CHM 1010 **GAGE**

REVIEW PROBLEMS FOR SOLUTIONS

1. For each pair below decide if a solution is likely to form or not and explain briefly why or why not:

    1. H_2O (l) and Na_3PO_4 (s)
    2. N_2 (g) and H_2O (l)
    3. $CH_3CH_2CH_2CH_2CH_3$ (l) and C_6H_6 (s)
    4. H_2O (l) and $CH_3CH_2CH_2CH_2CH_3$ (l)

2. How many grams of potassium sulfate are needed to make 250.0 mL of a 0.155 M solution?

3. Explain why the boiling point of a 0.5 M $CaCl_2$ solution is higher than the boiling point of pure water.

4. Explain what happens step-by-step when the following materials are mixed with water and why: $MgSO_4$; Gasoline (C_8H_{18})

5. How many mL of 0.344 M $BaCl_2$ are needed to react to provide 5.50 g of silver chloride based on the unbalanced equation below:

    $BaCl_2$ (aq) + $AgNO_3$ (aq) ---------> AgCl (s) + $Ba(NO_3)_2$(aq)

6. Indicate whether each of the following statements is true or false. If it is false, explain why. (6)

    a. If you stir magnesium acetate as you are dissolving it in water you can increase its solubility.
    b. A 100 mL of 22% solution of NaCl contains the same number of moles as 100 mL of 22% solution of NaF.
    c. In solutions, like dissolves like.

7. What is the molarity of a solution that contains 3.65 g of acetic acid in 450 mL of solution? What is the g/v% of the same solution?

Answers:

1. a = yes, b = no, c = yes, d = no
2. 6.76 g
5. 55.7 mL
7. 0.135M, 0.811%