

# DEGREE-II (HONS.)

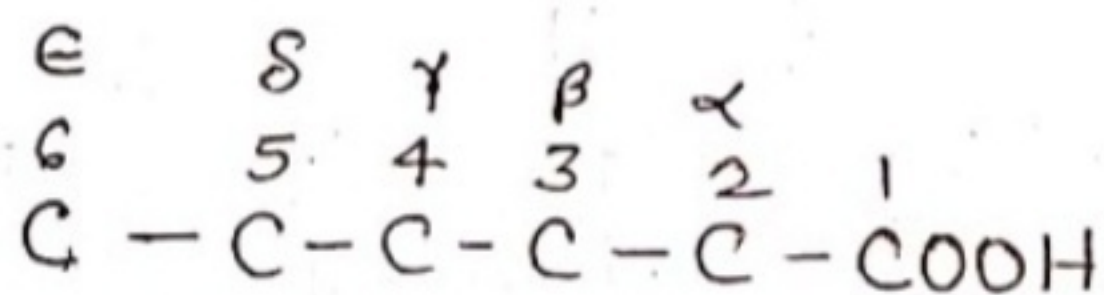
1.

By:-Dr.Rinky ,15/10/2020

## Topic:- Classification, Nomenclature, Preparation & Properties Of Hydroxy Acid.

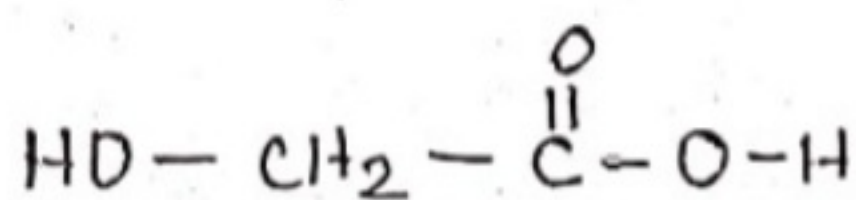
The derivatives of carboxylic acids in which one or more H-atoms of the hydrocarbon group are replaced by as many OH groups.

They are referred to as  $\alpha, \beta, \gamma, \delta$  etc. hydroxy acids according as OH is bonded to  $\alpha, \beta, \gamma$  or  $\delta$  carbon of the chain.



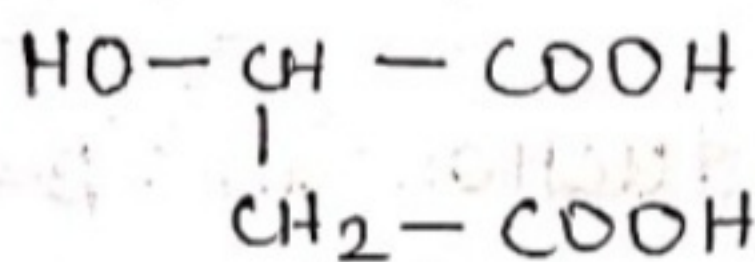
They are referred to as  $\alpha, \beta, \gamma, \delta$  etc. hydroxy acids according as the -OH bonded to  $\alpha, \beta, \gamma$  or  $\delta$  carbon of the chain.

Some of the important hydroxy acids are:—



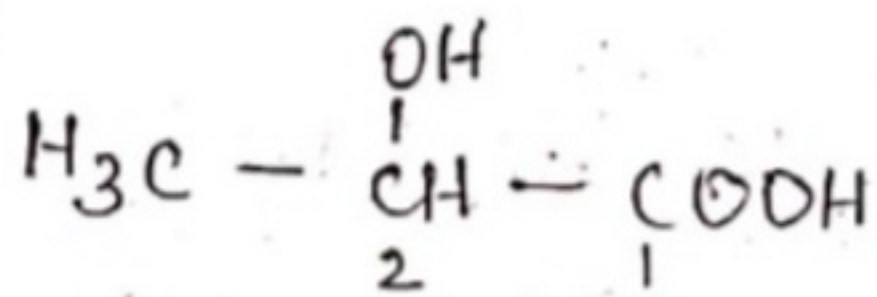
Hydroxy acetic acid

(Glycolic Acid)



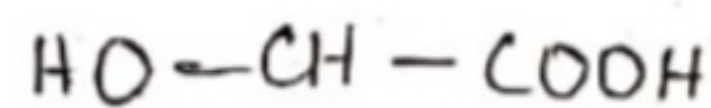
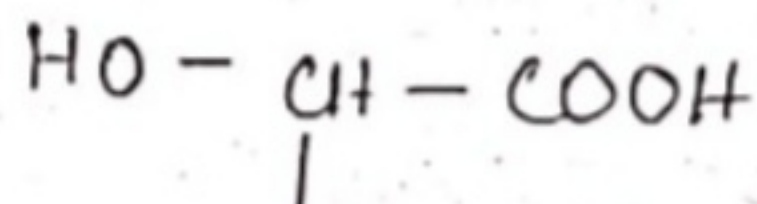
Malic Acid





2-hydroxypropanoic acid

(Lactic acid)

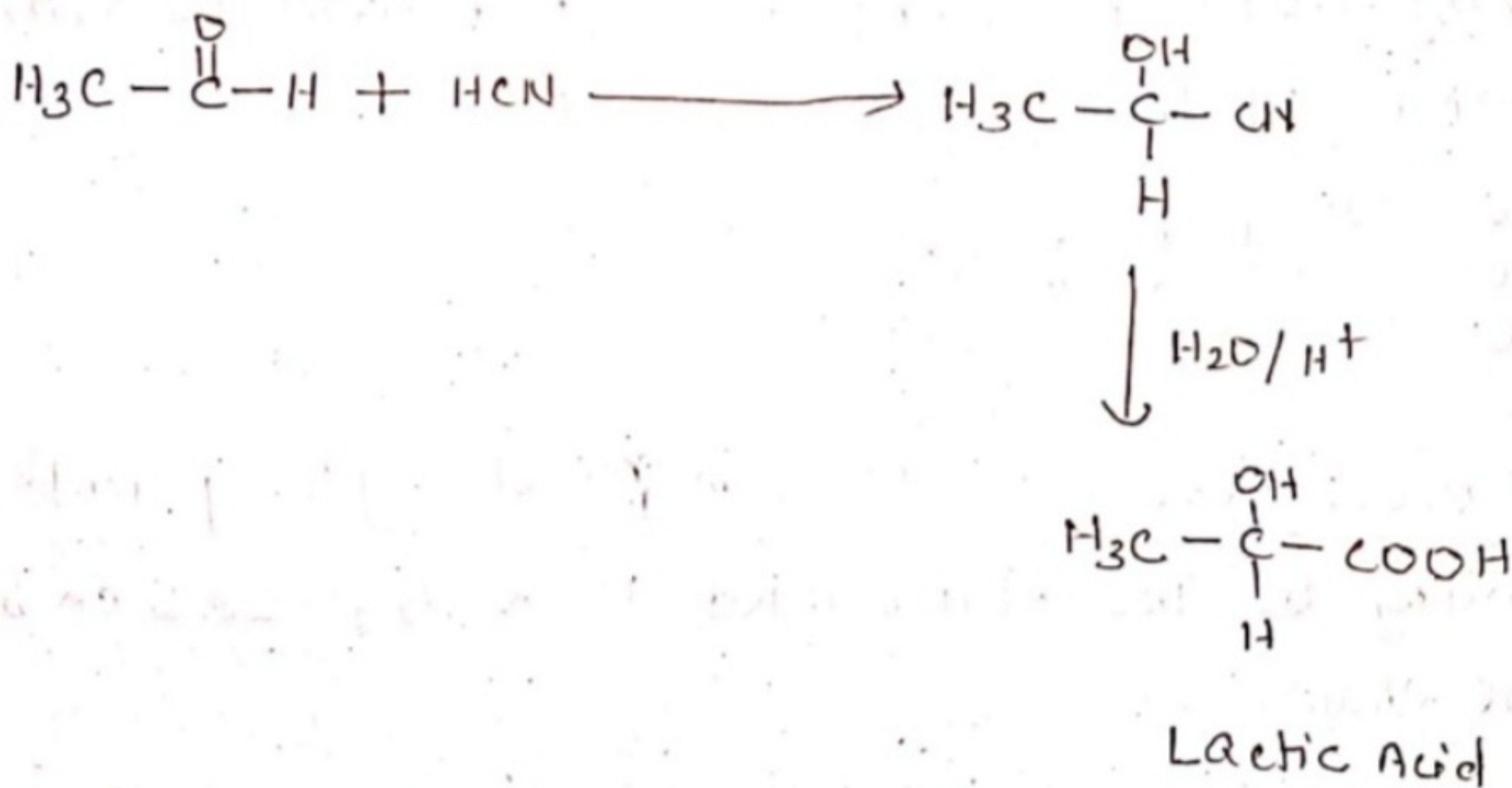


Tartaric Acid

## METHODS OF PREPARATION

### For $\alpha$ -Hydroxy Acid

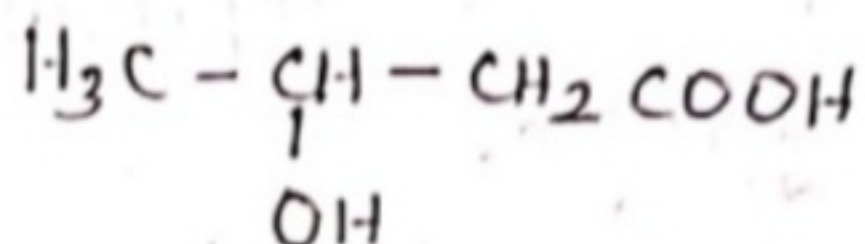
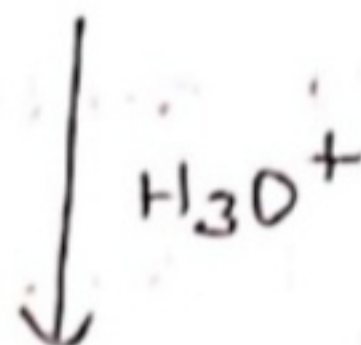
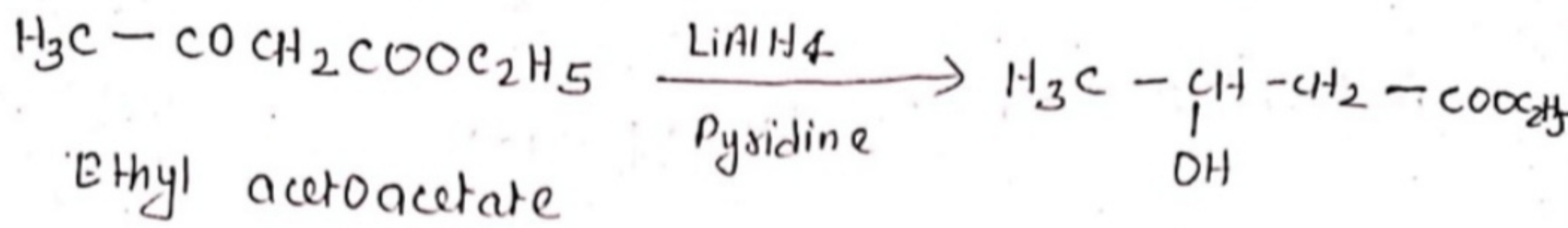
1. By Hydrolysis of cyanohydrins:-



### For $\beta$ -Hydroxy acids:-

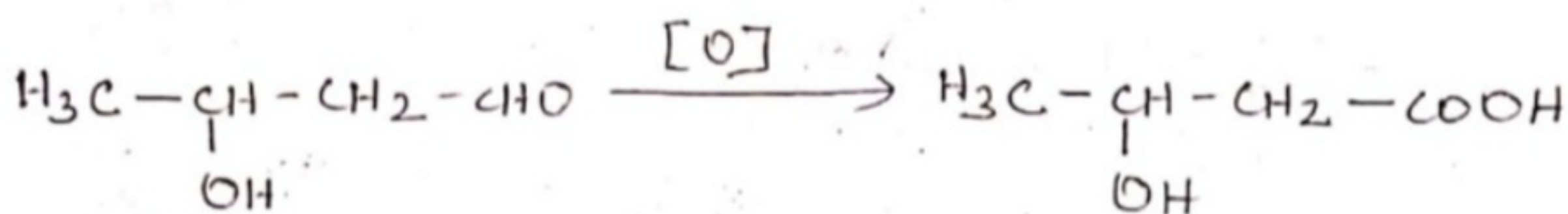
2. By reduction of  $\beta$ -keto acids or esters with  $\text{LiAlH}_4$  in the presence of pyridine.





$\beta$ -hydroxybutyric acid

3. By careful oxidation of an aldol with Tollen's reagent



### PHYSICAL PROPERTIES

- \* The hydroxy acids are colourless crystalline solids or syrupy liquids.
- \* Their melting and boiling points are much higher than those of the parent unsubstituted acid.
- \* They are more soluble in water than either the parent-carboxylic acid or the alcohol since both the functional group in them can form hydrogen bond with water.



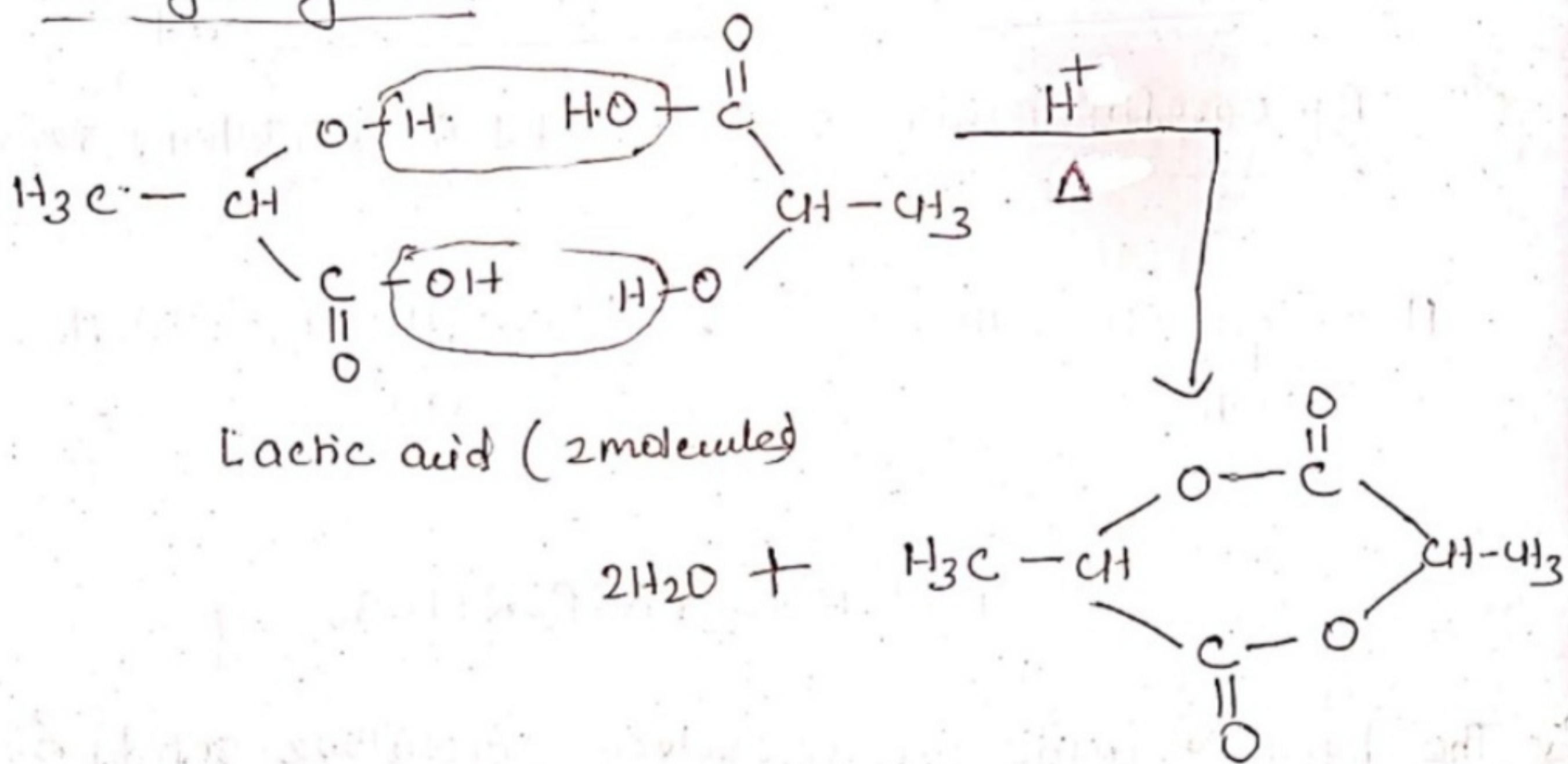
# CHEMICAL PROPERTIES

4.

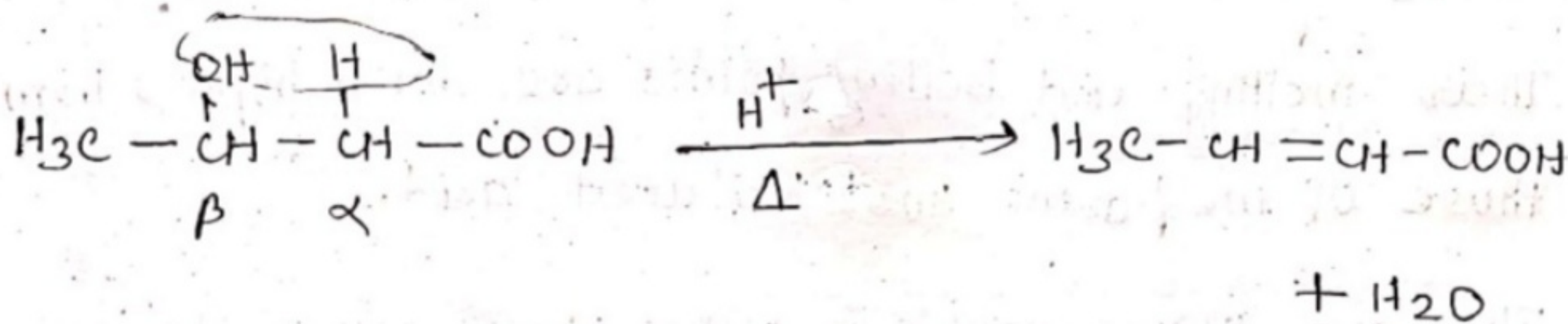
## Action of Heat on Hydroxy Acids

Hydroxy acids when heated in presence of little mineral acid ( $HCl$  or  $H_2SO_4$ ) yield a variety of products depending on the distance between  $OH$  and  $-COOH$  groups.

### 1. $\alpha$ -Hydroxy acid



### 2. $\beta$ -Hydroxy acids: -



Completed..