

Membrane Transport & Osmosis Study Sheet

Directions: Before lab, answer questions 1 – 9. During lab, answer questions 10-14.

1. The zigzag motion of particles resulting from collisions with smaller particles is called:

2. What effect would *increasing* temperature have on Brownian motion? _____

3. Define diffusion:

4. Diffusion involves movement of the: (circle one) solute or solvent

5. For molecules with a given amount of kinetic energy, small molecules move more rapidly than large molecules. This difference is even more pronounced when diffusing through a semi-solid substance, such as agar, that can hinder the movement of molecules: small molecules can slip through the gaps more easily than large ones.

Given the following solutions:

potassium permanganate (molecular weight = 158)

methylene blue (mw = 320)

congo red (mw = 697)

Which would move the slowest and go the furthest through agar? _____

6. How would temperature affect diffusion rates?

Higher temperature: (circle one) increase decrease stay the same

Lower temperature: (circle one) increase decrease stay the same

7. A _____ membrane acts as a barrier to the movement of some molecules but allows other molecules to pass through.

8. Define osmosis:

9. Osmosis involves movement of the: (circle one) solute or solvent

10. Record the results from your instructor’s demonstration of osmosis in the table below:

Sucrose Concentration in Dialysis Bag	Sucrose Concentration in Beaker	The bag solution is ___* to the beaker solution.	Weight at Start	Weight at End	Change in Weight

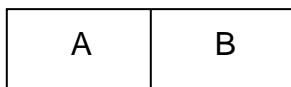
* isotonic, hypotonic, or hypertonic

11. Predict which bag(s) will gain weight and which should lose weight:

Gain weight: _____ Lose weight: _____

12. a) If the observed results matched your prediction, explain why.

b) If the observed results did not match your prediction, explain some possible reasons.



13. The two artificial cells above are separated by a selectively permeable membrane that is permeable to water but impermeable to sodium chloride (NaCl). Cell A contains a 30% NaCl solution, while cell B contains a 20% NaCl solution.

- a. Cell A is **hypotonic** / **hypertonic** / **isotonic** compared to cell B.
- b. Draw an arrow on the diagram to indicate in which direction water would move.

14. If you were hospitalized and needed to be given fluids intravenously (IV), would you want that fluid to be hypertonic to your cells? (circle one) Yes No

Explain what would occur if you were to receive hypertonic IV fluid, including the direction of fluid movement and how it would affect the cell.