

HYDROXY ACID

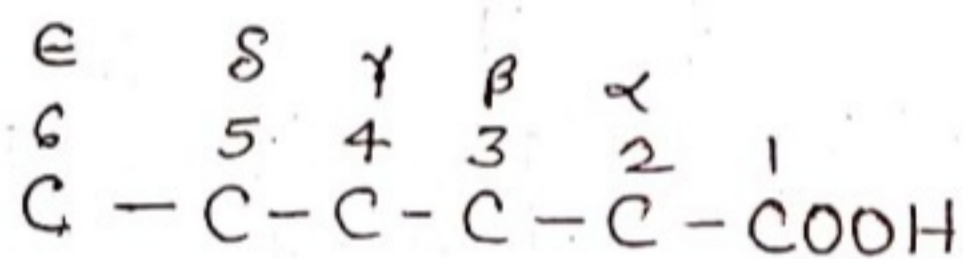
1.

DEGREE-II (HONS.) PAPER-IV

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

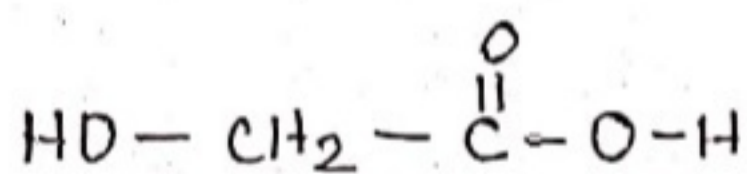
The derivatives of carboxylic acids in which one or more H-atoms of the hydrocarbon group are replaced by as many OH groups.

They are referred to as α , β , γ , δ etc. hydroxy acids according as OH is bonded to α , β , γ or δ carbon of the chain.

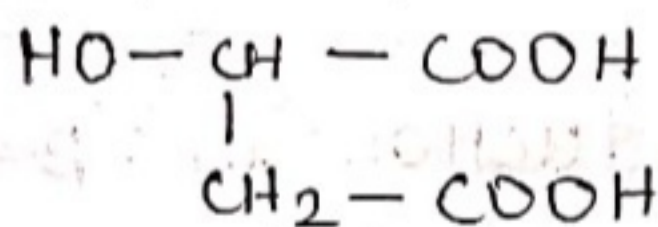


They are referred to as α , β , γ , δ etc. hydroxy acids according as the -OH bonded to α , β , γ or δ carbon of the chain.

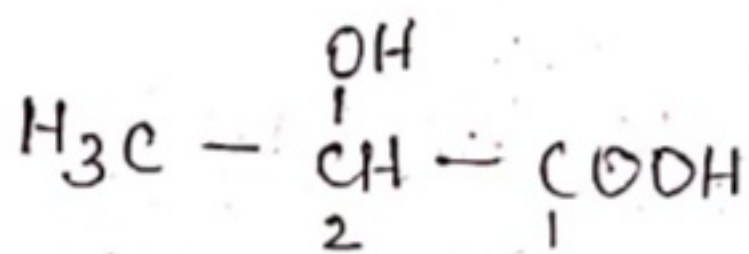
Some of the important hydroxy acids are:—



Hydroxy acetic acid
(Glycolic Acid)

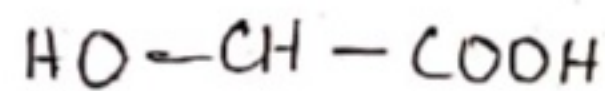
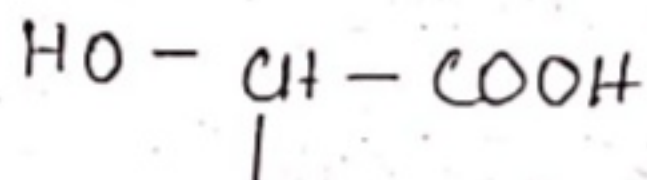


Malic Acid



2-hydroxypropanoic acid

(Lactic acid)

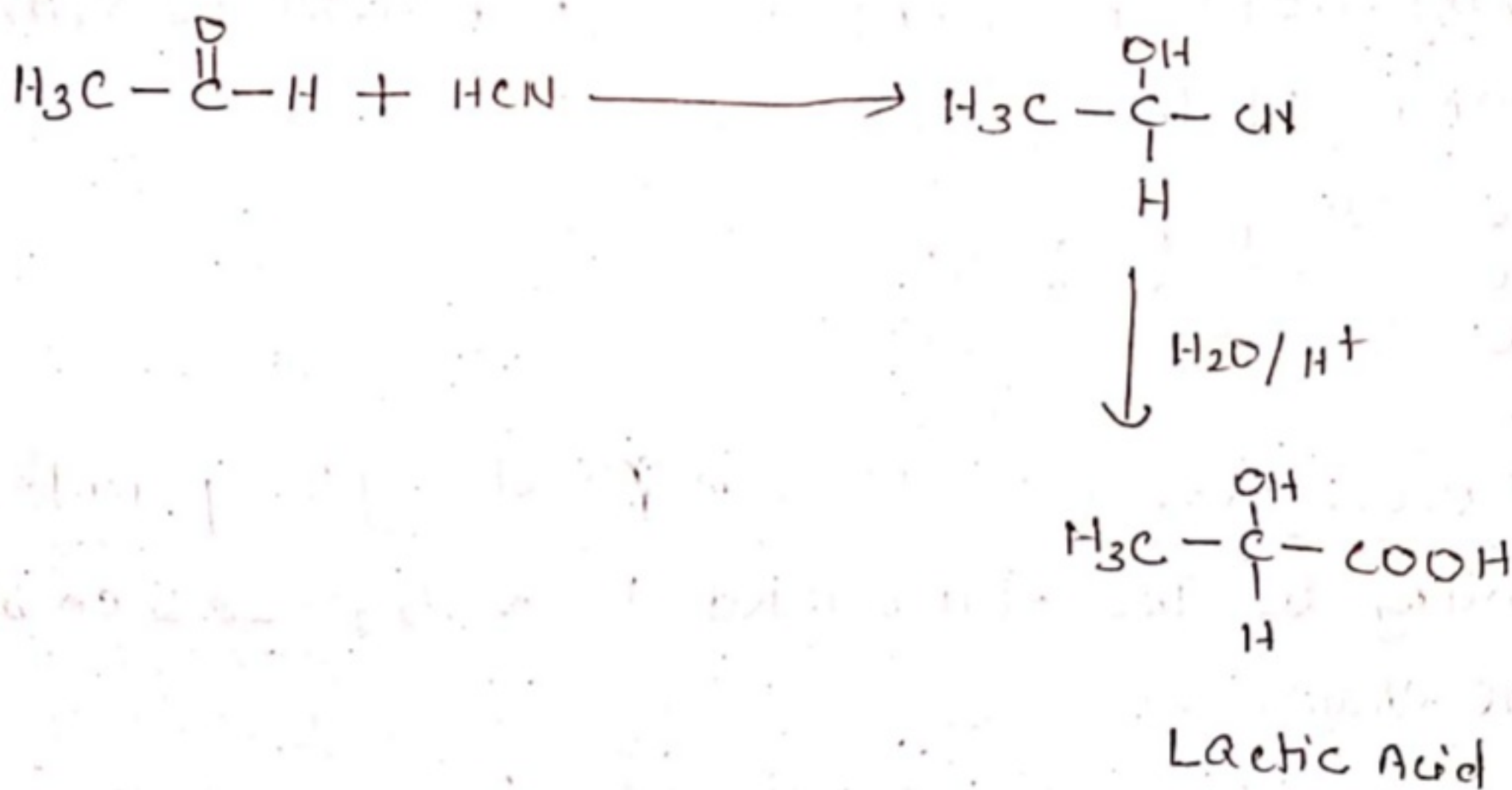


Tartaric Acid

METHODS OF PREPARATION

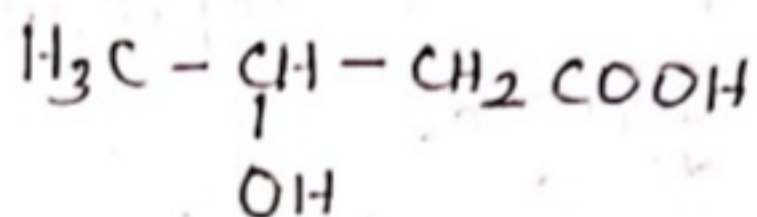
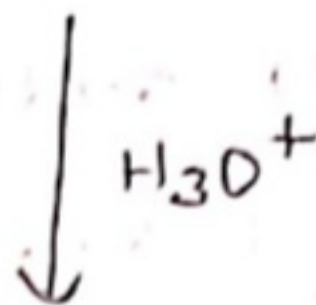
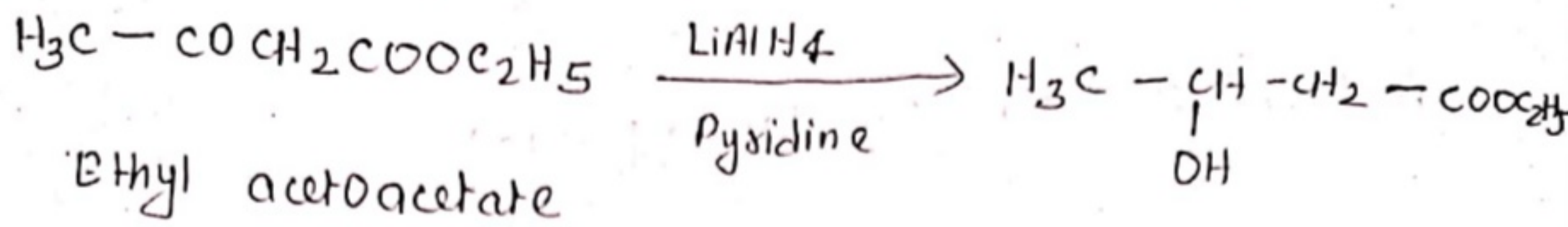
For α -Hydroxy Acid

1. By Hydrolysis of cyanohydrins:-



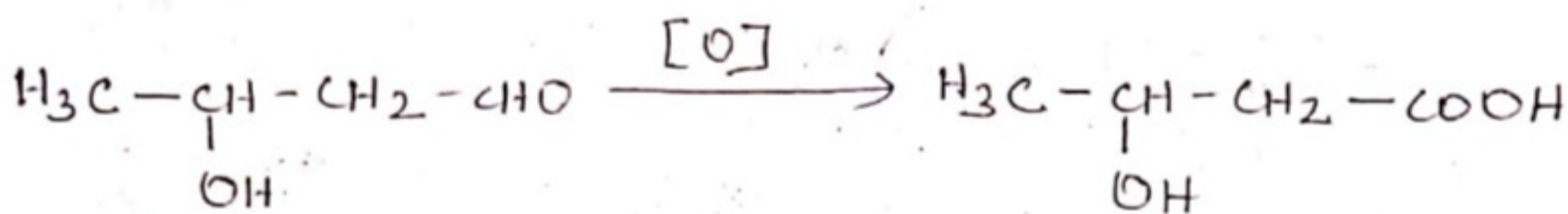
For β -Hydroxy acids:-

2. By reduction of β -keto acids or esters with LiAlH_4 in the presence of pyridine.



β -hydroxybutyric acid

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



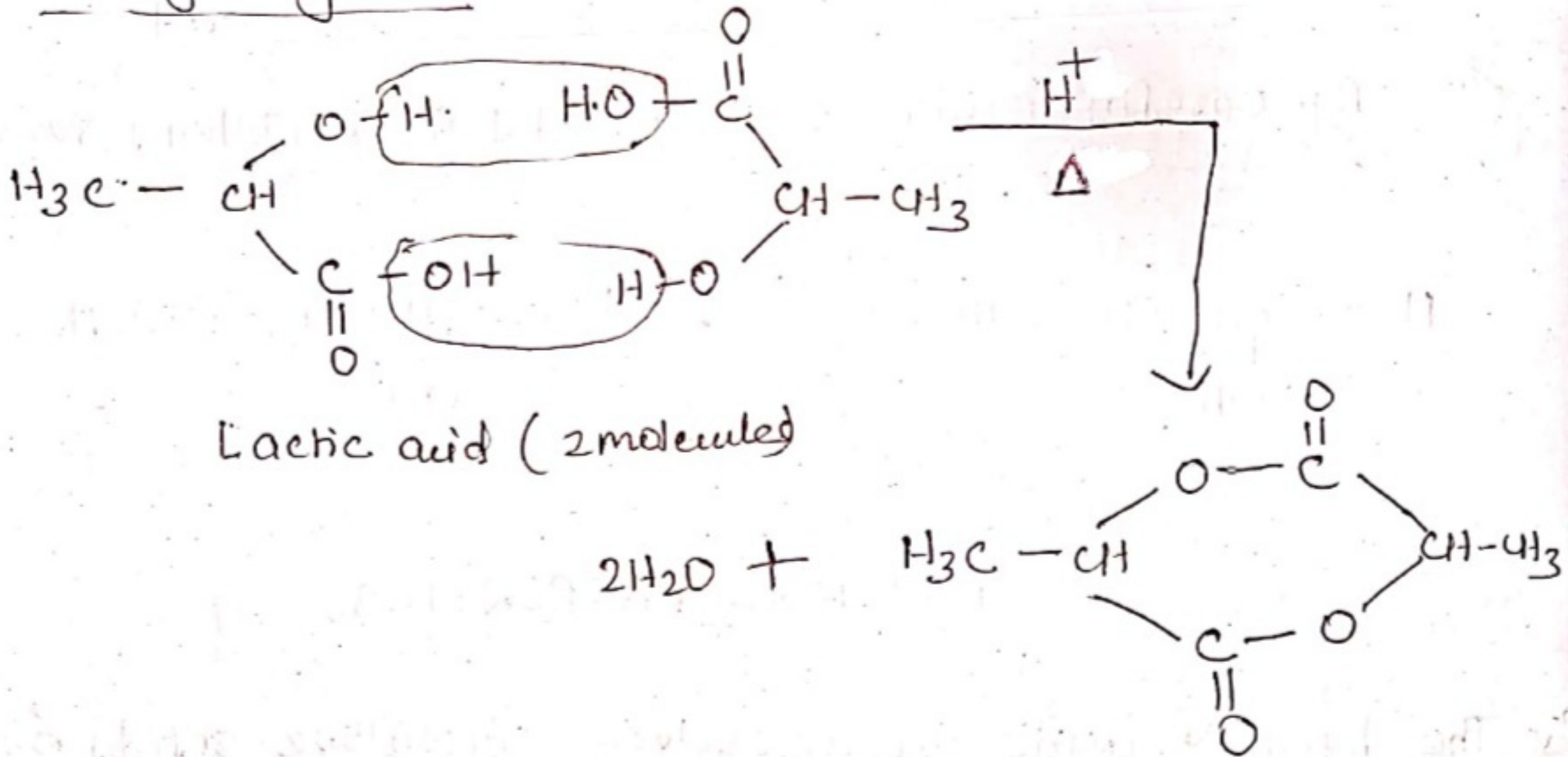
PHYSICAL PROPERTIES

- * 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.

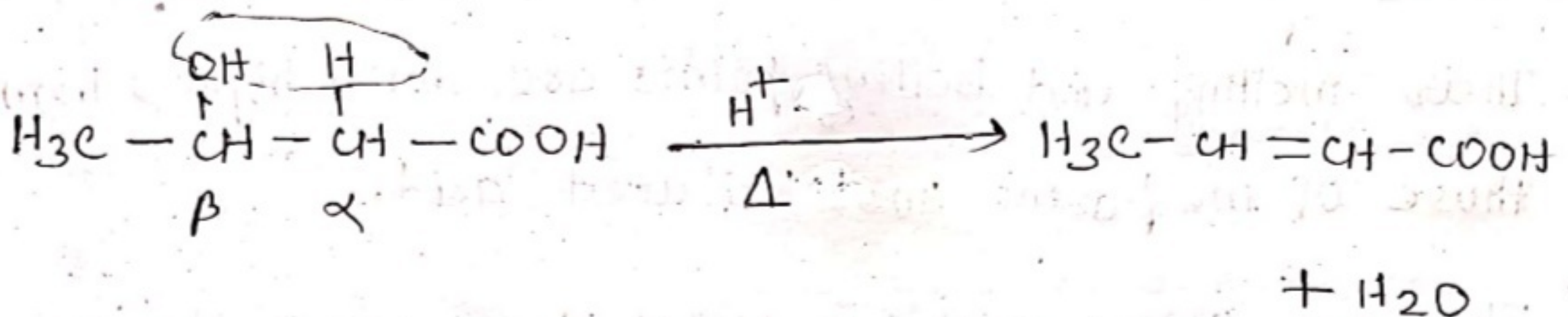
Action of Heat on Hydroxy Acids

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. α -Hydroxy acid



2. β -Hydroxy acids: -



Completed..