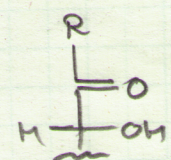


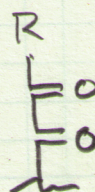
Ag^0 (mirror coating in rxn flask)

Ketose oxidation
Fehling's



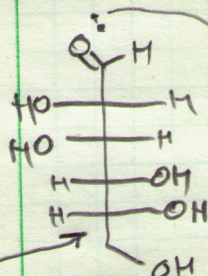
a ketose

Tollen's

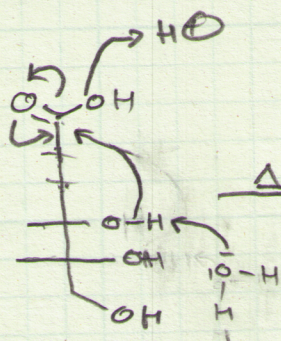
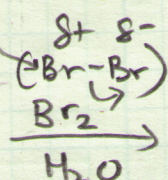


a dicarbonyl

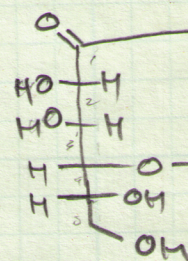
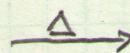
a C₆-sugar



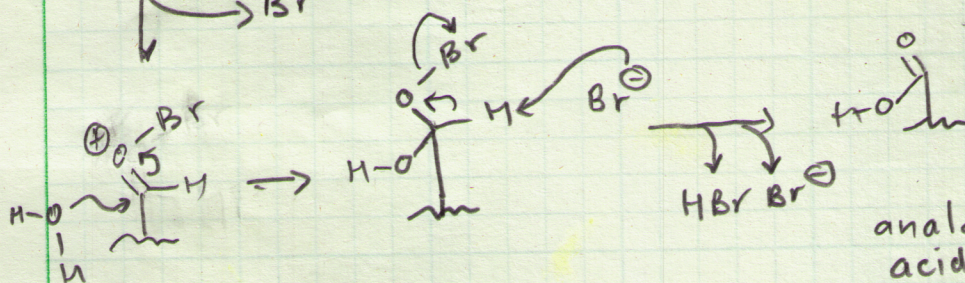
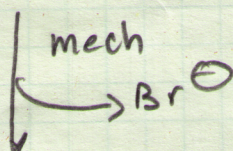
D-Mannose



an aldonic acid

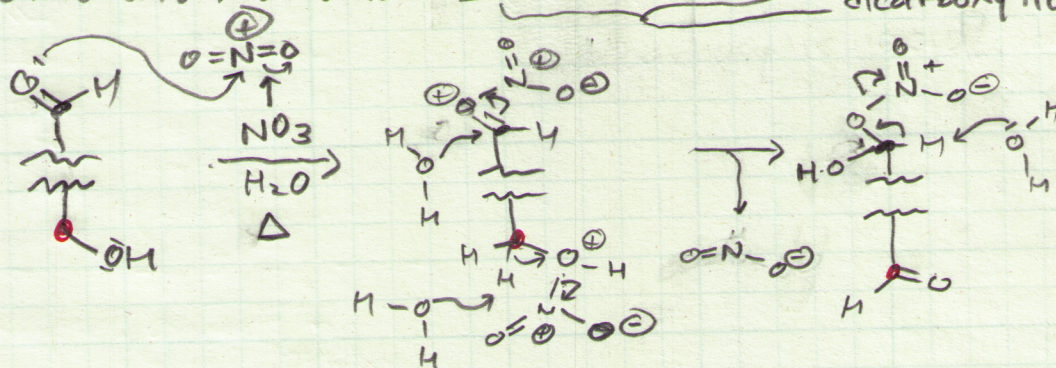


a lactone
D-manno-γ-lactone

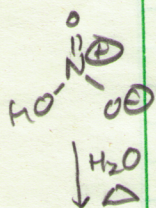


an aldonic acid

$\text{NO}_3, \text{H}_2\text{O}, \Delta$ MORE vigorous [O] than $\text{Br}_2, \text{H}_2\text{O}$ 24-11
 Oxidation: alcohols $\rightarrow$ aldaric acid dicarboxylic acid

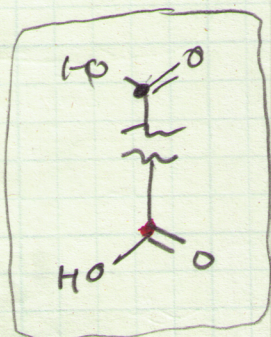


NITRATE
 HNO_3



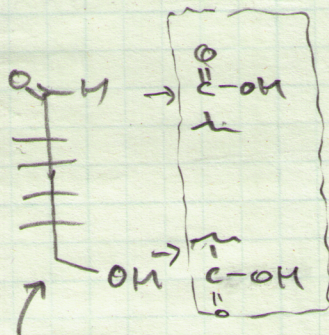
$\text{O}=\text{N}=\text{O}^+$
 ELECTROPHILE

$\text{NO}_2^- \rightarrow \text{HNO}_2$
 nitrite



44%

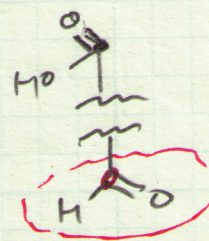
you can imagine
 other 2° alcohols
 getting oxidized to ketones



1° alcohol

sterically accessible,
 like yields selective

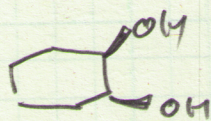
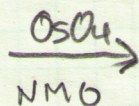
[O] at this centre



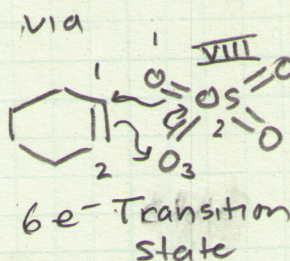
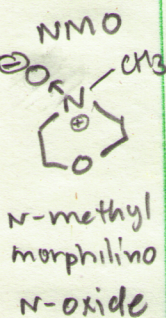
Repeat rxn
 exactly as
 for the aldehyde
 above

oxidative Cleavage of a diol

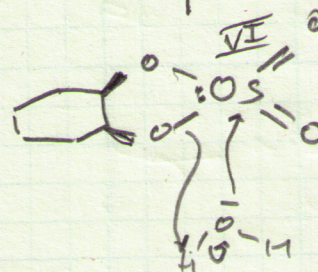
Recall



$\xleftarrow{\text{H}_2\text{O (Hydrolysis)}}$

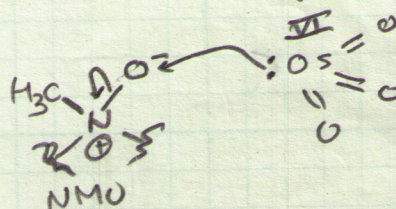
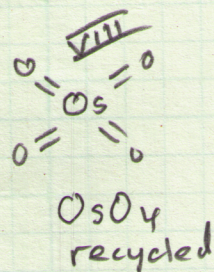
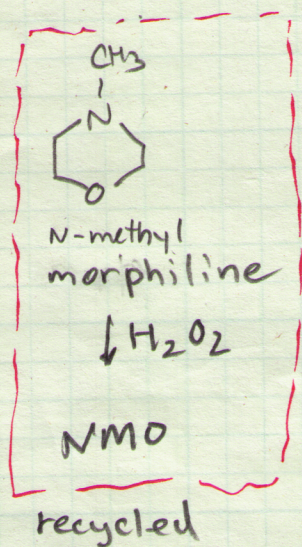
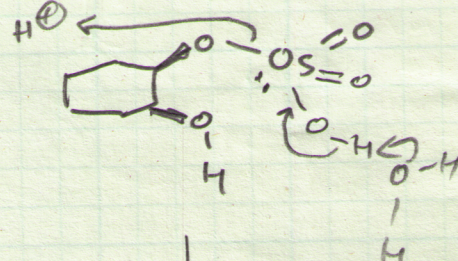


3 + 2 cycloaddition

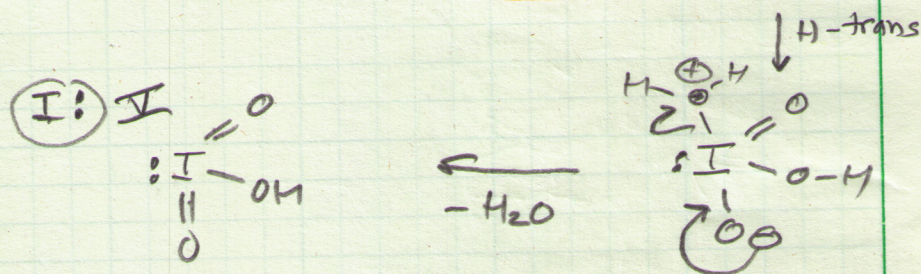
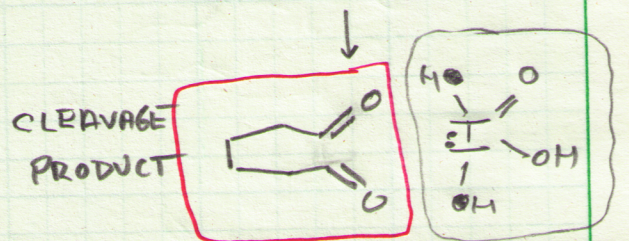
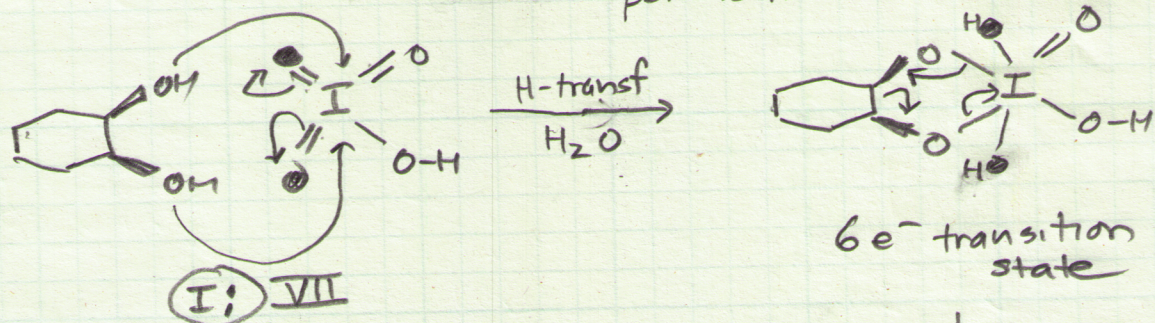


HYDROLYSIS

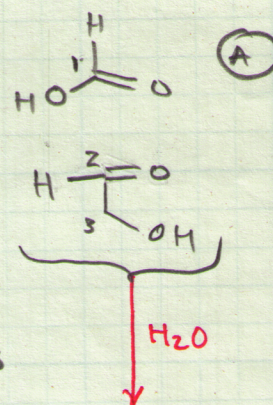
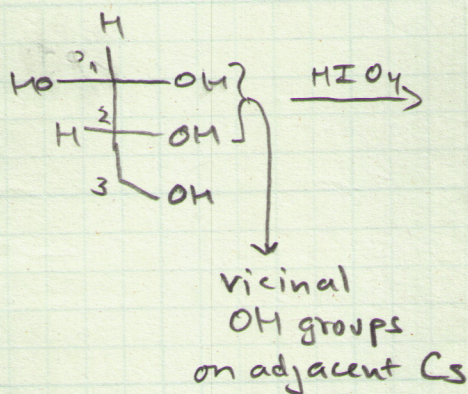
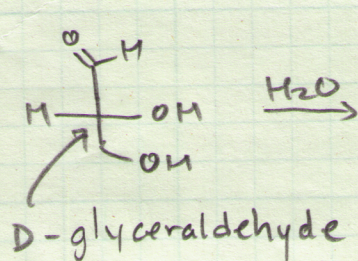
dihydroxy
product
above



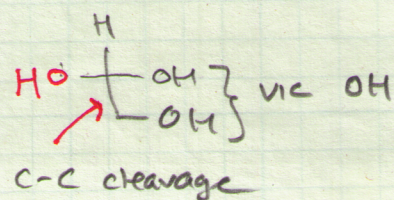
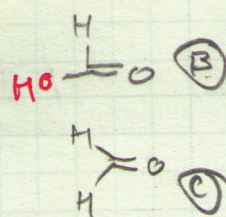
Now let's cleave the diol w/ HIO_4
per-iodic acid



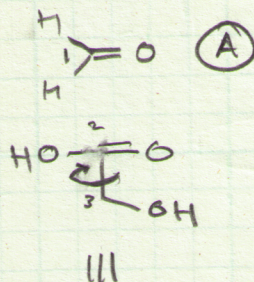
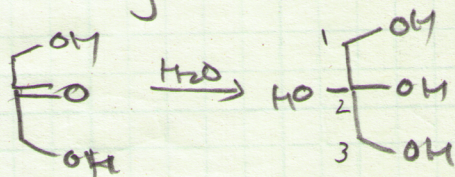
when a $\text{C}=\text{O}$ contain sugar is added to H_2O ,
the acetal (hydrate) form is made. That "OH" group
can now participate in HIO_4 cleavage.



(A, B, C) oxidative
cleavage products

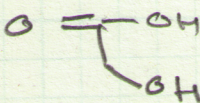
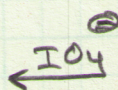
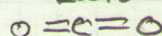


Same story for ketoses

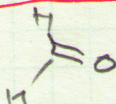


specific to ketoses

ⓑ

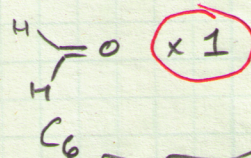
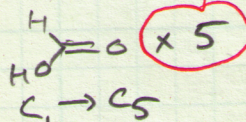
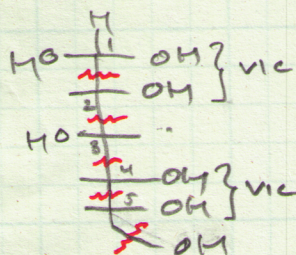
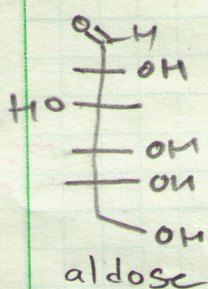


Ⓐ'

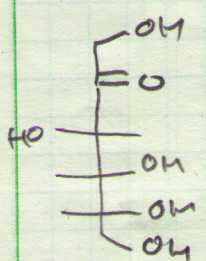


same as Ⓐ above

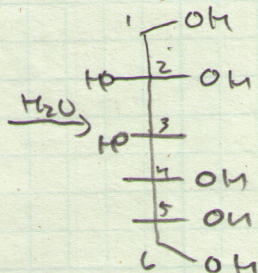
Oxidative cleavage is used to ID the structure of a sugar



After
 HIO_4



Ketose



internal gem diol

