

# Preclass Assignment

## CHEM 1100-General Chemistry I

Name:

#2

Section: 31, TR

Due Date: Tuesday 1/21/2020

1. At 79.6 °C the vapor pressure of pure water is 0.466 bar while the vapor pressure of pure ethanol is 1.066 bar.

a. What is the vapor pressure of an aqueous solution that has a 0.500 mole fraction of ethanol? Assume the mixture follows Raoult's law.

b. If the actual vapor pressure of the ethanol/water solution is 1.013 bar, does the mixture follow Raoult's law?

2. Ethylene glycol,  $\text{C}_2\text{H}_6\text{O}_2$ , is a nonvolatile nonelectrolyte and is commonly added to water and used as both a coolant and an antifreeze in radiators. What is the molality of an aqueous solution that is 52.7 % (by mass) ethylene glycol?

3. A solution that is isotonic to blood can be made by dissolving 0.92 g sodium chloride in enough water to make 0.100 L of solution. What is the osmotic pressure, in atm, of this solution at 37.0 °C?