

# Participation Assignment

## CHEM 1100-General Chemistry II

Name:

#3

Section: 31, MWF

Due Date: Monday 7/16/2018

1. Ethylene glycol,  $C_2H_6O_2$ , is a nonvolatile nonelectrolyte and is commonly added to water and used as both a coolant and an antifreeze in radiators. Use the molality of the aqueous 52.7 % (by mass) ethylene glycol solution calculated previously and calculate both the freezing point and boiling point of this solution. Assume water boils at  $100.0\text{ }^\circ\text{C}$  and freezes at  $0.0\text{ }^\circ\text{C}$ .

2. A solution is prepared by dissolving 35.0 g hemoglobin in enough water to make 1.00 L of solution. If the osmotic pressure is 0.0132 atm at  $25\text{ }^\circ\text{C}$ , what is the molar mass of hemoglobin?

	<b>0.100 m</b>	<b>0.0100 m</b>	<b>0.00100 m</b>	<b>Limiting Value</b>
<b>Sucrose</b>				
<b>NaCl</b>				
<b>MgSO<sub>4</sub></b>				
<b>K<sub>2</sub>SO<sub>4</sub></b>				

Data: Brown, LeMay, Bursten, *Chemistry: The Central Science*, 9<sup>th</sup> ed., Pearson Education, Inc, 2003, p511.

3. Arrange the following according to decreasing freezing point: 0.10 m sucrose (a nonelectrolyte), 0.10 m hydrochloric acid, 0.10 m acetic acid.