

ORGANIC CHEMISTRY, PAPER-VII ^{1.}

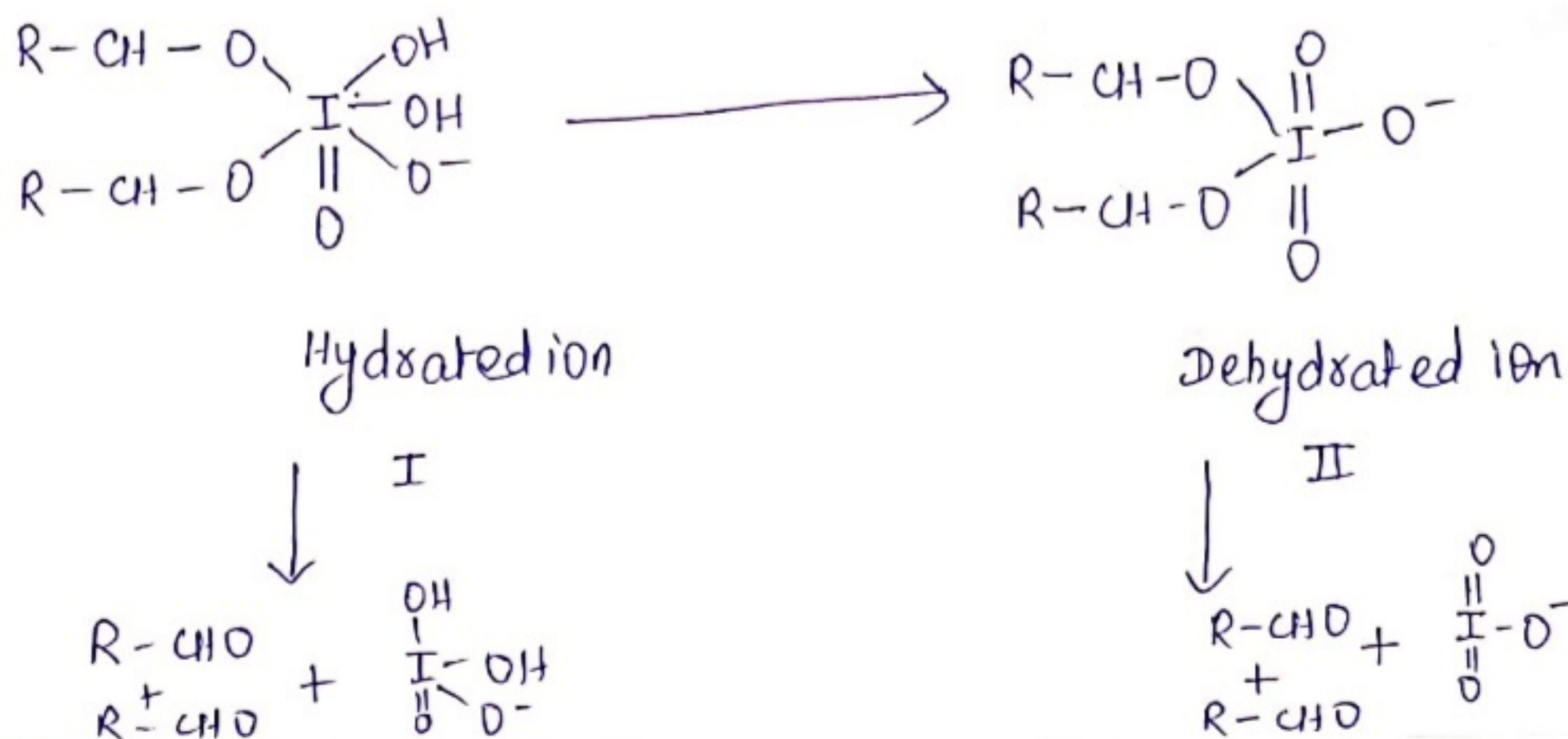
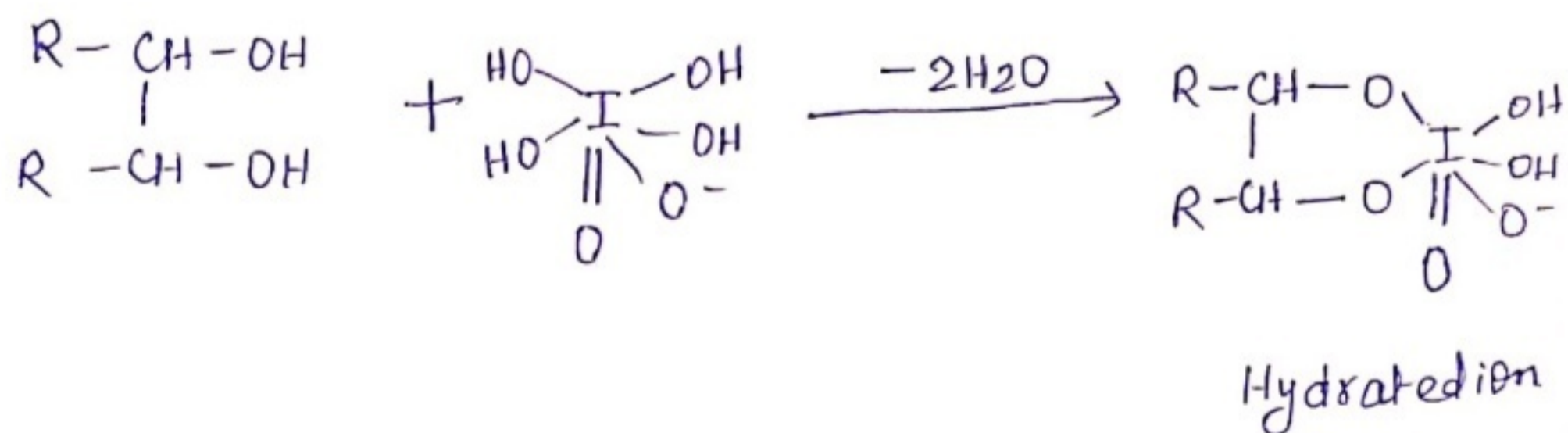
07/09/2020 DEGREE-III (H) By-Dr.Rinky

SYNTHETIC REAGENTS, LECTURE-20

TOPIC :- PERIODIC ACID

USES (Continued..)

- * Oxidation with H_5IO_6 is carried out in neutral or faintly acidic aqueous solution at room temp.
- * The reaction proceeds through a cyclic intermediate either I or II.

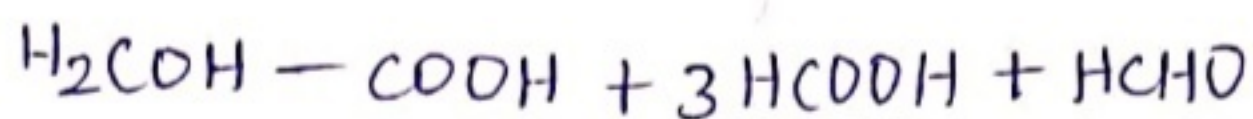
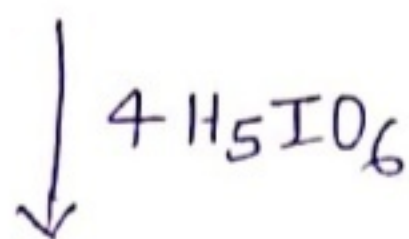
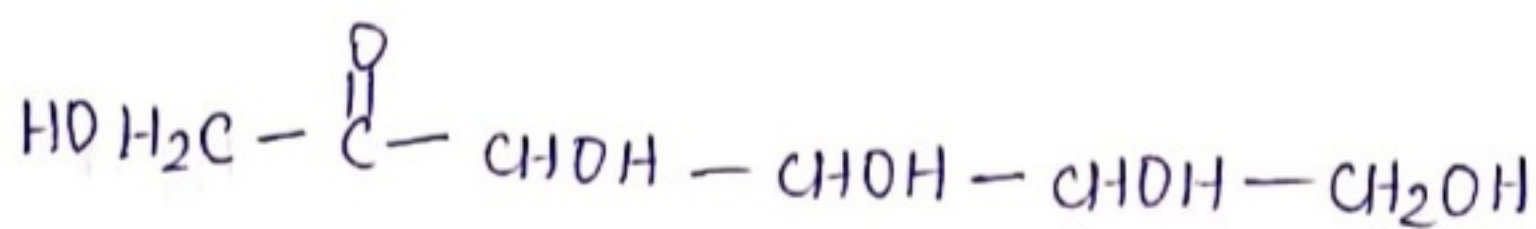
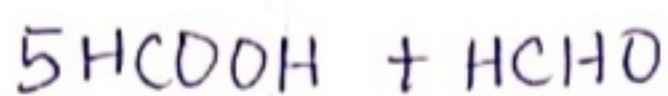
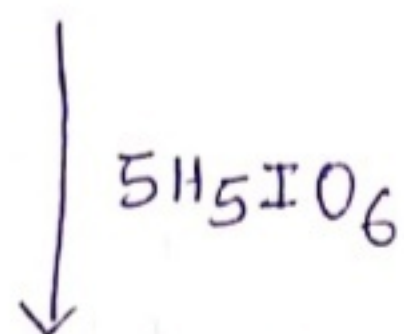
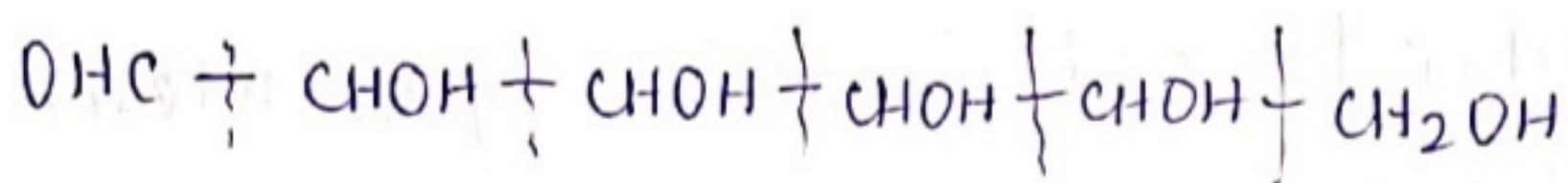


* Some of the important analytical and synthetic uses of periodic acid are described here: - - -

1. In carbohydrate chemistry:-

(a) Differentiation of aldoses and ketoses:-

Glucose and fructose consume different amount of periodic acid in the following manner:-

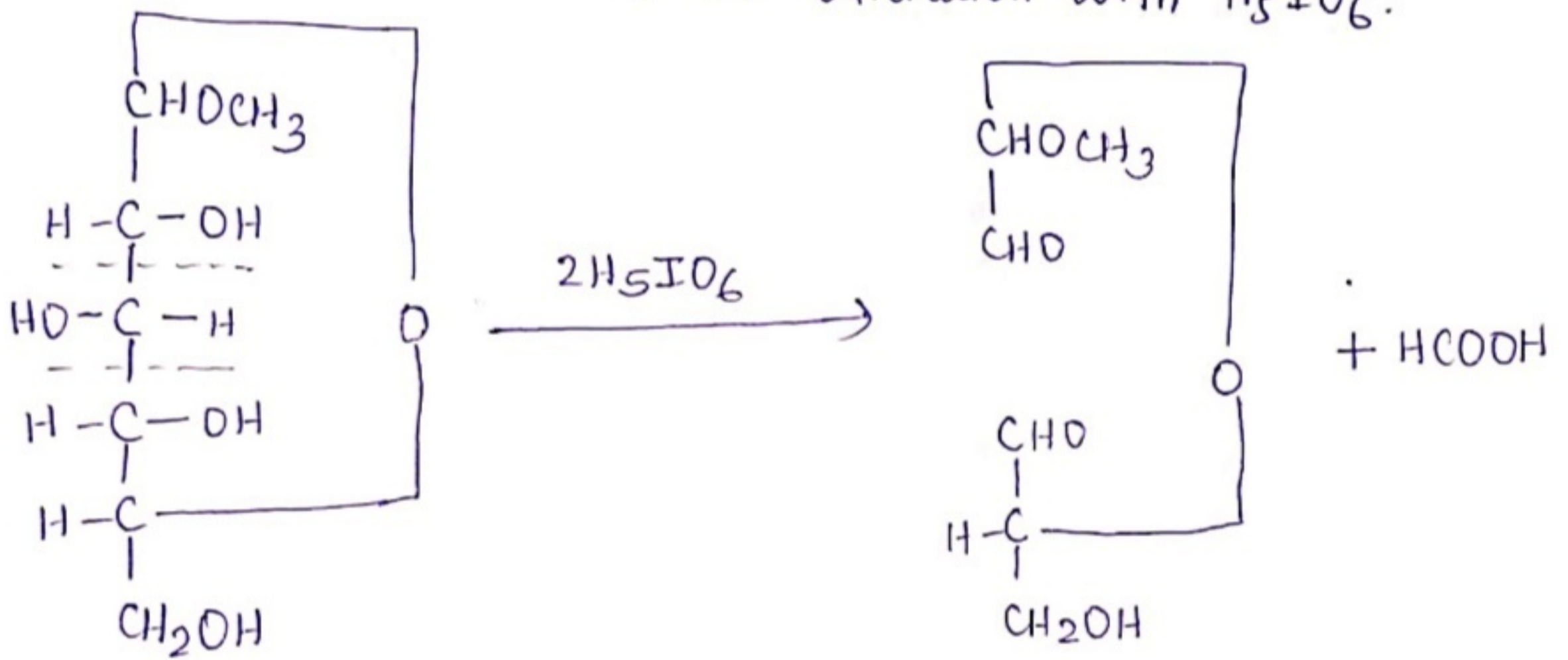


Similarly, joint analyses of the H_5IO_6 molecules consumed and aldehyde produced can be used to distinguish between hexoses, pentoses etc. in aqueous solution.

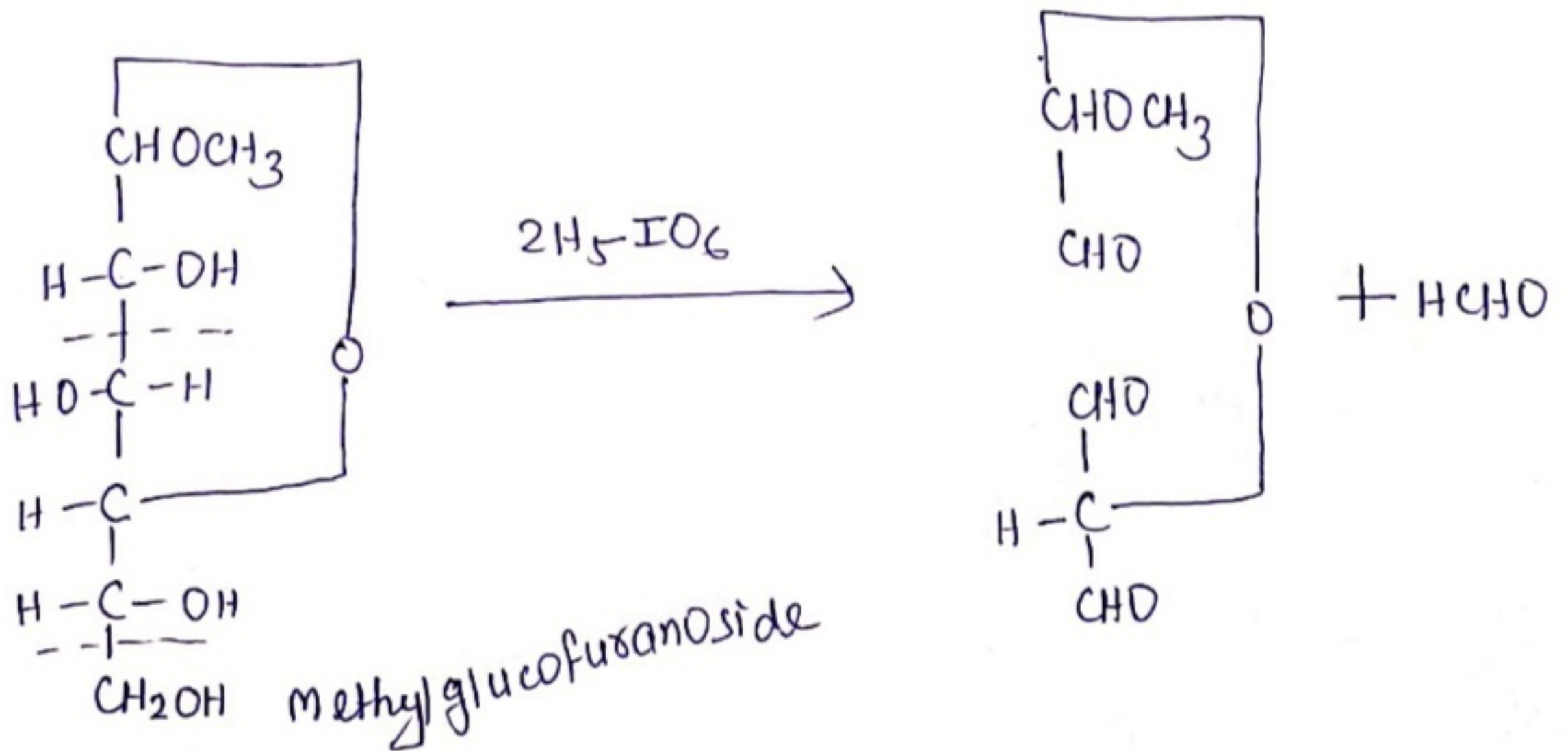
⑥ Determination of the ring:-

Periodic acid is very useful reagent for determining the size of the ring of the two glycosides as the two glycosides gives different products.

viz. HCOOH and HCHO on Oxidation with H_5IO_6 .

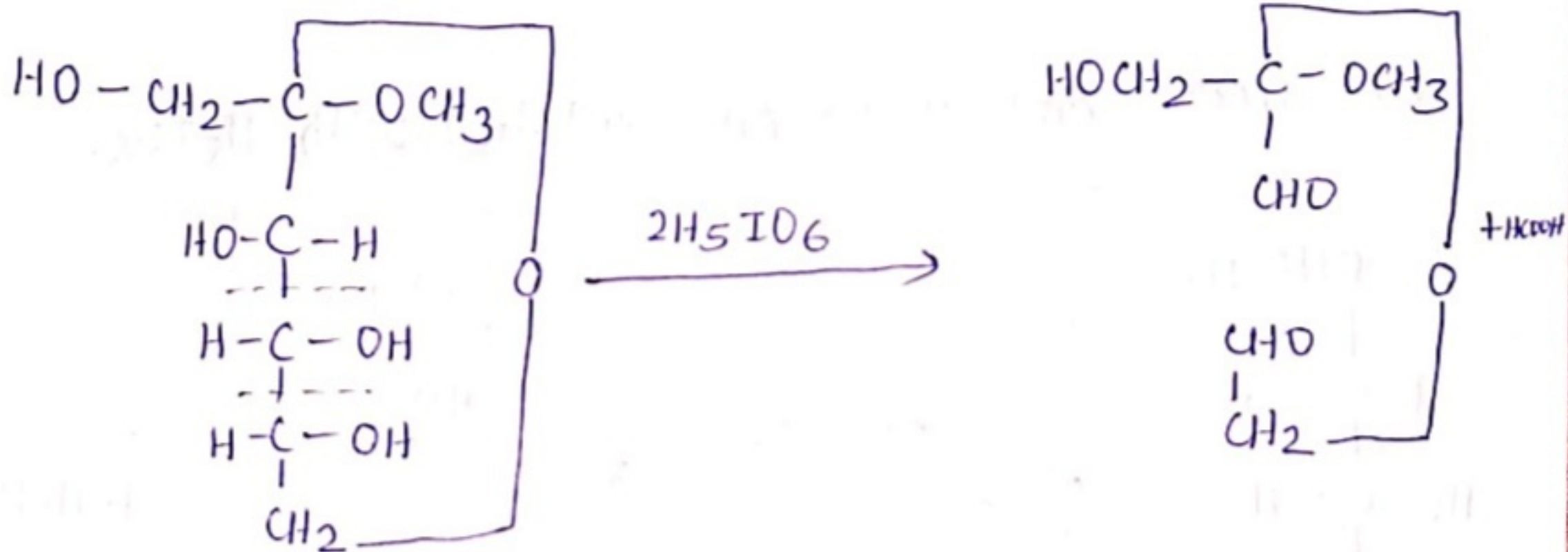


methyl glucopyranoside

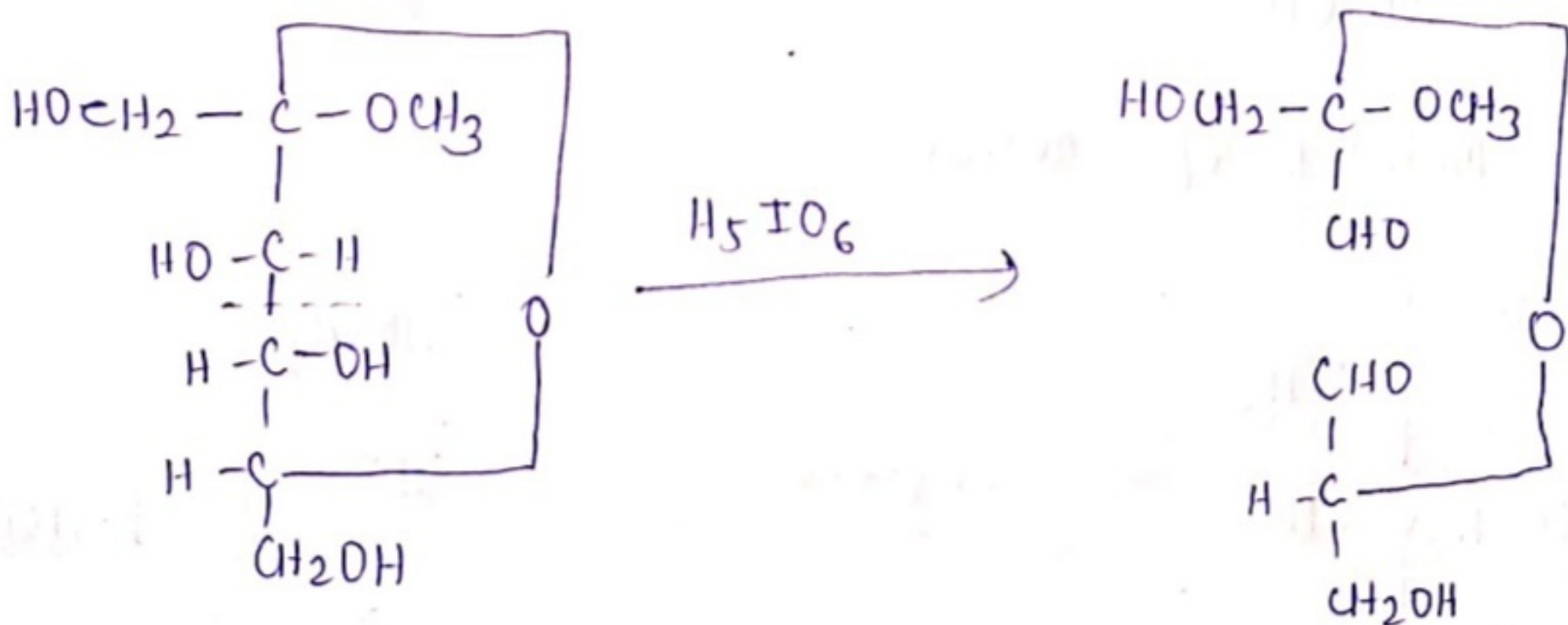


methyl glucofuranoside

* Similarly, the distinction between fructopyranoside & fructofuranoside can be made because the two different fructosides give different products upon oxidation with periodic acid.



α -methyl fructopyranoside



α -methyl fructofuranoside

To be continued in next lecture..