Organic Chemistry c3444y

Problem Set 7 - Amines and Carbohydrates

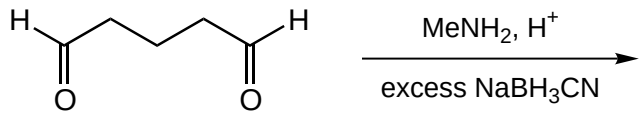
Due in class Monday, April 22

Relevant Reading: 24.2, 24.4-24.6, 25.1-25.7, 25.9, 25.10

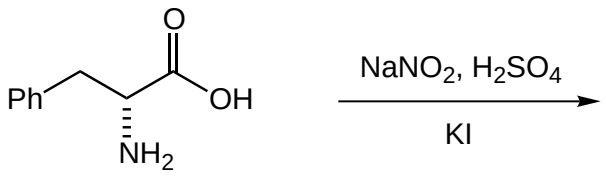
Relevant Book Problems: 24.35b,c, 24.37a,b,c,d, 24.38-24.44, 24.58, 25.29, 25.31, 25.34, 25.37, 25.38, 25.41, 25.54, 25.60.

1. Predict the major product of the following reactions:

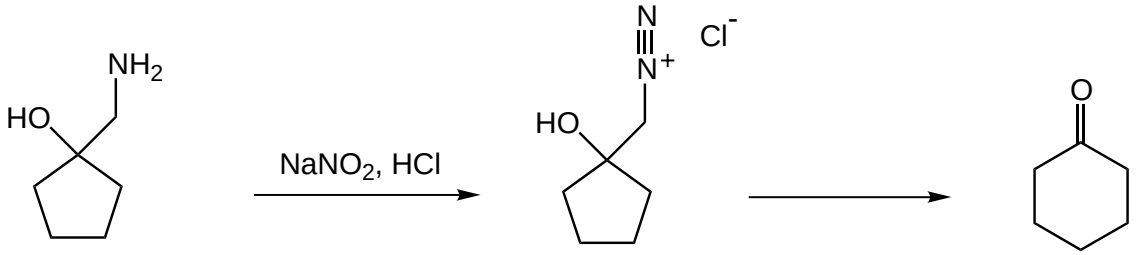
a.



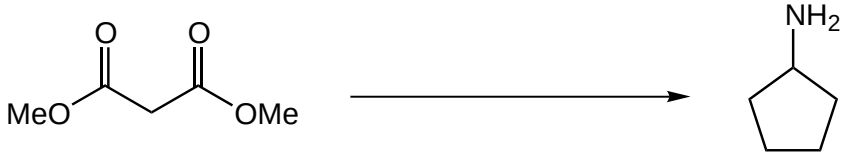
b.



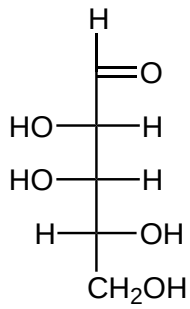
2. Recall that in class we saw that diazotization of simple alkyl amines is generally not useful, because mixtures of products can form. We also saw that amino acids were an exception. Here is another exception. First write a mechanism for the formation of the diazonium salt, then write a mechanism for the second part of the reaction.



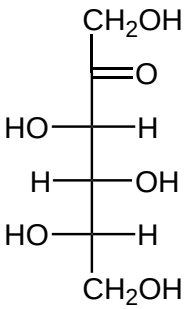
3. Propose a synthesis to achieve the following transformation.



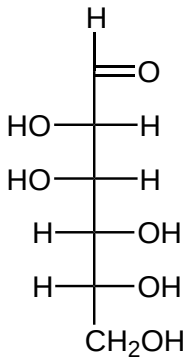
4. Provide a "normal" (chair or wedges and dashes) representation of the following carbohydrates in the indicated form:

a. 

as a β-furanose

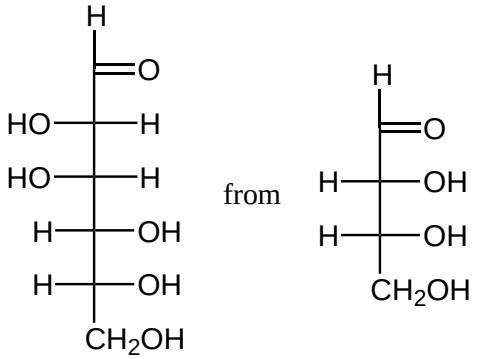
b. 

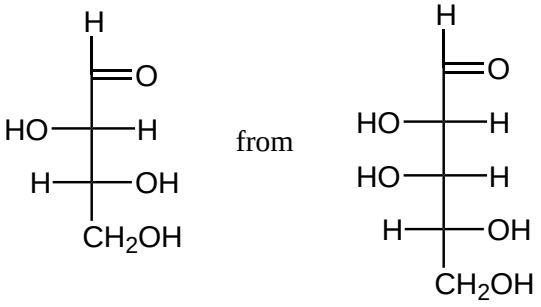
as an α-furanose

c. 

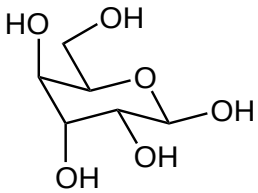
as a β-pyranose

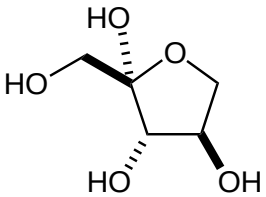
5. Propose syntheses to achieve the following transformations:

a. 

b. 

6. Provide a classification (*e.g.* D-aldopentose or L-ketohexose etc.) and the Fischer Projection representation for the following carbohydrates:

a. 

b. 

c.