5.3 Concentrations Assignment /25

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Show all work to receive full marks! This includes units, starting equations or the proper unit canceling method! Also, don’t forget about your friend Sig Digs!!!*

1. Copper (II) sulphate is used in copper electroplating cells. What is the molar concentration of an electroplating solution in which 1.50 mol of copper (II) sulfate is dissolved in water to make 2.00 L of solution? **(2 marks)**
2. When 11.0 g of glacial (pure) acetic acid is dissolved in water to make 250 mL of vinegar (acetic acid) solution, what is the molar concentration of the vinegar? **(2 marks)**

1. Sodium bicarbonate is used medicinally to counteract excess stomach acidity. How many moles of solid sodium bicarbonate would be needed to make 100 mL of 0.660 mol/L solution for use as an antacid? **(2 marks)**
2. What is the molar concentration of a solution in which 0.240 mol of washing soda Na2CO3▪10H2O is dissolved in water to make 480 mL of solution for softening wash water? **(2 marks)**
3. A useful tile and household clearer is sodium phosphate. Find the number of moles of Na3PO4 in 2.00 L of a 0.100 mol/L cleaning solution used for the home. **(2 marks)**
4. A rust stain remover may be prepared by dissolving potassium persulphate (K2SO5) in water. How many grams of this compound are there in 500 mL of a 0.242 mol/L solution suitable for removing rust stains? **(2 marks)**
5. What is the molar concentration of 500 mL of a solution that contains 12.7 g of swimming pool chlorinator, Ca(OCl)2? **(2 marks)**
6. What volume of 0.850M CuSO4 solution can be prepared from 75.0g of copper (II) sulfate pentahydrate, CuSO4-5H2O? **(2 marks)**
7. A Web site promoting eco-friendly alternatives to commercial cleaners suggests mixing 125 mL of vinegar with enough water to make 1.0 L of cleaning solution. If the vinegar used contains 5.0% acetic acid (by volume), what is the percent concentration of acidic acid in the cleaning solution? **(2 marks)**
8. A shopper has a choice of yogurt with three different concentrations (%W/W) of milk fat: 5.9%, 2.0% and 1.2%. If the shopper wants to limit his fat intake to 3.0 g per serving, determine the mass of the largest serving the shopper could have for each type of yogurt. **(3 marks)**
9. Acid rain may have 335 ppm of dissolved carbon dioxide.
10. What mass of carbon dioxide is present in 1.00 L of acid rain? **(2 marks)**
11. Calculate the amount concentration of carbon dioxide in the acid rain sample. **(2 marks)**