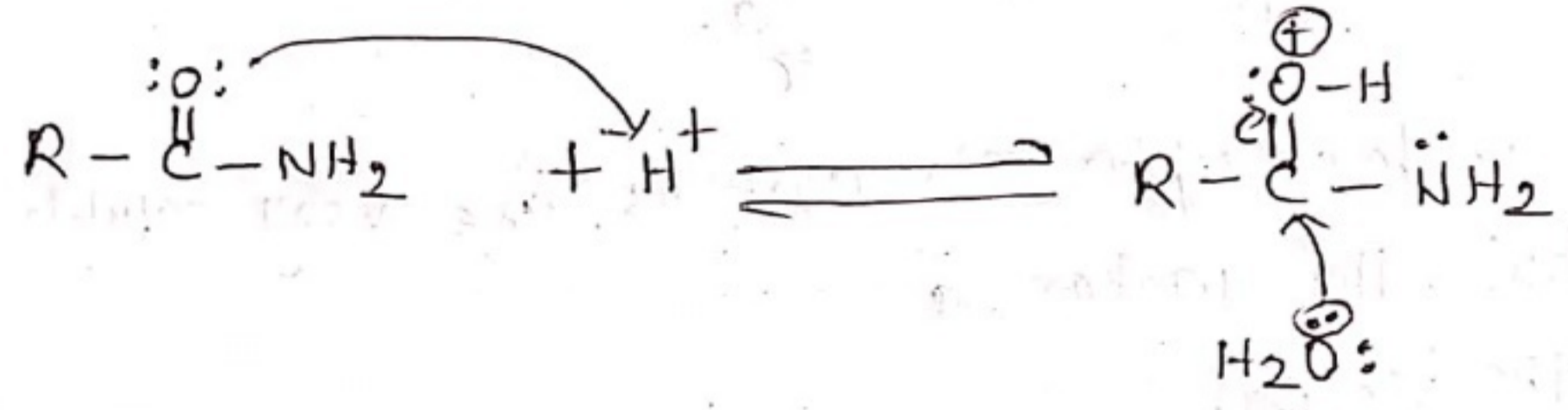
The amides can be hydrolysed in acid or in alkaline solution on prolonged heating.





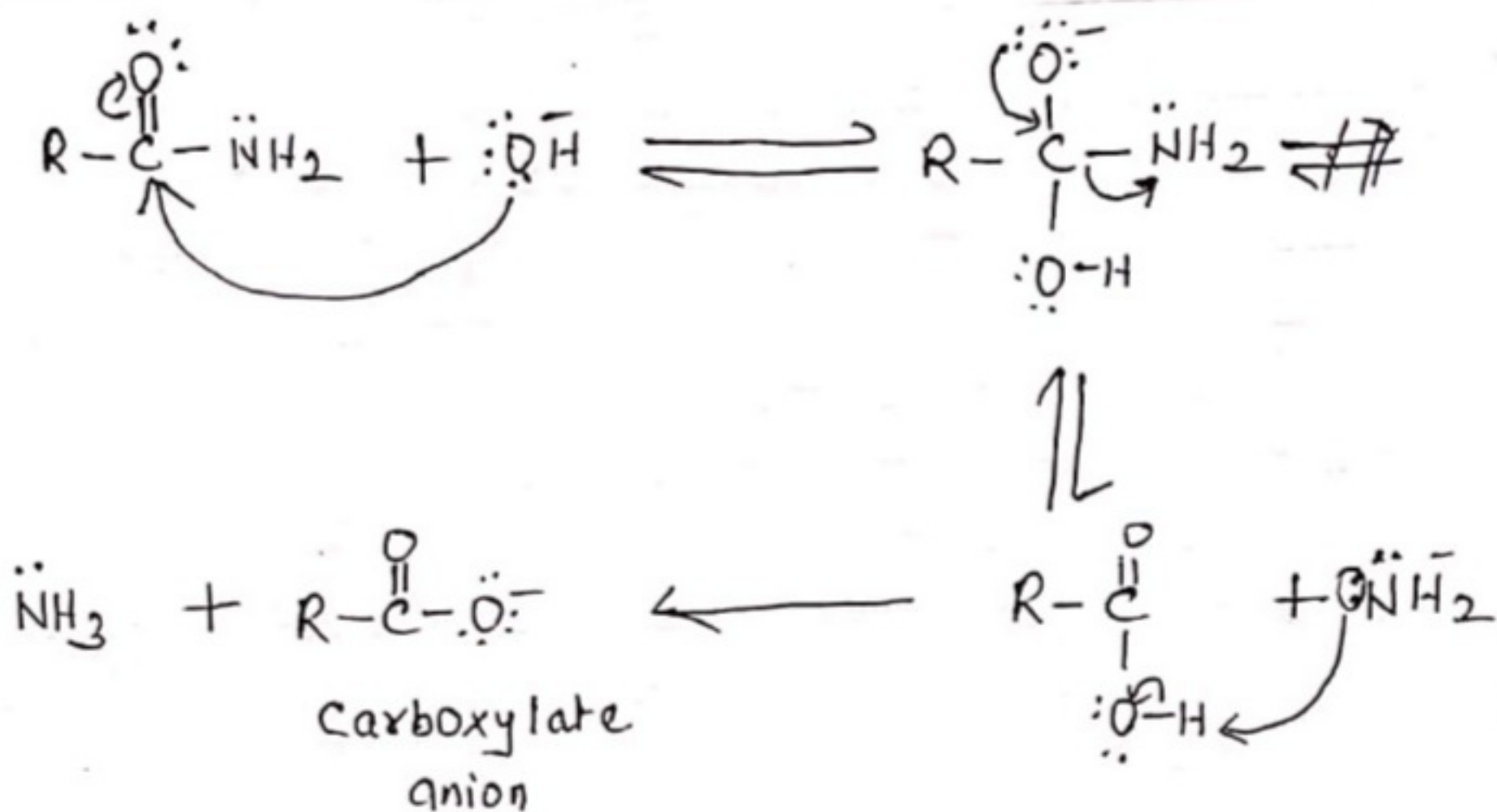
Mechanism

Acid catalysed hydrolysis :-

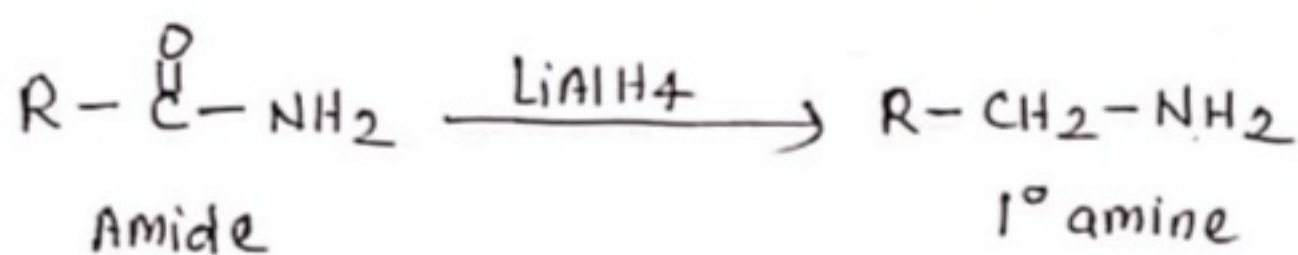


Base catalysed hydrolysis :-

5.

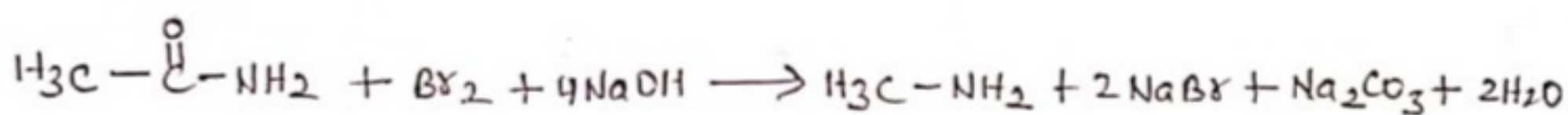
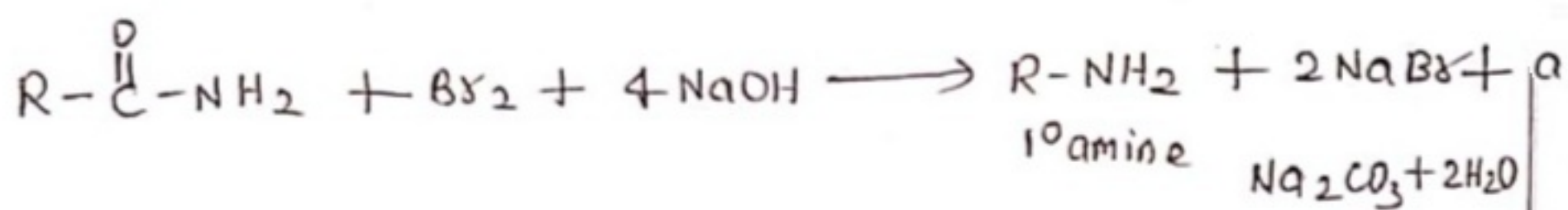


2. REDUCTION :- $LiAlH_4$ reduces amides to primary amines.



3. HOFMANN'S BROMAMIDE REACTION

Treatment of an amide with $Br_2 + NaOH$ produces a primary amine is one lesser carbon.



* This reaction is also called Hofmann's Rearrangement.

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Acid Amides completed.