

05/09/2020 DEGREE-III (H) By:-Dr.Rinky

SYNTHETIC REAGENTS, LECTURE-19

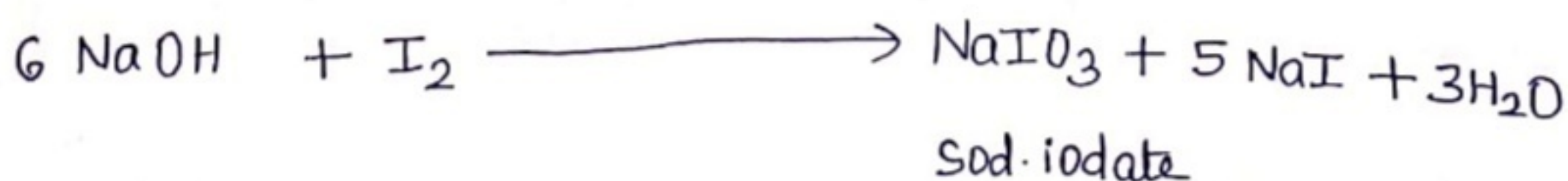
TOPIC : PERIODIC ACID

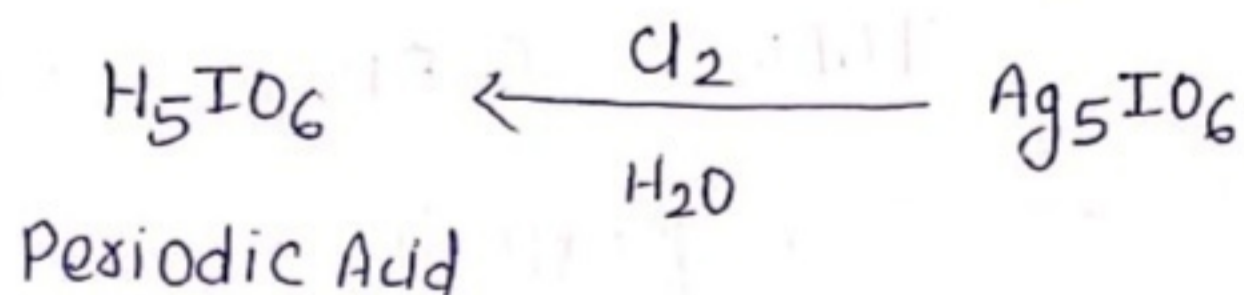
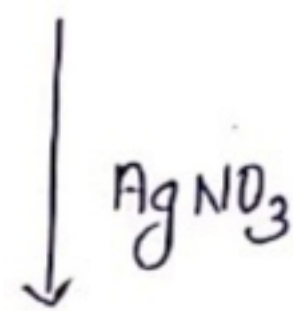
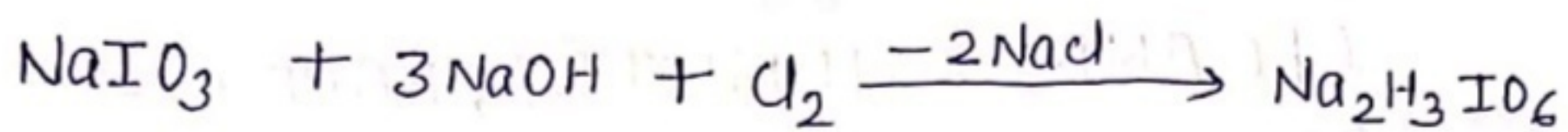
- * There are two periodic acids viz., ortho-periodic acid (H_5IO_6) and meta-periodic acid (HIO_4).
The former is commonly known as periodic acid.

PREPARATION

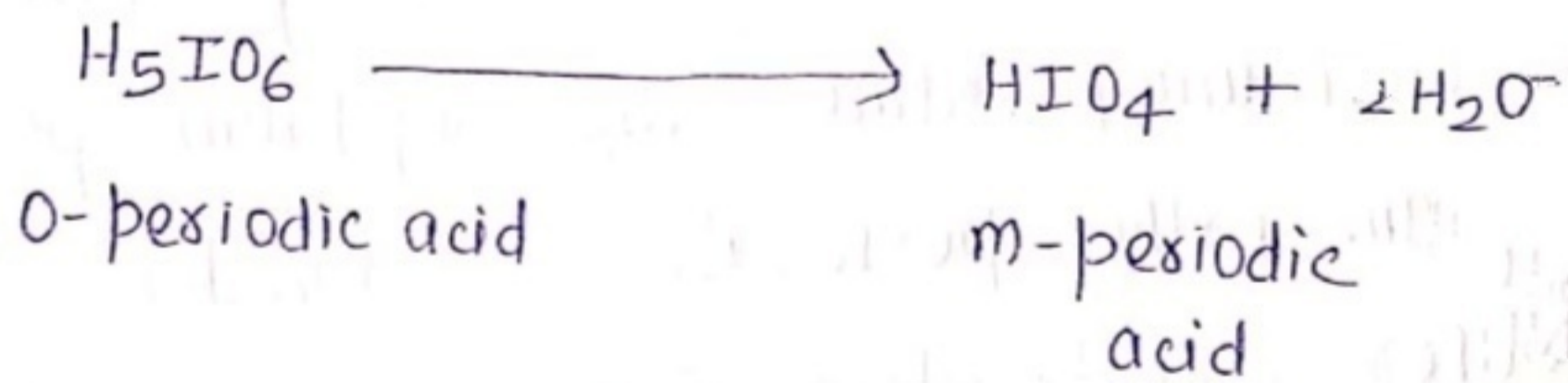
It is prepared by the following methods :-

- (i) By passing chlorine into a boiling solution of NaOH containing iodine; the crystalline precipitate of disodium ortho-periodate so formed is suspended in water and treated with silver nitrate when silver ortho-periodate is formed.
- * The silver ortho-periodate gives o-periodic acid on treatment with chlorine in presence of water.

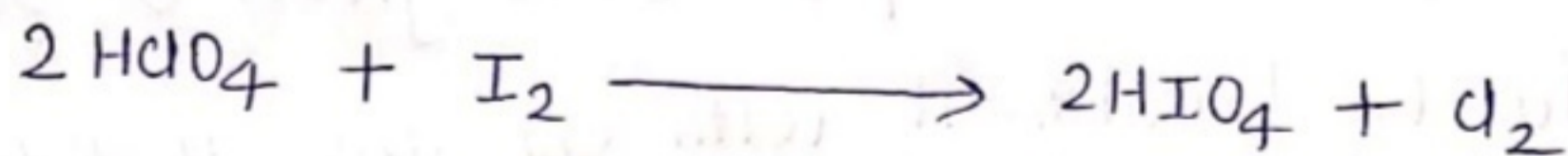




- * The solution is filtered and the filtrate is evaporated over conc. H_2SO_4 to give colourless crystals of ortho-pexiodic acid (H_5IO_6) or ($\text{HIO}_4 \cdot 2\text{H}_2\text{O}$).
- * The latex on heating in vaccuum at 100°C loses water molecules and gives the m-pexiodic acid (HIO_4).



- (ii) Aqueous solution of perchloric acid on treatment with iodine gives pexiodic acid.

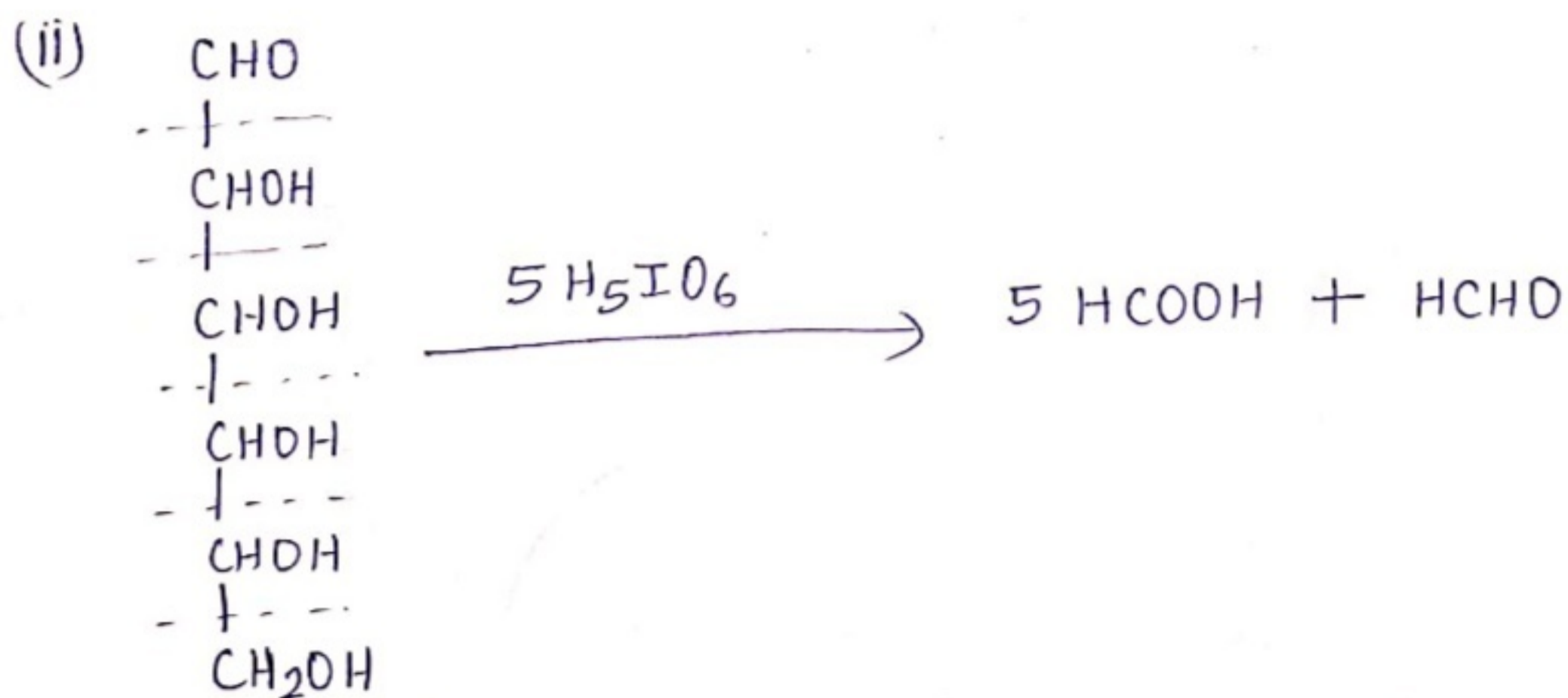
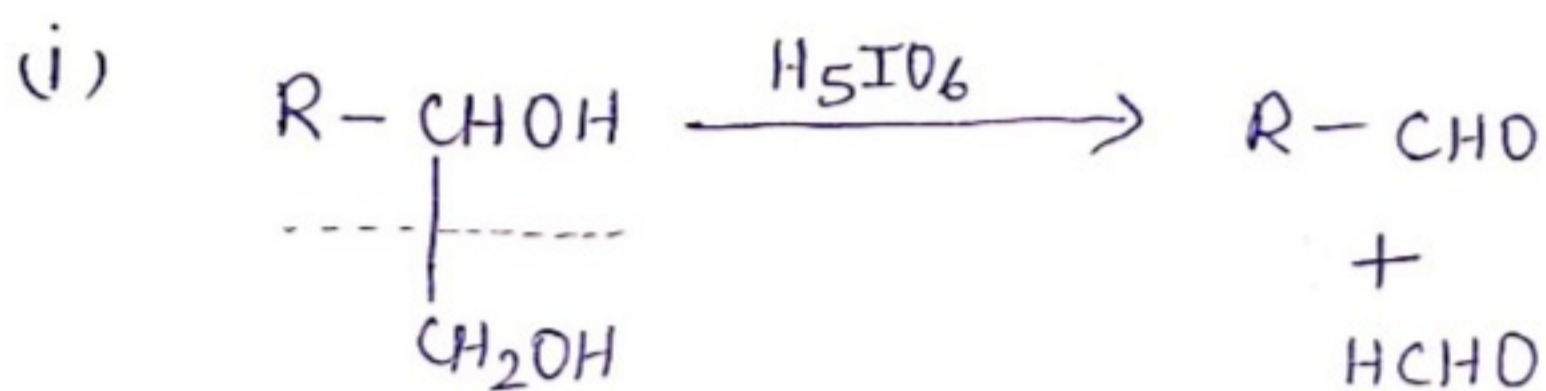


USES

- * Pexiodic acid is used as an important oxidising agent.

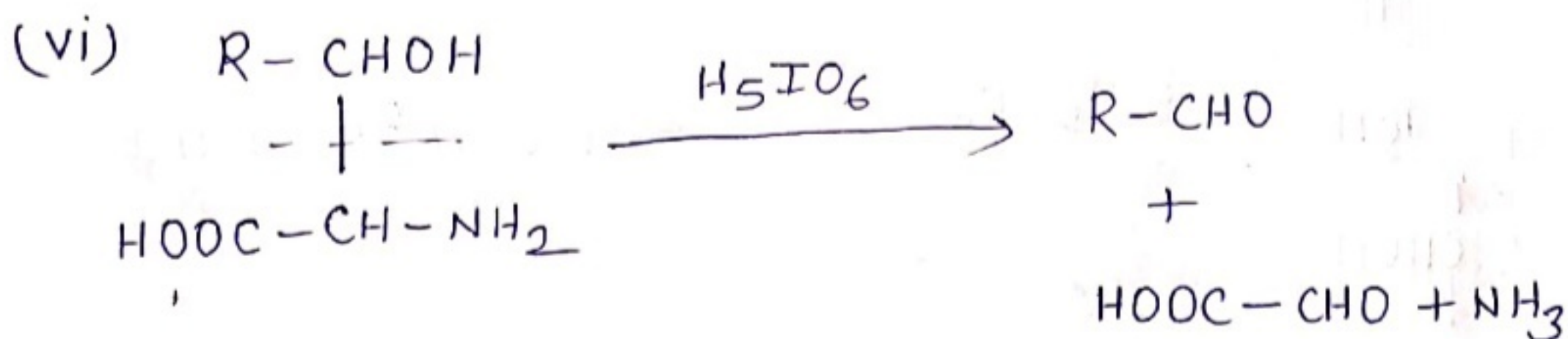
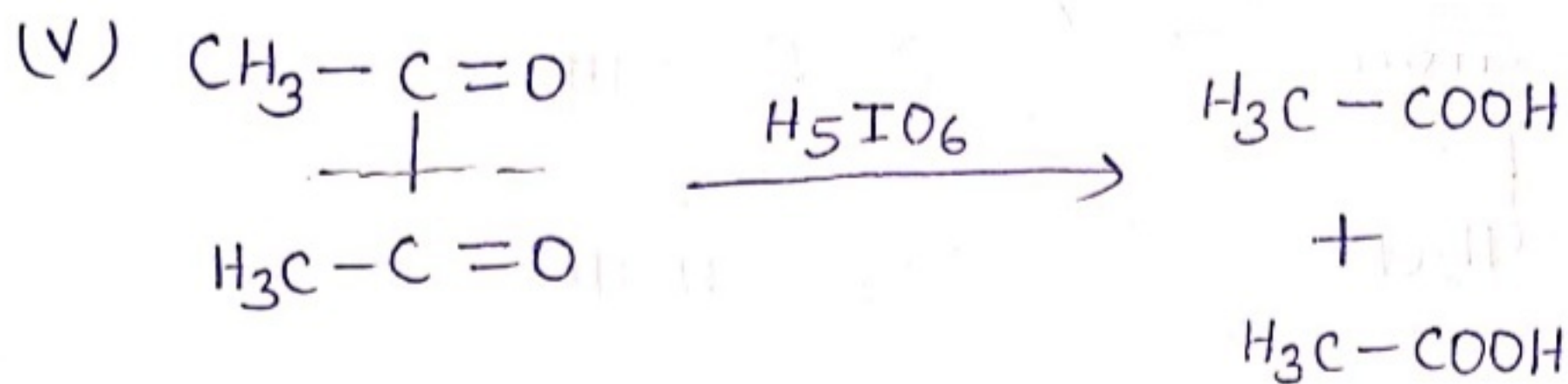
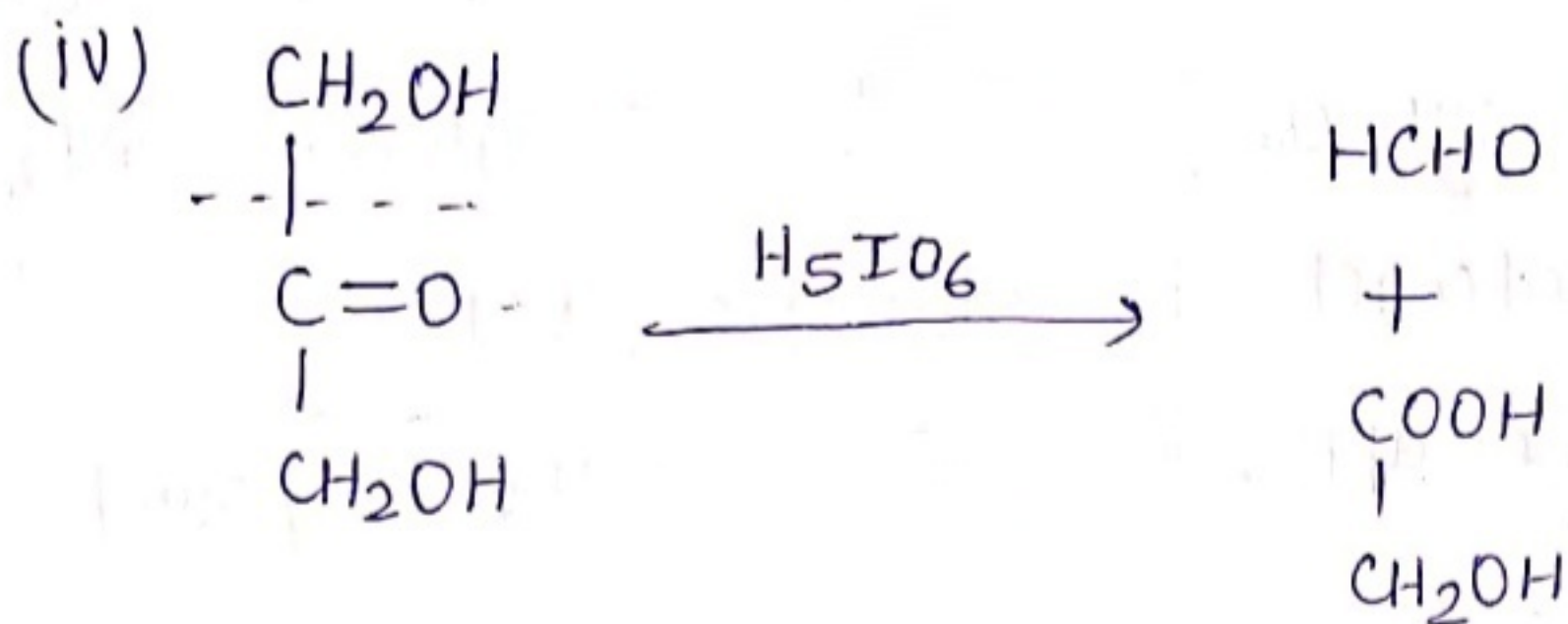
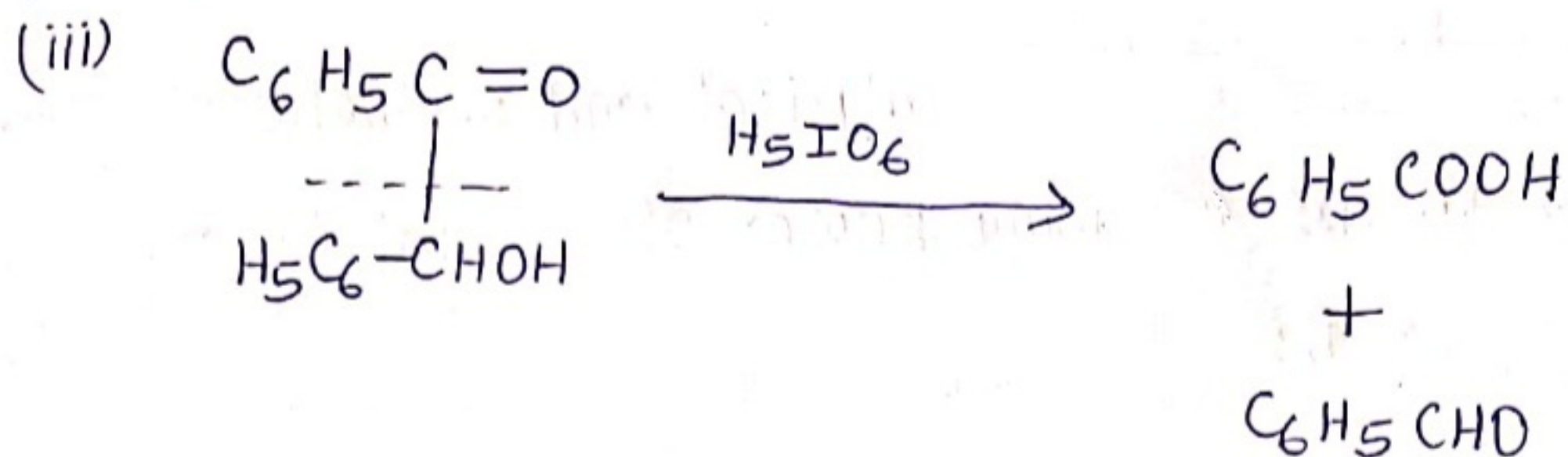
* Its importance in the analytical and synthetic chemistry is due to its oxidising power of vicinal hydroxy groups or 1,2-glycols [Malaprade, 1928].

* In general periodic acid oxidises 1,2-diols (glycols), α -hydroxy carbonyl compounds, dicarbonyl compounds, and α -amino alcohols to aldehydes, ketones or acids depending upon the nature of the compound to be oxidised.



Aldohexose

Note :- H_5IO_6 does not oxidise alpha hydroxy acids.



Note:- The dotted line indicate the points of attacks, more over the number of dotted lines shows the number of H_5IO_6 molecules consumed during oxidation.

Continued.....