

CHEM 220 Problem Set 10

1) Draw the structures for the following cyclo-compounds:

- A) cyclopropane                      B) cyclobutane                      C) cyclopentane  
D) cyclohexane                      E) cycloheptane                      F) cyclooctane

2) Draw the Fisher structures in both long-hand and short-hand of the following carbohydrates:

- A) D-xylose                      B) D-ribose                      C) D-fructose  
D) D-sedoheptulose                      E) D-ribulose                      F) D-glucose  
G) D-galactose                      H) D-mannose

3) Draw the Hayworth structures for the carbohydrates in #2.

4) Use the glucose mechanism as a model for closing the ring to close the ring from the Fisher structure of D-ribose to its Hayworth structure.

5) Do the same as #3 with D-arabinose.

6) Do the same as #3 with D-xylose.

7) Do the same as #3 for D-galactose.

8) Do the same as #3 for D-mannose.

9) Draw generic  $\alpha$  1 $\rightarrow$ 4,  $\alpha$  1 $\rightarrow$ 2,  $\alpha$  1 $\rightarrow$ 6 and  $\beta$  1 $\rightarrow$ 4 glycoside bonds.

10) Why are fructose and glucose reducing sugars and sucrose isn't? Support your statement with reactions.