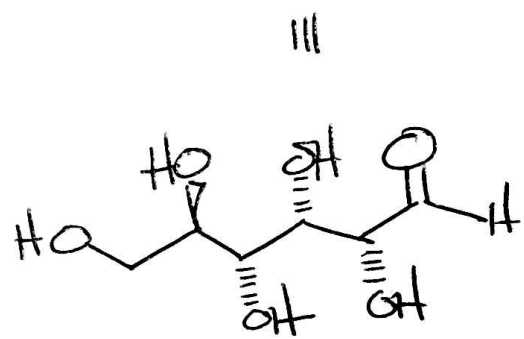
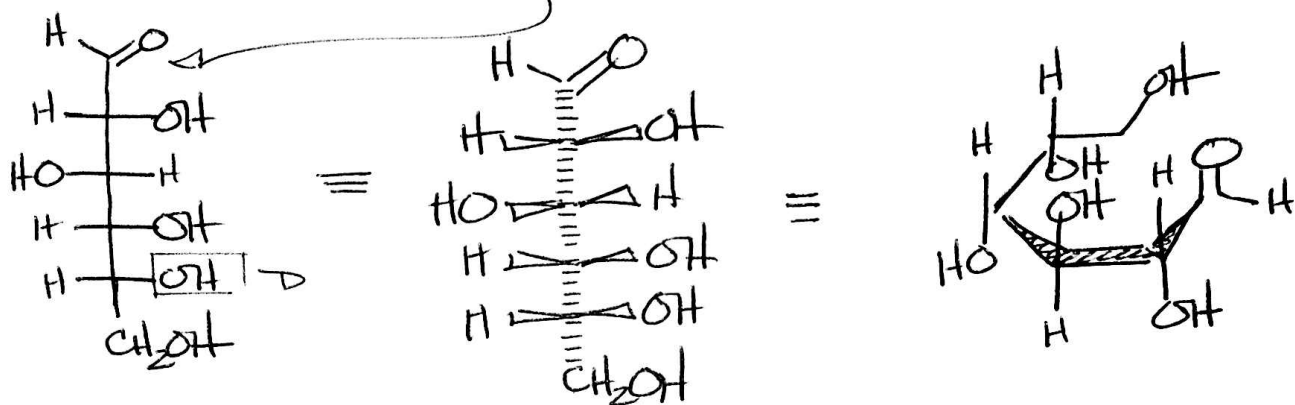


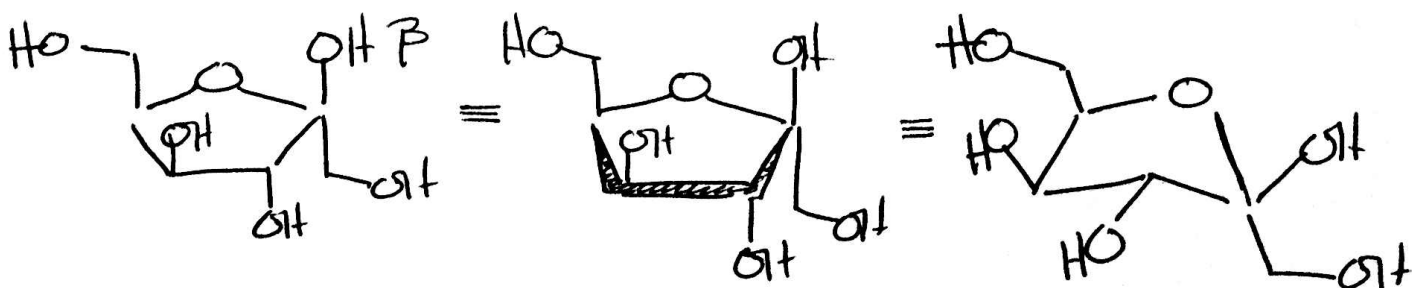
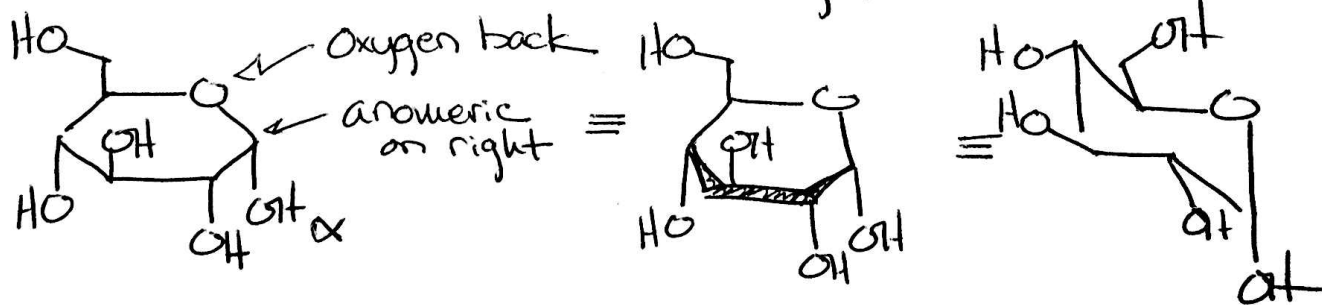
Carbohydrates

Fischer Projection (Straight Chain)

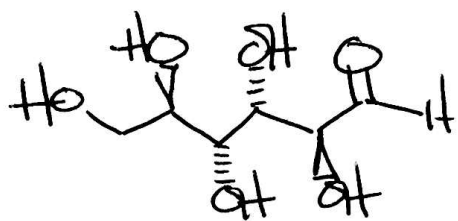
Most Oxidized Carbon top



Haworth Projections (Rings)

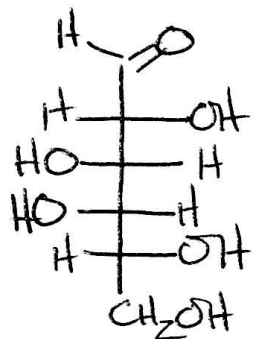


a) Draw the Fischer projection for D-Mannose



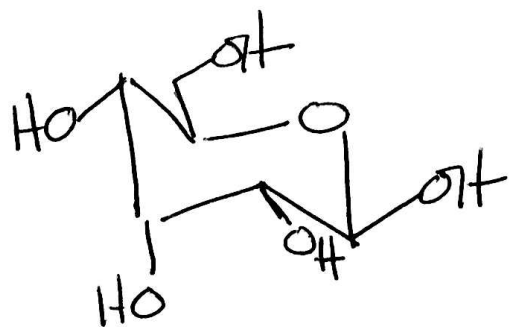
D-mannose

b) Draw the Haworth projections of α -D-Galactopyranose and β -D-Galactofuranose



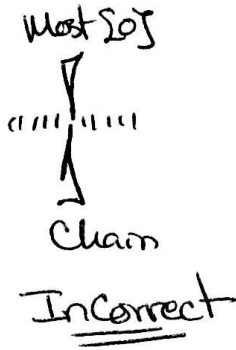
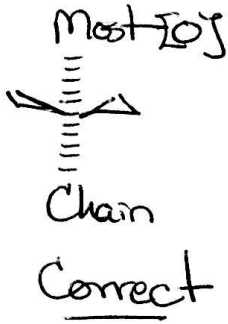
D-Galactose

c) Draw the Fischer projection for the open chain form of the following monosaccharide

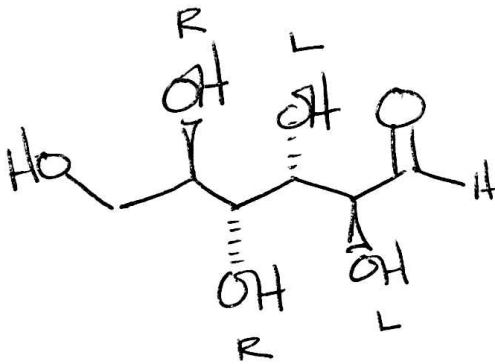


Answers

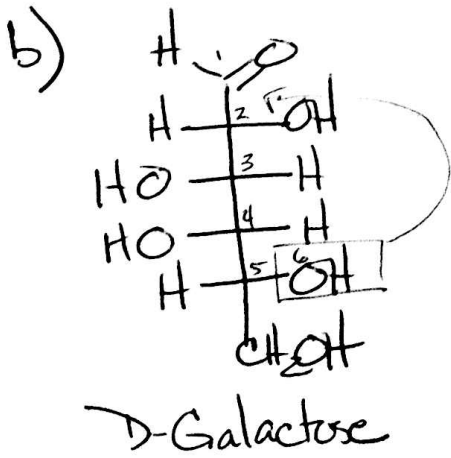
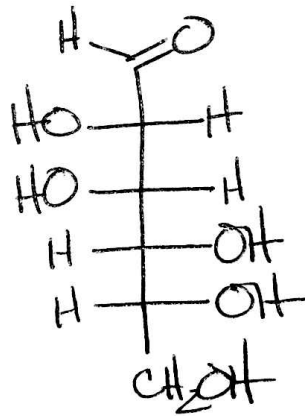
a) to move from stereo to Fisher, view each stereocenter with most oxidized carbon up and main chain down. Then orient substituents towards you.



Go through each stereocenter and note the position of the hydroxyl group



≡

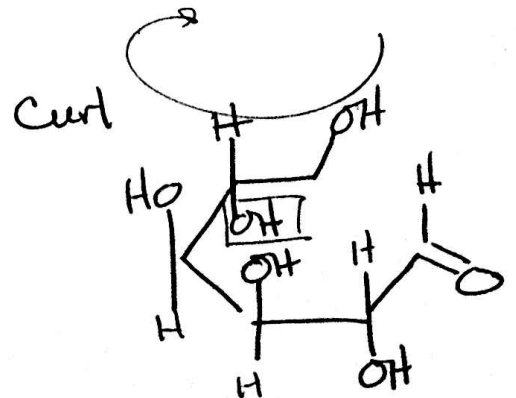
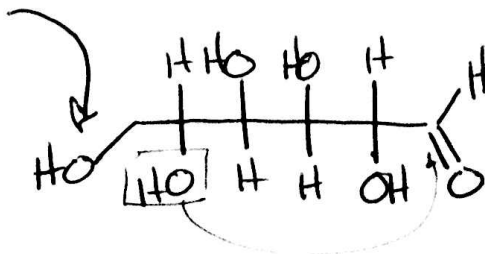


① α -D-Galactopyranose

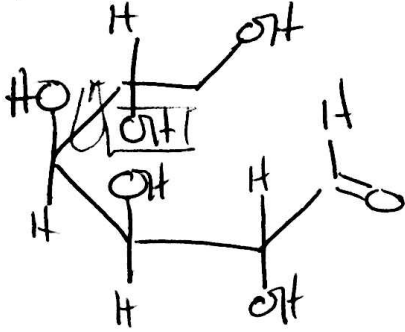
↑ anomeric Down

↑ 6 member

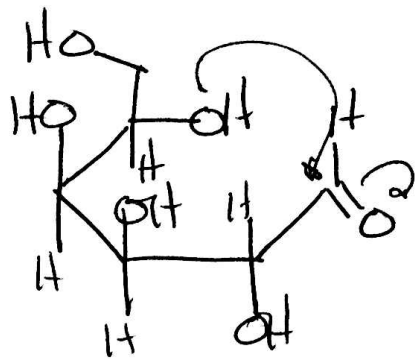
lay on side



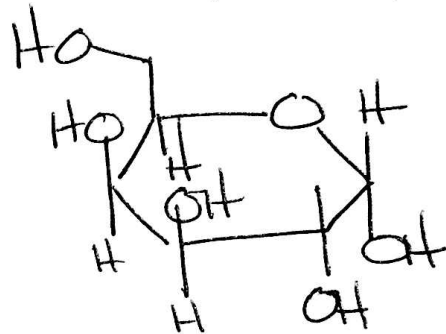
b) Cont...



now
rotate
σ bond



close ring



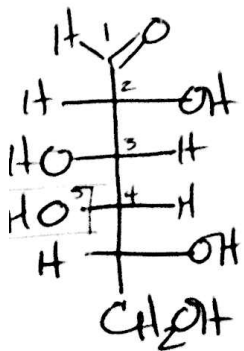
α-D-Galact

~~α-D-Galact~~
α-D-Galactopyranose

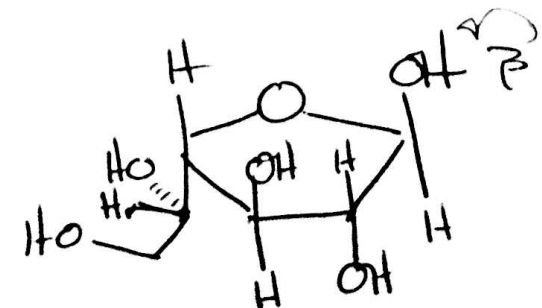
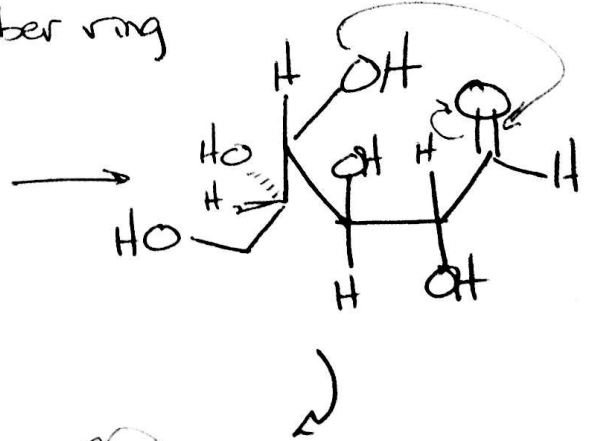
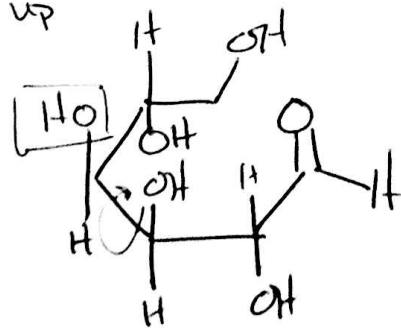
Same for β-D-Galactofuranose

↑ anomeric
up

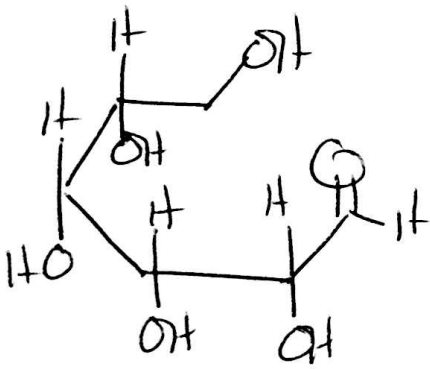
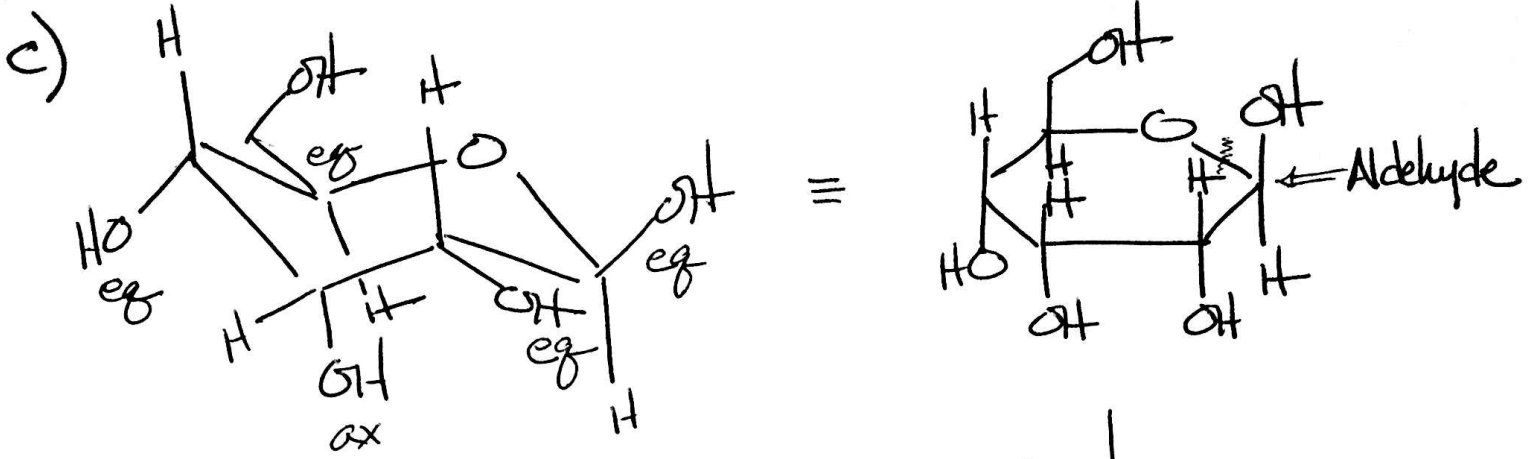
↑ 5 member ring



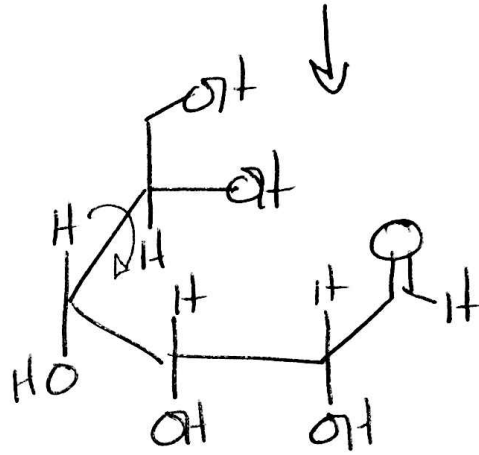
→



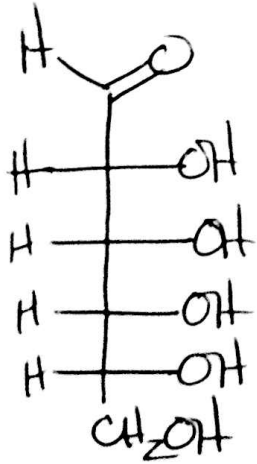
β-D-Galactofuranose



Rotate
←



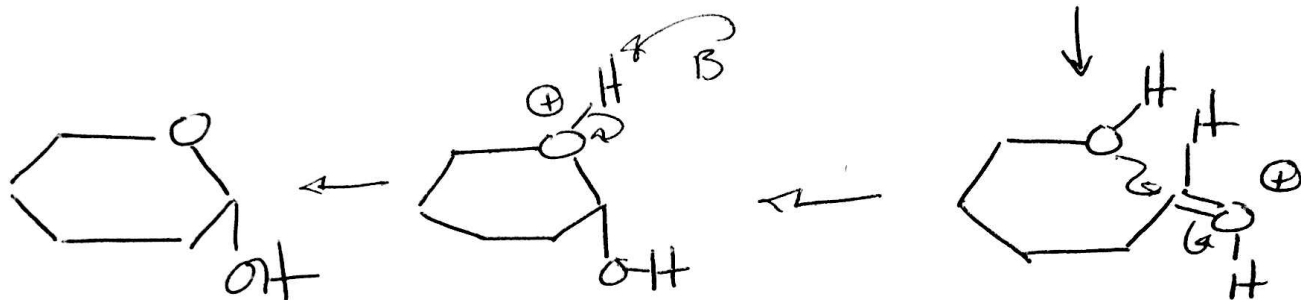
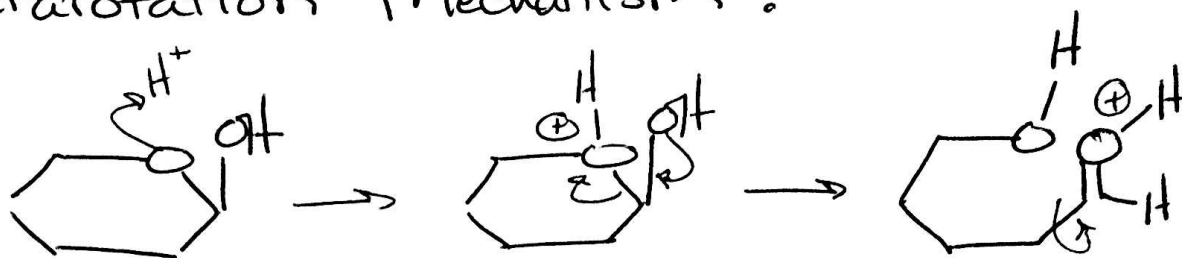
|||



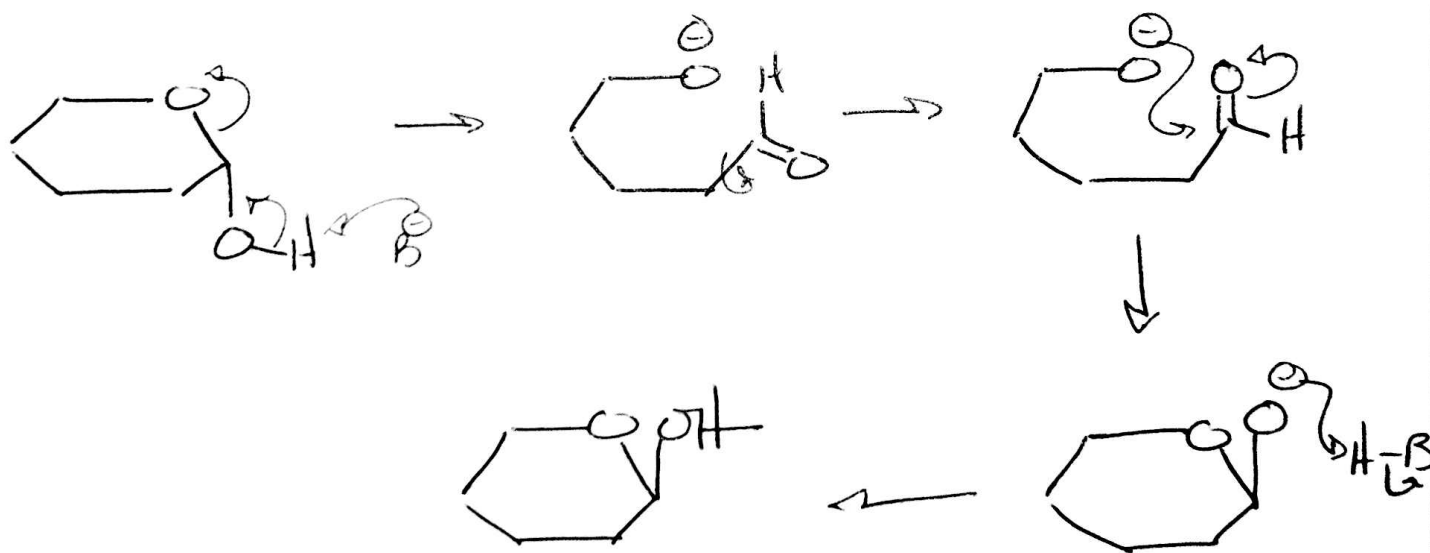
D-Allose

Mutarotation Mechanism :

Acid

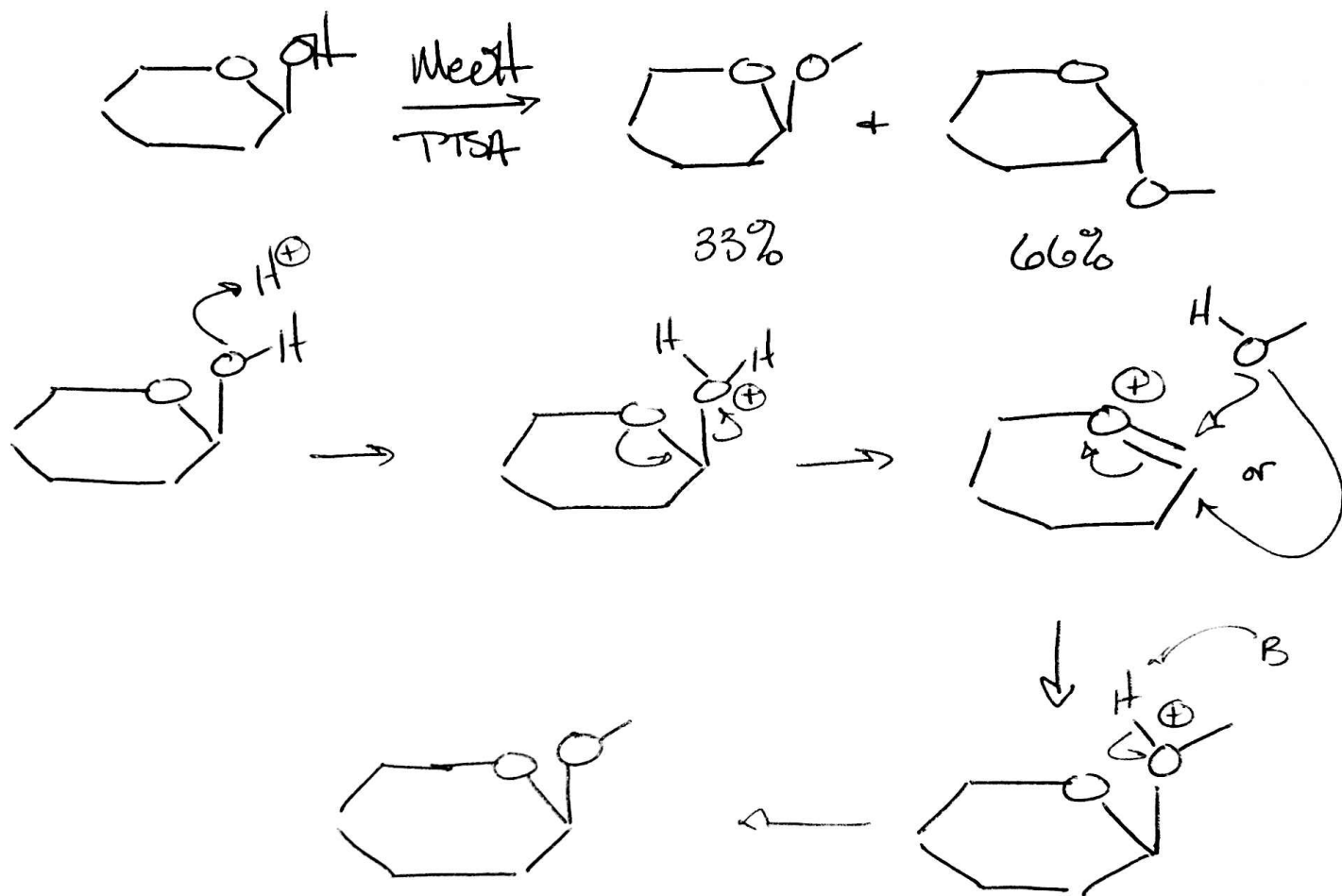


Base



The rate of the reaction is increased by
Catalytic acid or base

Glycoside formation Mechanism



Exactly the same as the acetal/ketal formation

Glycosides do not undergo mutarotation

Glycosides are not reducing sugars

* These Problems are all rather straight forward.

Rather than write out more problems, do the problems from Carey. More practice with these is a good idea to help w/ speed and reducing errors.