

2. Conversion into functional derivatives (Carboxylic acid derivatives)

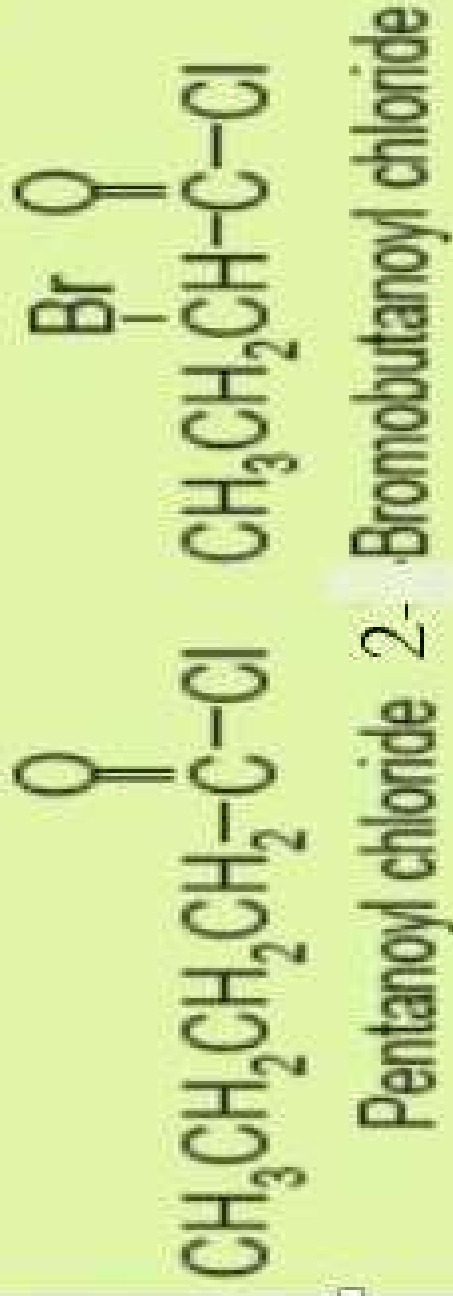


(a) Conversion into acid chlorides.



Nomenclature of acid chlorides

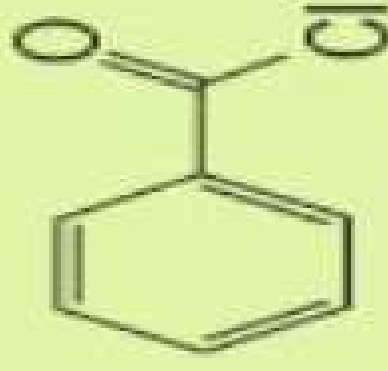
Acid chlorides are named by replacing the -ic acid ending with -yl chloride or replacing the carboxylic acid ending with -carbonyl chloride.



Pentanoyl chloride 2-Bromobutanoyl chloride

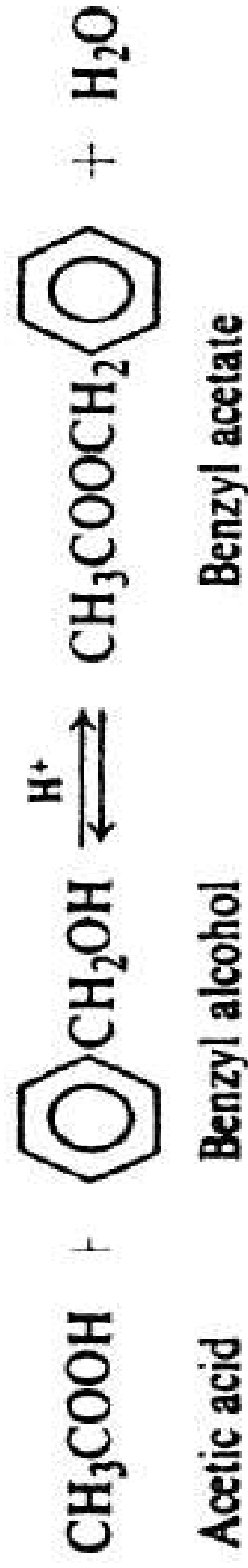
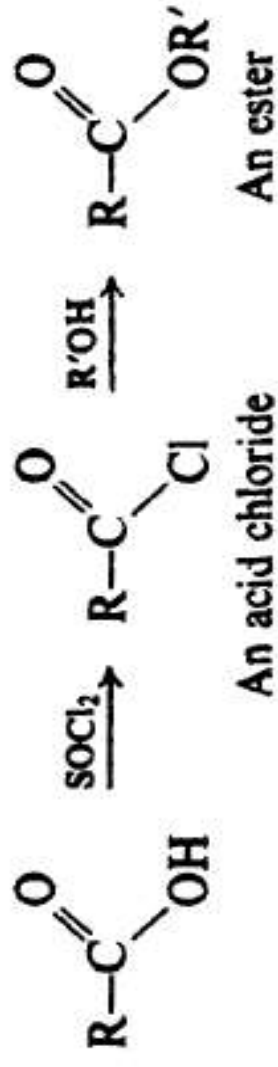
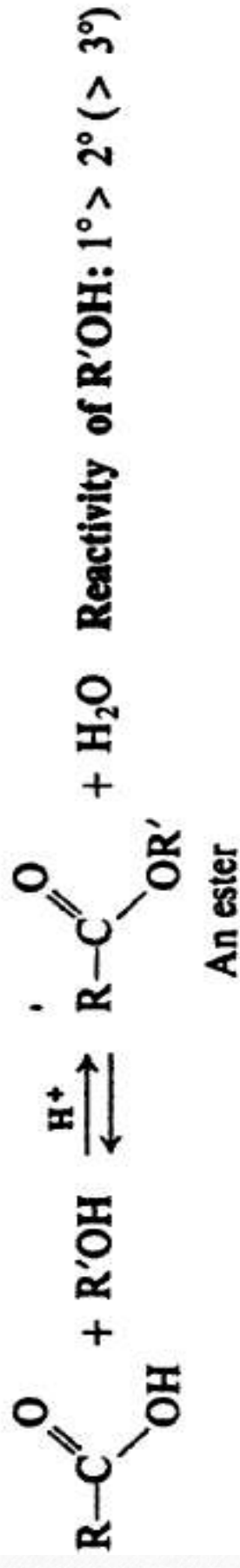


Cyclohexanecarbonyl
chloride



Benzoyl chloride

b- Conversion into esters.



Nomenclature of esters

- The mechanism of esterification is necessarily the exact reverse of the mechanism of hydrolysis of esters.

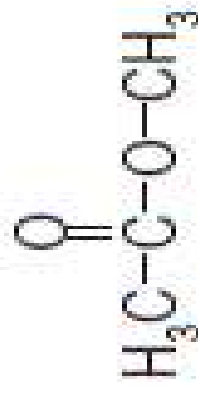
Reactivity in esterification



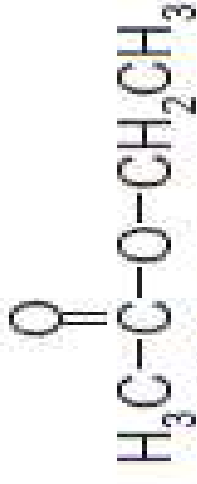
Nomenclature of esters

The first word of the name comes from the alkyl group of the alcohol, and the second part comes from the carboxylate group of the carboxylic acid used.

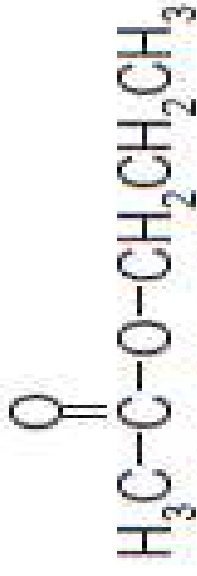
Nomenclature of esters



Methyl acetate
Methylethanoate

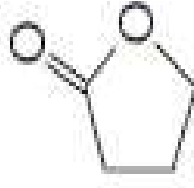


Ethyl acetate
Ethylethanoate



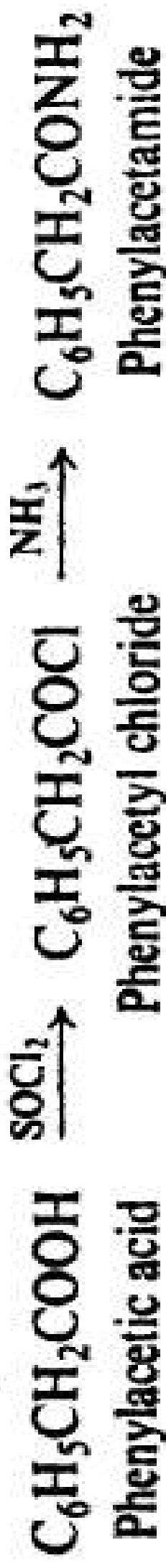
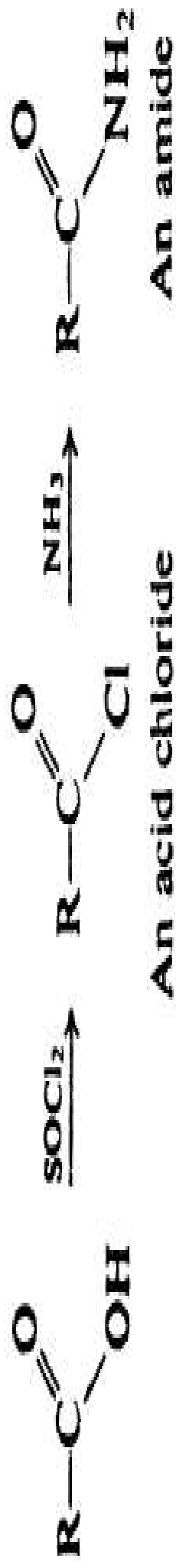
Propyl acetate
Propylethanoate

A cyclic ester is called a lactone, and the IUPAC names of lactones are derived by adding the term lactone at the end of the name of the parent carboxylic acid.



4-Hydroxybutanoic acid lactone

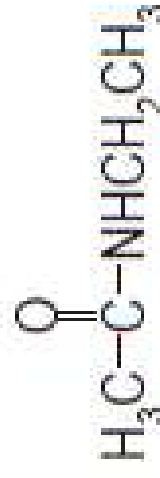
- (c) Conversion into amides.



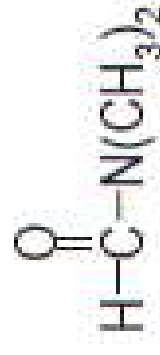
Nomenclature of amides

Amides are named by replacing the -oic acid or -ic acid suffix of the parent carboxylic acids with the suffix -amide, or by replacing the -carboxylic acid ending with -carboxamide.

Alkyl groups on nitrogen atoms are named as substituents, and are prefaced by N- or N,N-, followed by the name(s) of the alkyl group(s).

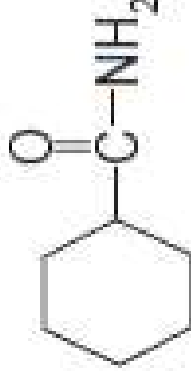


N-Ethylethanamide

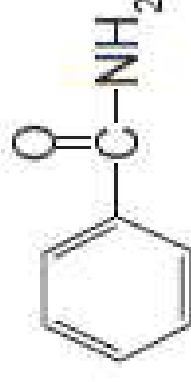


N,N-Dimethylformamide

DMF



Cyclohexanecarboxamide



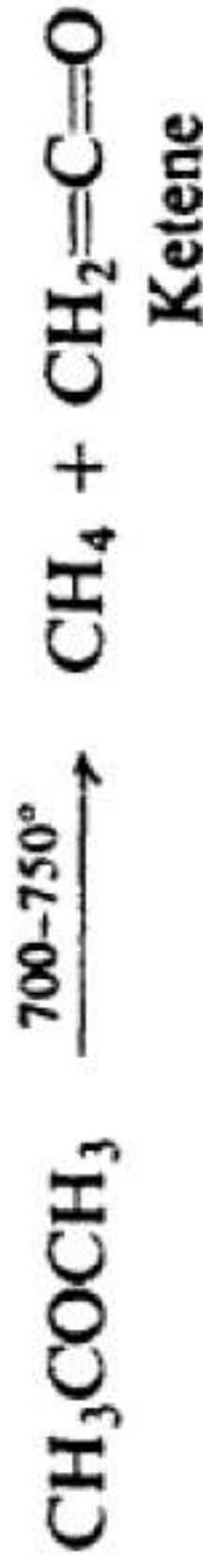
Benzamide

Preparation of acid anhydrides

Only one monocarboxylic acid anhydride is encountered very often: **acetic anhydride**

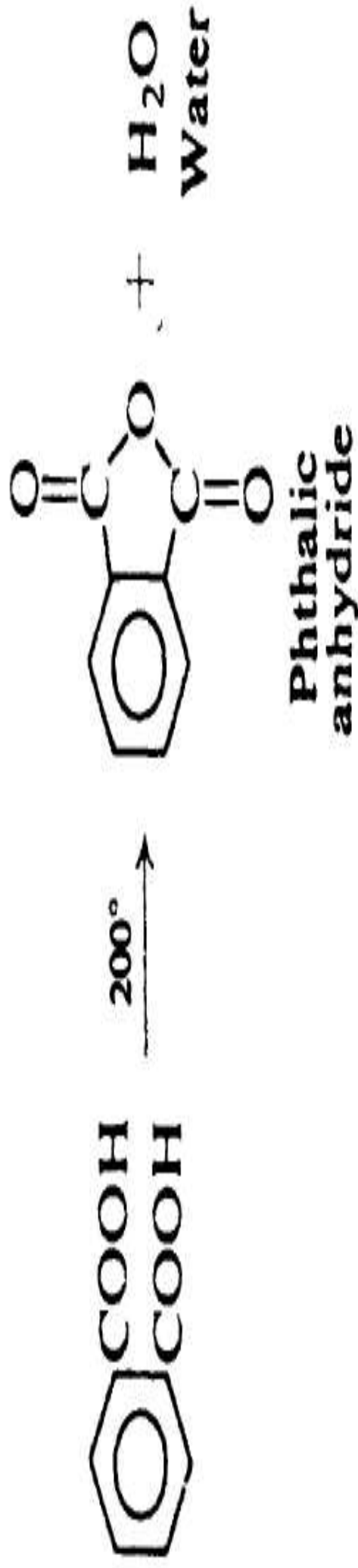
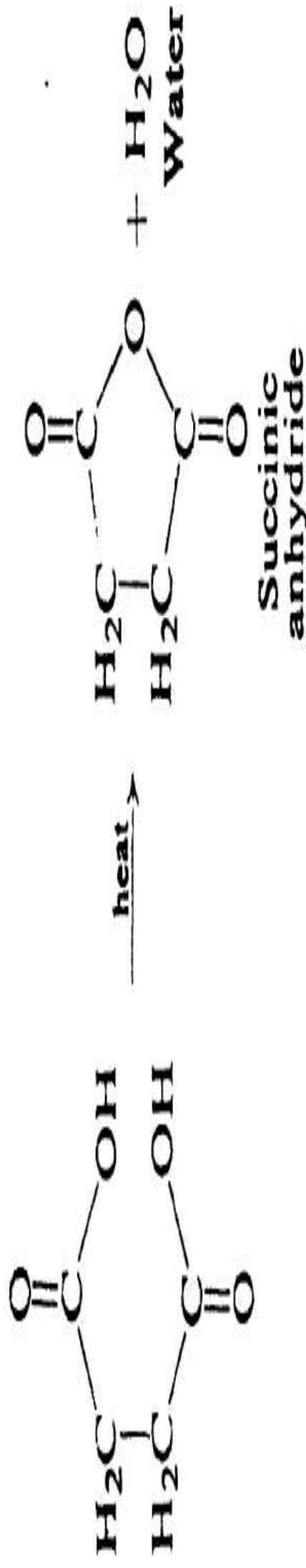


Ketene is made in the laboratory by pyrolysis of acetone, and ordinarily used as soon as it made



Preparation of acid anhydrides

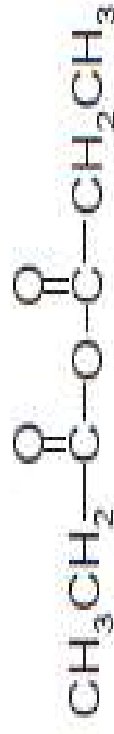
- Dicarboxylic acids yield anhydrides on simple heating: in those cases where a five- or six-membered ring



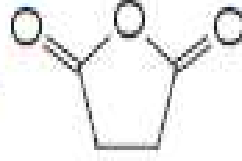
Nomenclature of acid anhydrides

Replacing the -acid suffix of the parent carboxylic acids with the word anhydride.

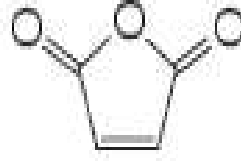
Mixed anhydrides that consist of two different acid-derived parts are named using the names of the two individual acids with an alphabetical



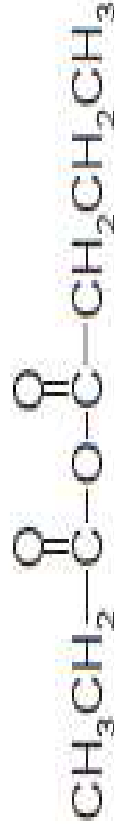
Propanoic anhydride



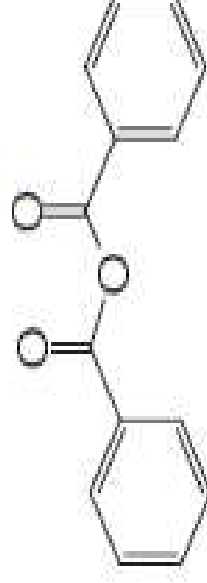
Butanedioic anhydride
Succinic anhydride



2-Butenedioic anhydride
Maleic anhydride



Butanoic propanoic anhydride



Benzoic anhydride

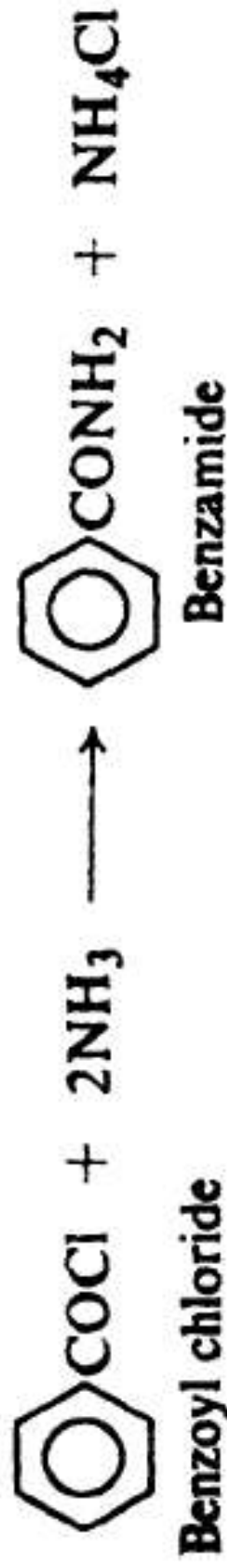
1-Reaction of acid chloride

1-Conversion into acid and acid derivative.

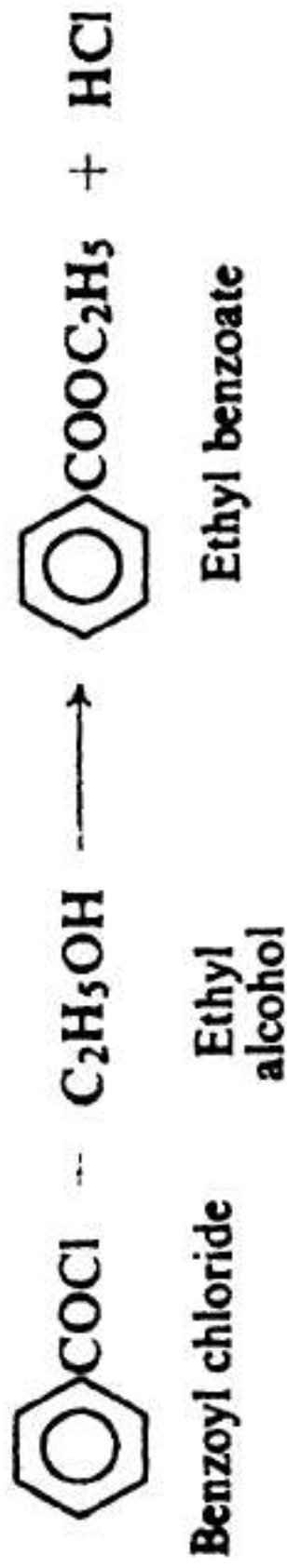
(a) Conversion into acids. Hydrolysis



(b) Conversion into amides. Ammonolysis



(c) Conversion into esters. Alcoholysis



2. Formation of ketones. Friedel-Crafts acylation.

