

AP Water Potential Sample Questions

Name: _____

1. If a cell's $\Psi_P = 2$ bars and its $\Psi_S = -3.5$ bars, what is the resulting Ψ ?
2. The cell from question #1 is placed in a beaker of sugar water with $\Psi_S = -4.0$ 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 $\Psi_S = -0.15$ 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?
5. 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?
6. 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 ?
7. 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 ?