Name_____Period_____Assignment #_____

Diffusion and Osmosis: What affects the rate of osmosis?

1) What were some strengths of the way you planned or carried out your investigation? (What made is scientific?)

2) What were some weaknesses of the way you planned or carried out your investigation? (What made it less scientific?)

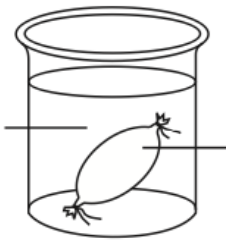
3) What rules should we make in order to ensure that our next investigation is scientific?

4) The mass of the 'cell' is 11 grams. Is this an observation or inference?

5) The mass of the 'cell' increased 2 grams. Is this an observation or inference?

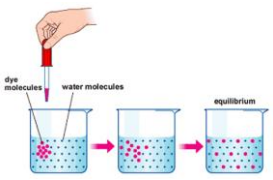
6) Water moved into the cell. Is this an observation or inference?

7) Describe the control group, what it controls for, and why it is necessary

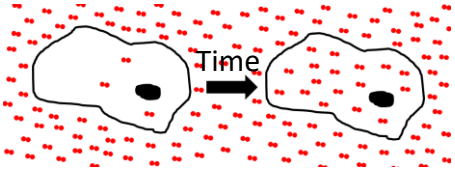


8) Describe what happened

9) Explain why diffusion happens (address energy in your explanation)



10) Describe what happened



11) What is this process called?

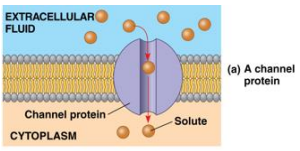
12) Explain why this did or did not cost the cell energy

13) What properties can you infer the solute has?

14) Explain why substances with these properties are permeable to the plasma membrane

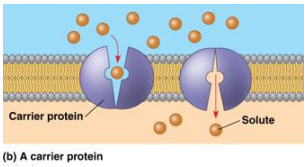
15) What kind of transport is shown in figure (a)?

16) How do you know?



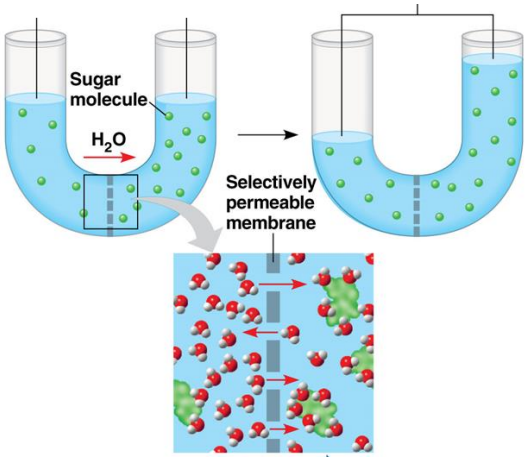
17) What kind of transport is shown in figure (b)?

18) How do you know?



19) Explain why this did or did not cost the cell energy

20) Describe what happened

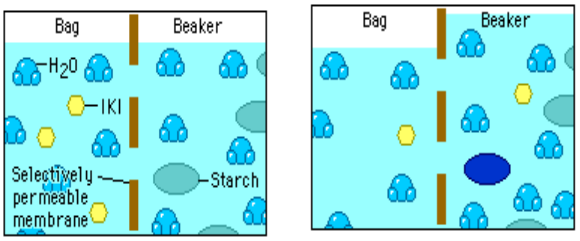


21) What is this process called?

22) What kind of transport is this?

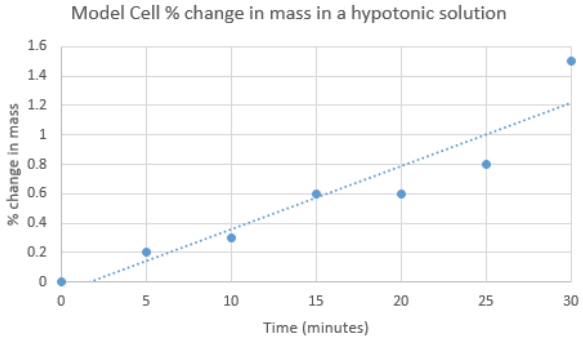
23) Why did the water rise?

24) Describe what happened?



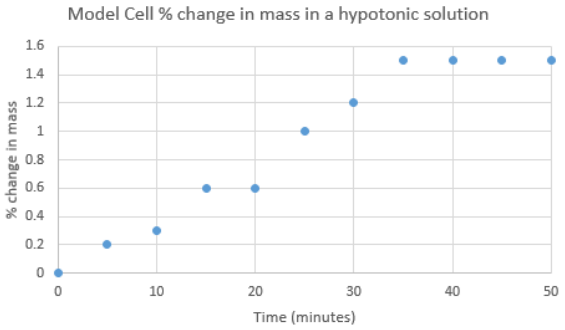
25) Explain why it happened?

26) Calculate the rate of water moving into the cell at 7 minutes. Show your work!



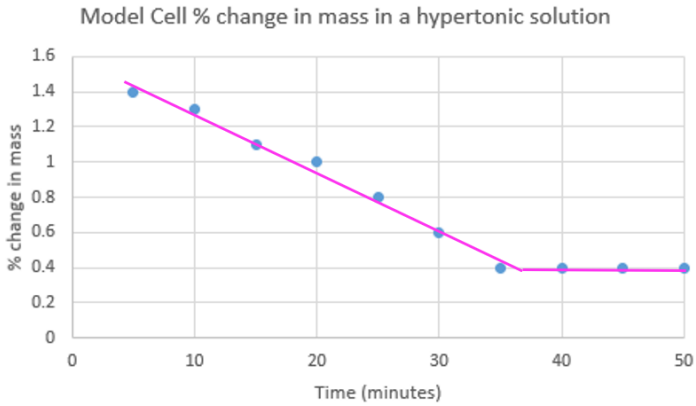
27) Calculate the rate of water moving into the cell at 22 minutes

28) Calculate the rate of water moving into the cell at 40 minutes



29) Describe <u>and explain</u> the movement of water over the 50 minutes of data collection

30) Describe <u>and explain</u> the movement of water over the 50 minutes of data collection

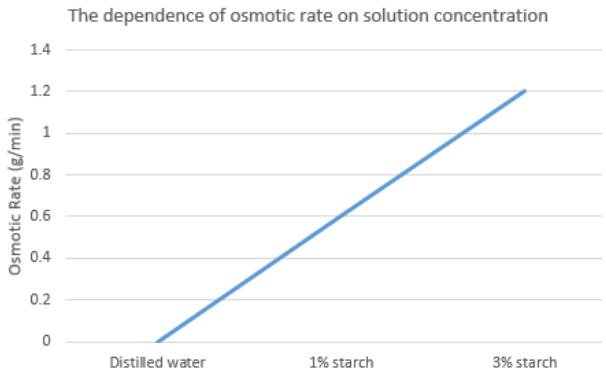


31) Explain why the percent change was used rather than change in mass

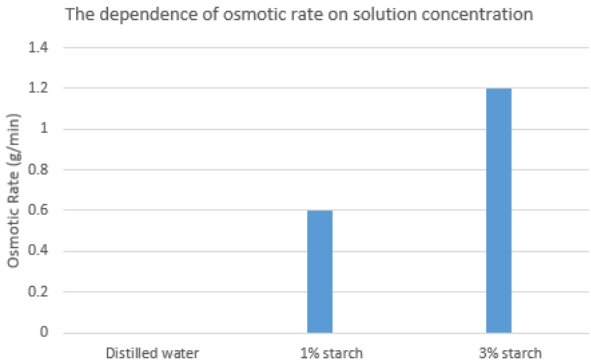
32) Calculate the percent change in mass for the following experimental results: model cell 1 = 7.3g initial, 8.6g final; model cell 2 = 17.4 initial, 14.9 final

33) What is the rate of osmosis in the following:

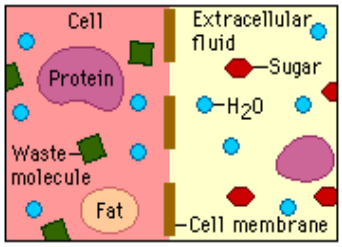
- Distilled water
- 1% starch solution
- 3% starch solution

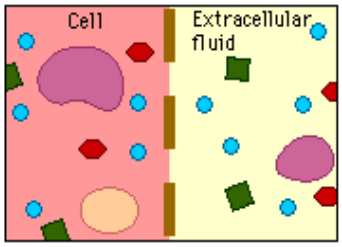


34) Which chart best represents the data? Justify your answer.



35) Describe what happened?

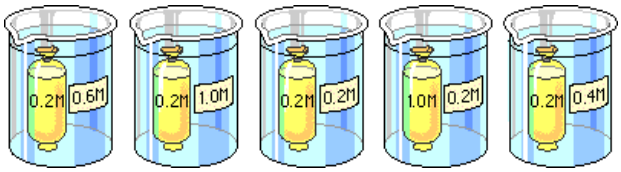




36) Explain why it happened?

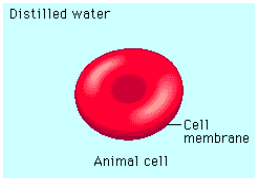
37) Explain how sugar got into the cell and why it did or did not cost the cell energy

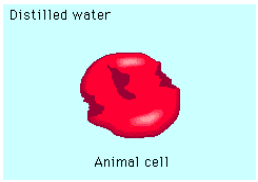
38) Arrange the beakers above in order of mass inside of them after 30minutes. Starting with the one with the **<u>least</u>** amount of mass. (assume they all start with the same amount of mass)



39) Explain the relative position of each beaker

40) Describe what happened





41) Explain why it happened

42) What would happen if a human drank ocean water?

43) How was the following demonstrated in this lab?

Patterns

- Different patterns may be observed at each of the scales at which a system is studied and can provide evidence for causality in explanations of phenomena.

44) How was the following demonstrated in this lab?

Cause and effect: Mechanism and Prediction

- Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.
- Cause and effect relationships can be suggested and predicted for complex natural and human designed systems by examining what is known about smaller scale mechanisms within the system.

45) How was the following demonstrated in this lab?

Systems and system models

- Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions—including energy, matter, and information flows—within and between systems at different scales.
- Models can be used to predict the behavior of a system, but these predictions have limited precision and reliability due to the assumptions and approximations inherent in models.

46) How was the following demonstrated in this lab?

Energy and matter: Flows, Cycles, and Conservation

- The total amount of energy and matter in closed systems is conserved.
- Changes of energy and matter in a system can be described in terms of energy and matter flows into, out of, and within that system.
- Energy drives the cycling of matter within and between systems.

47) How was the following demonstrated in this lab?

Structure and Function

- The functions and properties of natural and designed objects and systems can be inferred from their overall structure, the way their components are shaped and used, and the molecular substructures of its various materials.