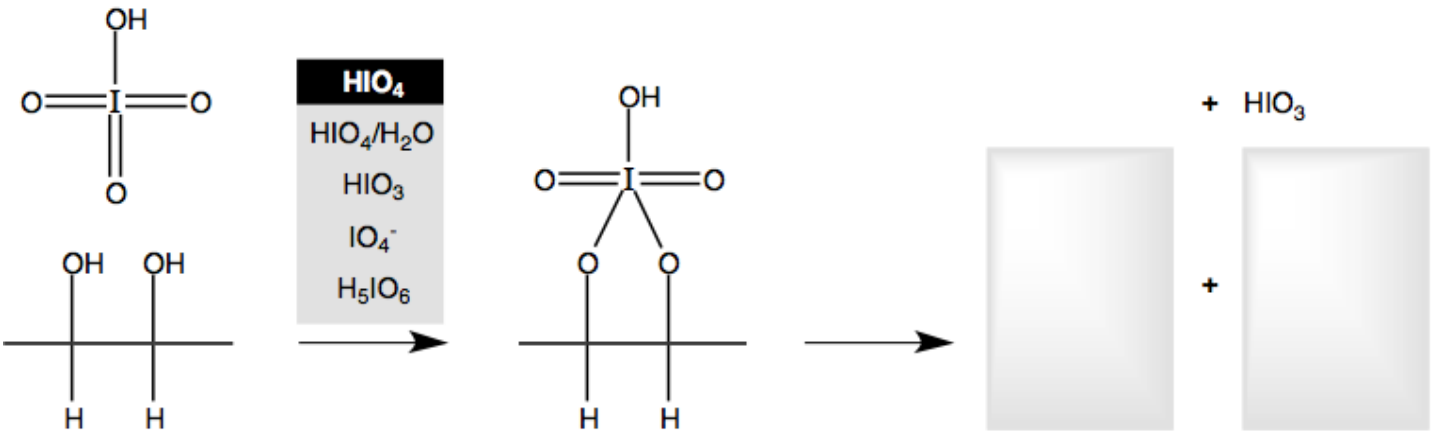
CONCEPT: MONOSACCHARIDES – OXIDATIVE CLEAVAGE (PERIODIC ACID)

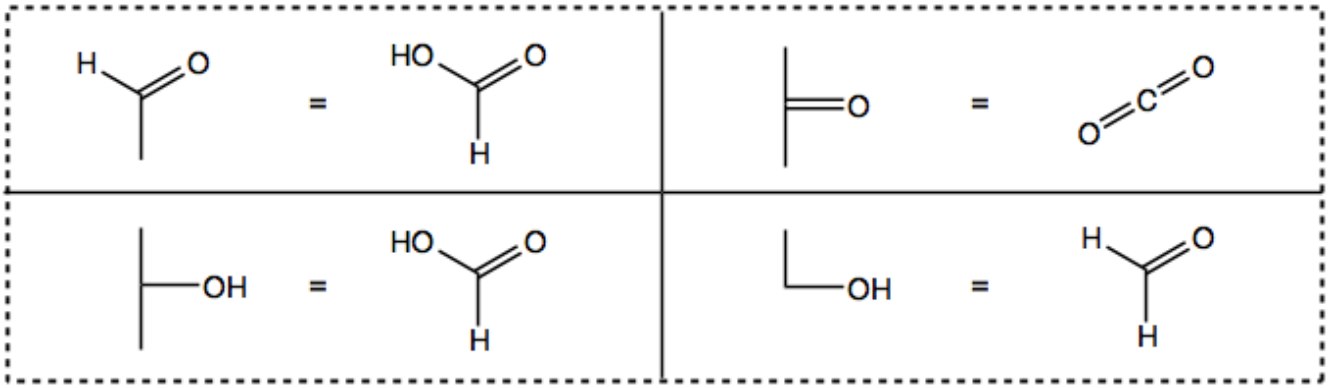
Periodic acid has the ability to _____ vicinal diols. Sugars contain multiple diols that can potentially be cleaved.

● General mechanism is identical to oxidative cleavage of diols with periodic acid

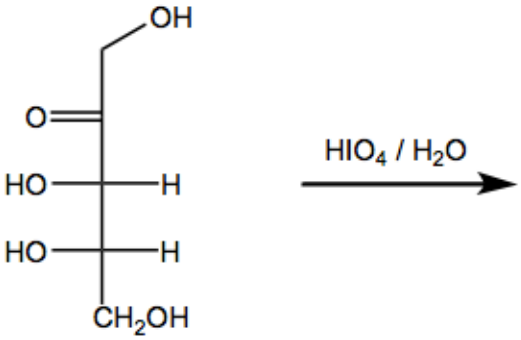


Monosaccharide Oxidation Products:

● There are 4 cleavage patterns of monosaccharides you should memorize



EXAMPLE: Predict the products of the following oxidative cleavage.



PRACTICE: In aqueous base, D-glucose has the ability to *epimerize* into small amounts of D-mannopyranose and *rearrange* into D-fructofuranose. Fischer Glycosidation can then transform these saccharides into O-glycosides.

a. Predict the structure of the glycoside products after treatment with acid and methanol

b. How could treatment of those O-glycosides with periodic acid distinguish if epimerization or rearrangement is more favored?