



**CHE 112 - Homework - Ch 12e**  
**Colligative Properties - Part II**

5. What is the freezing point (in °C) of a solution of 10.0 g of urea ( $\text{CH}_4\text{N}_2\text{O}$ ) in 150.0 g of water?
6. The van't Hoff factor for KCl is  $i = 1.85$ . What is the boiling point of a solution of 0.75 molal KCl in water?
7. A solution of 3.00 g of ascorbic acid ( $\text{C}_6\text{H}_8\text{O}_6$ ) in 50.0 g of acetic acid has a freezing point below that of pure acetic acid of  $\Delta T = 1.33^\circ\text{C}$ . What is the value of the molal freezing-point-depression constant for acetic acid?
8. The freezing point of a solution of 5.00 g of an unknown compound dissolved in 75.0 g of acetic acid is  $13.2^\circ\text{C}$ . Calculate the molar mass of the compound. Show work to support your answer.

**CHE 112 - Homework - Ch 12e**  
**Colligative Properties - Part II**

9. Define Osmotic Pressure in words and using an equation. Explain the driving force for the process.
10. Which has the higher osmotic pressure, solution (A) containing 100.0 g of urea ( $\text{NH}_2\text{CONH}_2$ ) in 1.0 kg of water, or a solution (B) containing 100.0 g of glucose ( $\text{C}_6\text{H}_{12}\text{O}_6$ ) in 1.0 kg of water. Explain.
11. Human blood has an osmotic pressure of 7.7 atm at body temperature (37 °C). If a person is given an intravenous solution of glucose ( $\text{C}_6\text{H}_{12}\text{O}_6$ ) to maintain blood pressure, what does the Molarity of the solution need to be to give the same rise in blood pressure as blood?
12. What is the Molecular Weight of an unknown compound that when 0.822 g is dissolved in 300.0 mL of water results in a solution with an osmotic pressure of 149 mmHg at 298 K?

**CHE 112 - Homework - Ch 12e**  
**Colligative Properties - Part II**