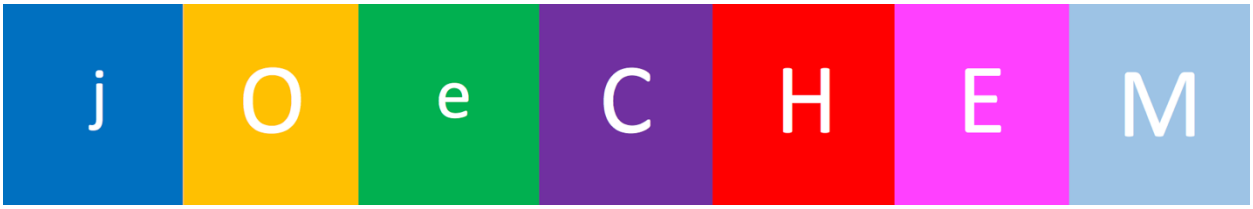
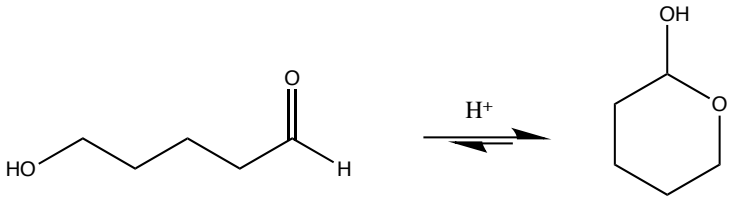
Organic Chemistry II

Exam 3

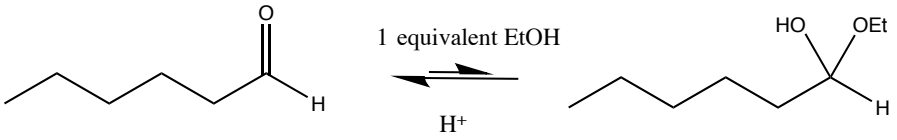


1.) Below are 2 hemiacetal forming reactions. Reaction A is **favorable**, while Reaction B is **not favorable**. Provide a BRIEF explanation as to why this is the case.

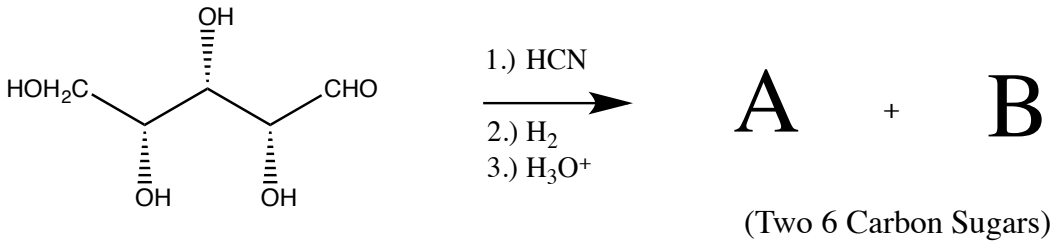
Reaction A



Reaction B

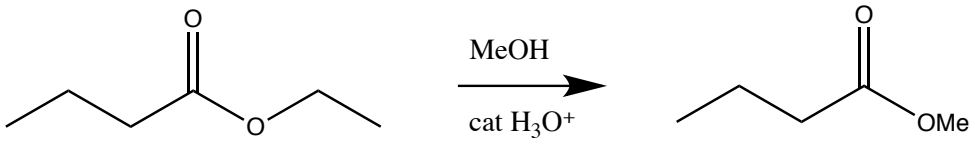


2.) When D-xylose is subjected to the reaction sequence below, two new 6 carbon sugars (A and B) are observed. Provide the structures for the resulting two 6 carbon sugars, **and** explain why two products are observed.



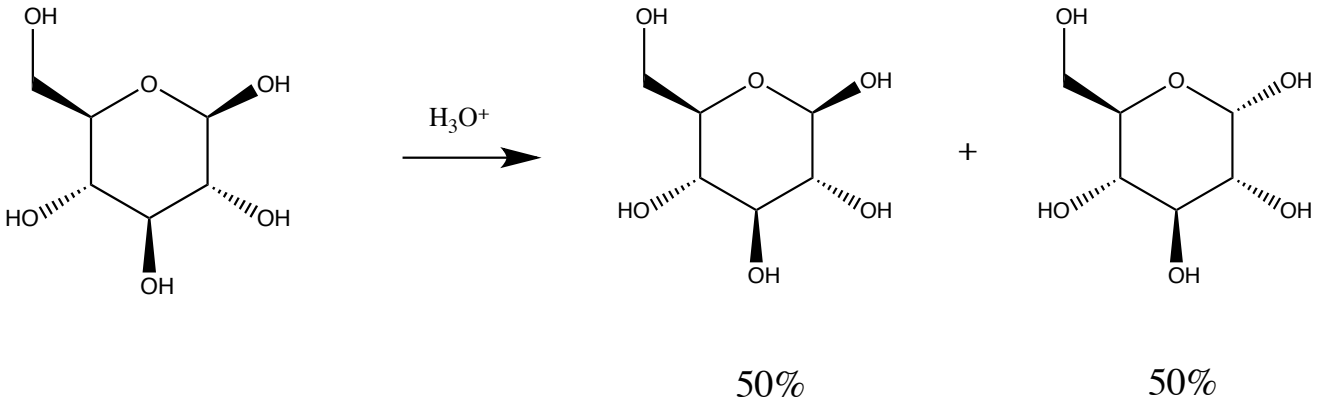
(Two 6 Carbon Sugars)

3.) Given the reaction below, draw the full arrow-pushing mechanism.



4.) Pictured below is D-glucose (the all equatorial sugar, remember?). When D-glucose is subjected to acidic conditions, it is observed that the stereochemistry at the anomeric carbon is effectively altered, resulting in a 50%-50% mix of wedge and dash at that position.

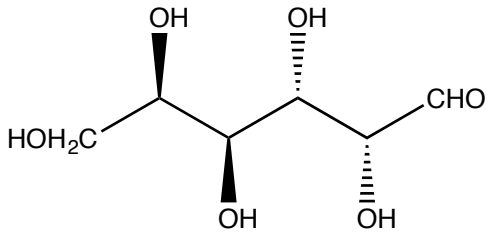
Draw the full arrow pushing mechanism that illustrates this transformation.



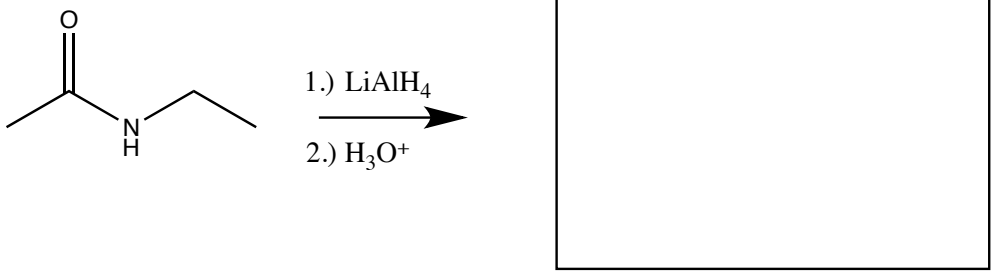
50% 50%

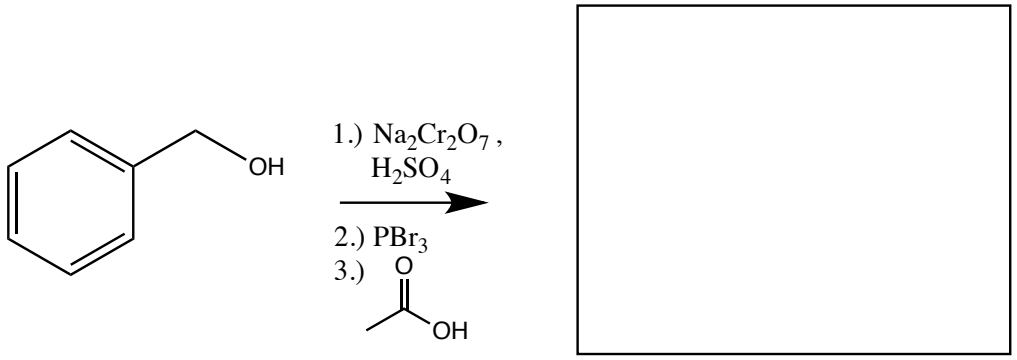
5.) Given the hexose below (in bond-line form), redraw the structure as a: Fischer Projection, Haworth Projection*, and Chair Conformation*

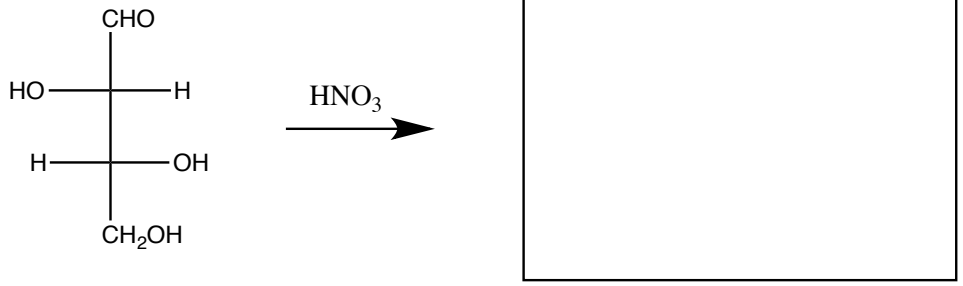
Use a squiggly line at the anomeric position for the Haworth Projection and Chair Conformation

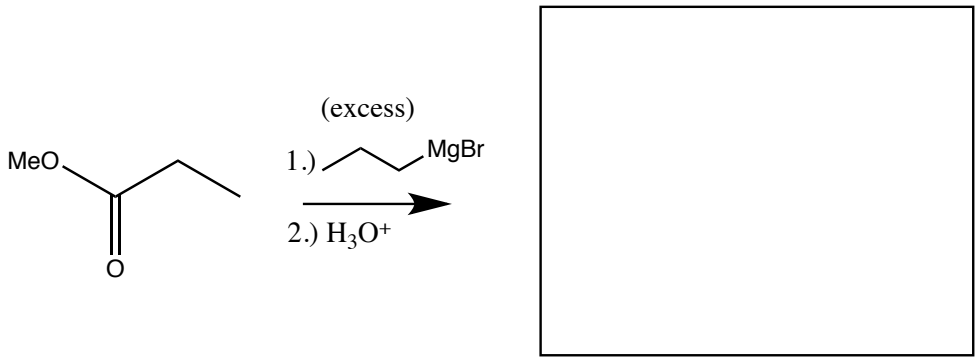


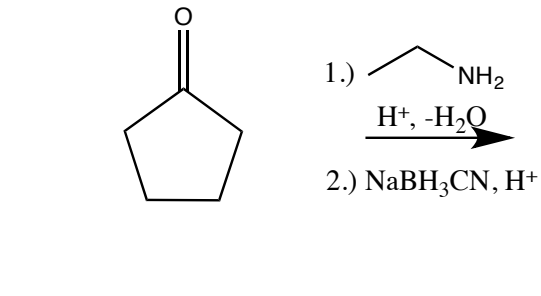
6.) The reactions below are shown missing their **final product**. For each problem below, correctly predict the final product. If you believe no product is formed/no reaction occurs, write "**NR**".

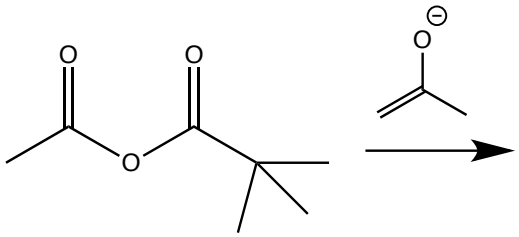


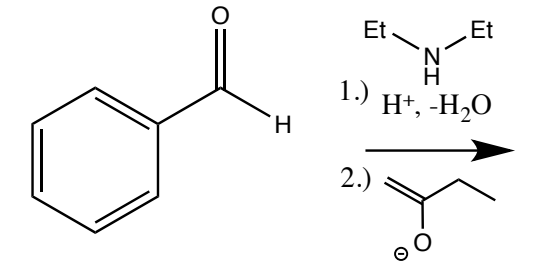







O
1.)
NH2
H+, -H2O
2.) NaBH3CN, H+


O
O
O


O
Et
N
H
Et
1.) H+, -H2O
2.)
O
O
H