

Name:

Freezing Point Depression

1. Determine the freezing-point depression of H₂O in each of the following solutions.
 - a. 1.50 *m* solution of C₁₂H₂₂O₁₁ (sucrose) in H₂O
 - b. 171 g of C₁₂H₂₂O₁₁ in 1.00 kg H₂O
 - c. 77.0 g of C₁₂H₂₂O₁₁ in 400. g H₂O

2. Determine the molality of each solution of an unknown nonelectrolyte in water, given the following freezing-point depressions.
 - a. -0.930 °C
 - b. -3.72 °C
 - c. -8.37 °C

3. A solution contains 20.0 g of C₆H₁₂O₆ (glucose) in 250. g of water.
 - a. What is the freezing-point depression of the solvent?
 - b. What is the freezing point of the solution?

4. How many grams of antifreeze, C₂H₄(OH)₂, would be required per 500. g of water to prevent the water from freezing at a temperature of -20.0 °C?