CHM 1046 - JOENS   WORKSHEET #1   Due date: Friday, May 11th
WORKSHEETS ARE DUE AT THE BEGINNING OF CLASS ON THE DATE GIVEN ON THE
WORKSHEET. LATE WORKSHEETS WILL NOT BE ACCEPTED.

NAME _____   Panther ID _____

For problems involving calculations you must show your work for credit.

1) Which of the following liquids is expected to be miscible with water (circle all that apply)?

        methanol (CH_3OH)   acetone (CH_3COCH_3)   cyclohexane (C_6H_{12})

2) A solution is 18.7% by mass cyclohexane (C_6H_{12}, MW = 84.2 g/mol) in carbon tetrachloride (CCl_4, MW = 153.8 g/mol). What are the molality and the mole fraction of cyclohexane in the solution?

3) Because many chemical reactions in the atmosphere occur in cloud droplets, scientists are interested in the concentration of dissolved gases in these droplets.

The Henry's law constant for hydrogen peroxide (H_2O_2, MW = 34.1 g/mol) in water is k = 8.3 x 10^4 mol/L·atm at T = 20. °C. What is the concentration of dissolved H_2O_2 in a cloud droplet in equilibrium with the atmosphere, and at T = 20.0°C, when the partial pressure of H_2O_2 in the atmosphere is 2.0 x 10^{-6} torr (a typical value for the lower atmosphere)? Give your answer both in units of mol/L and g/L.

4) The following question concerns ideal solutions.

a) How do we define an ideal solution of two gases?

b) How do we define an ideal solution of two volatile liquids?