

CHEM 121 Biological Chemistry Problem Set 8

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 $\rightarrow$ 6,  $\alpha$  1 $\rightarrow$ 2 and  $\beta$  1 $\rightarrow$ 4 glycoside bonds.

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