AP Water Potential Sample Questions Name:_____

1. If a cell's Ψ_P = 3 bars and its Ψ_S = -4.5 bars, what is the resulting Ψ?

2. The cell from question #1 is placed in a beaker of sugar water with Ψ_S = -4.0 bars. In which direction will the net flow of water be?

3. The original cell from question # 1 is placed in a beaker of sugar water with Ψ_S = -0.15 MPa (megapascals). We know that 1 MPa = 10 bars. In which direction will the net flow of water be?

4. The value for Ψ in root tissue was found to be -3.3 bars. If you take the root tissue and place it in a 0.1 M solution of sucrose at 20°C in an open beaker, what is the Ψ of the solution, and in which direction would the net flow of water be?

NaCl dissociates into 2 particles in water: Na^+ and Cl^-. If the solution in question 4 contained 0.1M NaCl instead of 0.1M sucrose, what is the Ψ of the solution, and in which direction would the net flow of water be?

5. A plant cell with a Ψ_s of -7.5 bars keeps a constant volume when immersed in an open-beaker solution that has a Ψ_s of -4 bars. What is the cell's Ψ_P?

6. At 20°C, a cell containing 0.6M glucose is in equilibrium with its surrounding solution containing 0.5M glucose in an open container. What is the cell's Ψ_P?

7. At 20°C, a cell with Ψ_P of 3 bars is in equilibrium with the surrounding 0.4M solution of sucrose in an open beaker. What is the molar concentration of sucrose in the cell?