IB/Diff Chem: Solutions Wkst 2

Name:

Be sure to include all your work. This includes any and all equations used, conversions and units.

- 1. A 32.0% by weight solution of propanol, C₃H₇OH, in water has a density at 20 °C of 0.945 g/mL. What are the molarity and molality of the solution?
- 2. How many liters of ammonia at 25.0 °C and 1.46 atm are required to prepare 3.00 L of a 2.50 M solution of NH₃?

3. Calculate the percent by mass and the molality in terms of $CuSO_4$ for a solution prepared by dissolving 11.5 g of $CuSO_4.5H_2O$ in 1.00 x 10² mL of water.

4. What is the molarity of H_3PO_4 in a solution that is prepared by dissolving 10.0 g of P_4O_{10} in sufficient water to make 0.500 L of solution?

- 5. A sample of HgCl₂ weighing 9.41 g is dissolved in 32.75 g of ethanol, C₂H₅OH (K_b=1.20 °C/m). The boiling point elevation of the solution is 1.27 °C. Is HgCl₂ an electrolyte in ethanol? Show your calculations.
- 6. The sugar fructose contains 40.0% C, 6.7% H, and 53.3% O by mass. A solution of 11.7 g of fructose in 325 g of ethanol has a boiling point of 78.59 °C. The boiling point of ethanol is 78.35 °C and the K_b is 1.20 °C/m. What is the molecular formula of fructose?