Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_ Period:\_\_\_\_\_\_\_\_\_\_\_\_

**CELLS and THEIR ENVIRONMENT**

*Science Skills: Osmosis*

*Use the information below and the figure at right to answer questions 1-3.*

**Experiment A**

A selectively permeable membrane separates the solutions in the arms of the U-tube shown at right. The membrane is permeable to water and to substance A, but not to substance B. Forty (40) grams of substance A and 20g of substance B have been added to the water on side 1 of the U-tube. Twenty (20) grams of substance A and 40g of substance B have been added to the water on side 2 of the U-tube. Assume that after a period of time, the solutions on either side of the membrane have reached equilibrium.

1. How many grams of substance A will be in solution on side 1 of the U-tube? \_\_\_\_\_\_

2. How many grams of substance A will be in solution on side 2 of the U-tube? \_\_\_\_\_\_

3. Explain.

4. How many grams of substance B will be in solution on side 1 of the U-tube? \_\_\_\_\_\_

5. How many grams of substance B will be in solution on side 2 of the U-tube? \_\_\_\_\_\_

6. Explain.

7. What has happened to the water level in the U-tube? Explain.

**Experiment B**

The cell membrane of red blood cells is permeable to water, but not to sodium chloride, NaCl. Suppose you have three (3) flasks:

* Flask X contains a solution that is 0.5% NaCl.
* Flask Y contains a solution that is 0.9% NaCl
* Flask Z contains a solution that is 1.5% NaCl.

To each flask, you add red blood cells, which contain a solution that is 0.9% NaCl.

*Read each question, and write your answer in the space provided.*

1. Predict what will happen to the red blood cells in flask X.

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2. Predict what will happen to the red blood cells in flask Y.

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3. Predict what will happen to the red blood cells in flask Z.

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**THINK ABOUT THE AMOUNT OF “FREE” WATER INSIDE AND OUTSIDE OF THE CELL.**