Honors Chemistry Name:

Chapters 20-21 Test Review: Practice Assessment Date:

For the following problems be sure to show all work, include units, and put a box around your final answer.

1. What is the **molality of the solution and of the ions** in a solution containing 55.5 g of aluminum sulfate in 325 ml of water? [20.3d]

2. What is the **mole fraction of each component** in a solution containing 15.0 grams of NaCl and 36.2 grams of $MgCl_2$ in 100.0 grams of benzene, C_6H_6. [20.3d]

3. What is the **boiling point** of a solution that contains 102.5 g of $Ga(NO_3)_3$ in 955.0 g of water? (**Assume 100% ionization**) [20.3e]

4. Ether has a molal freezing point constant of 1.79 $^{o}C \cdot kg/mol$. When 62.0 g of an unknown nonionizing solute is dissolved in 510 g of ether, the resulting solution has a freezing-point depression of 3.570^{o}C. What is the **molecular mass** of the solute? [20.4a]

5. Calculate the **vapor pressure** of a solution at 40.0 ^{o}C containing 42.7 g CH_3CH_2OH in 885 g H_2O. The vapor pressure of pure water at 40.0 ^{o}C is 5.2 kPa. [20.3e]

6. What is the freezing point if 98.3 grams of calcium chloride is dissolved into 952 grams of water?