Biology K/H: Identification of Biomolecules Lab Name_____

Be sure to follow all directions or instructions (10 points)

Purpose: To demonstrate positive tests for each of the major biomolecules and test unknown solution(s).

Procedure:

Materials:

- Test tube rack with 3 tubes for knowns and 3 for unknown, 6 total test tubes
- Test tube holder
- Hot water bath
- 4 known solutions (sugar, starch, protein, and fat)
- Test reagent solutions (Benedict's, Biuret's and Iodine)
- 2 Paper bag strips
- Unknown solution(s)

Caution: Wear goggles when using the hot water bath. Biuret's solution is corrosive- avoid spilling it on your skin.

Pre-Lab Questions: 10 points

1. What are the four biomolecules that are essential to living thing?

2. Which three biomolecules will we be testing in this procedure?

Observations: 10 points

A. **Benedict's test**- place 25 drops of monosaccharide (sugar) solution into test tube 1 in the rack. Add 10 drops of Benedict's solution into test tube**.** Heat the tubes in a water bath for 2-3 minutes. Record your results on your paper.

Solution	*Benedict's solution color BEFORE heating*	*Benedict's solution color AFTER heating*
Sugar		

B. **Biuret's test**- place 25 drops of the protein solutions into test tube 2 in the rack. Carefully add 10 drops of Biuret's solution into the test tube. Gently swirl the tube. Record your results on your paper.

Solution	*Biuret's solution color BEFORE addition to tube*	*Biuret's solution color AFTER addition to tube*
Protein		

C. **Iodine test**- place 25 drops of the starch solution into test tube 3 in the rack. Add 4 drops of iodine solution into the test tube. Record your results on your paper.

Solution	*Iodine solution color BEFORE addition to tube*	*Iodine solution color AFTER addition to tube*
Starch		

D. **Brown Bag test**- Rub lipid (oil) on the brown bag. Record your results on your paper.

Solution	*Paper bag color BEFORE addition*	*Paper bag color AFTER addition*
Oil		

Known results: (10 points)

Solution	*Benedict's*	*Biuret's*	*Iodine*	*Brown Bag*
Tester's Positive Color				
Biomolecule Tested (hint: there are 4 but we only tested 3 of them!)				

TESTING UNKNOWN SOLUTION (10 points)

E. Place 25 drops of unknown solution into 3 separate test tubes. Run all 3 tests (Benedict's, Biuret's and Iodine) in tubes and streak paper bag with unknown solution. Record your observations below.

Test tube	*Test performed*	*Results (indicate color change if you see one)*
1		
2		
3		
Paper Bag	Lipid (oil)	

F. Unknown Results: (10 points)

1. What biomolecule(s) are in your unknown sample?

2. Which test(s), Benedict's, Biuret's, Iodine or paper bag did you see a positive reaction?

Post-Lab Questions: Answer in **complete sentences** (or lose points!). 4 points for each question.

1. What biomolecule(s) are in your unknown solution?

2. What are the monomers for proteins?

3. What are the monomers for starch?

4. Describe using an analogy (a comparison) the relationship between monomers and polymers.

5. Which test reagent/indicator would you expect to see a positive test if you tested pasta, bread, and crackers?

6. Why would you see a color change with pasta, bread and crackers?

7. Which test reagent/indicator would you expect to test positive in lean (no fat) steak?

8. What order does your body access macromolecules for energy?
   1.
   2.
   3.

9. Which macromolecule do we not use for energy?

10. The macromolecule that is not used for energy is used for what function?