**Biochem Lab #2: Non-reducing sugars**

You have four unknown solutions (A-D) that are, in no particular order, water, glucose solution, sucrose solution, and a mixed solution of glucose and sucrose. Using the reagents and known tests provided, conduct an investigation that will identify which solution is which. (Hint: save your test tubes from round 1-2 of testing!)

**Necessary Lab Notebook components:**
TitlePurpose
Materials (list all)
Procedure
Results/Data table—be descriptive! No + or – for results!
Conclusions (Explain in complete sentences how you know which sample is which, AND answer the conclusion questions which will be posted on the board)

**Procedure:**1. Obtain equal quantities of all four unknown solutions, A-D, and label
 four test tubes A-D.
2. In separate test tubes, place 2ml each of the unknown solutions.
3. Add 2ml of Benedict’s qualitative solution to each test tube.
4. Heat all tubes at 95C for 10 min.
5. Observe color change and DESCRIBE results in data table. Save all
 test tubes until end.
6. Label fresh test tubes A-D and add 2ml of A-D to each of these tubes.
7. Add ~0.5ml of 2M HCl (approximately 10 drops using the pipet)
8. Heat the test tubes at 95C for 10 min.
9. Once heated, neutralize the acid by adding small amounts of NaHCO3
 until the solution stops fizzing.
10. Perform Benedict’s test ON THE NEUTRALIZED SAMPLES.
11. Record observations in data table.
12. Dispose of Benedict’s solution and reacted samples in communal
 “Waste” beaker in the back of the room.

**Tips/Specifics:**
-Make sure you note differences in color. You need to be able to tell the difference between
 the solution of glucose and the solution of glucose mixed with sucrose. How will you
 accomplish this?

**Conclusion Questions:** Copy the following questions and answer all in complete sentences.

1. Describe what happens when a reducing sugar is heated with
 Benedict’s solution. Why does this occur and what is different about
 non-reducing sugars that causes a different result?
2. Describe what happens when you add acid to the sucrose molecules
 and heat them.
3. What types of bonds connect sugar monomer units together? How
 are these bonds formed and how do they break apart?
4. Draw (structural diagram) the hydrolysis reaction of sucrose to its
 constituent parts. Be sure to indicate what is added to the molecule
 to break the connecting bond.
5. Discuss why the test for reducing sugars is considered semi-
 quantitative. (Hint: How do you whether something is a reducing
 sugar? In other words, what do you look for?)