**OSMOSIS PREVIEW**

**Use the following scenario to answer the questions:**

There are four beakers each filled with a different concentration of sucrose solution (sugar and water). **Sucrose cannot cross cell membranes, but water can**. The scientist cuts 3 identical pieces of potato and records their mass. She then places one sample of potato into each beaker, leaves them to soak for 30 minutes and then records their final mass. The data is listed below

Beaker 1 solution: the potato’s mass was unchanged

Beaker 2 solution: the potato lost mass

Beaker 3 solution: the potato gained mass

\_\_\_\_\_\_\_\_\_\_\_\_\_\_1. If sucrose (solute) cannot cross the membrane, what substance is leaving or entering the cells to change the potato chunk’s mass?

\_\_\_\_\_\_ 2. Which beaker contained a solution that was hypotonic (high water, low solute) compared to the potato cells’ cytosol?

\_\_\_\_\_\_ 3. Which beaker contained a solution that was isotonic (equal water and solute balance) to the potato cells’ cytosol?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 4. Rank the solution in each of the three beakers in order of increasing solute concentration

\_\_\_\_\_\_\_ 5. Which beaker contained the solution with the highest solute concentration?

\_\_\_\_\_\_\_ 6. Which beaker do you think had the crunchiest potato chunk (cells with the highest turgor pressure)?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_7. What is the independent/manipulated variable (IV) for this experiment?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_8. What is the dependent/responding variable (DV) for this experiment?

9. Define a “hypotonic solution” \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. A “hypertonic solution” is the opposite of a hypotonic one. What does “hypertonic” mean? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. If a “crunchy potato chunk” is described as containing cells with “high turgor pressure”, what might a potato chunk whose cells are low in turgor pressure be like? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_