CHAPTER NINE MIXED REVIEW

NAME _____ DATE _____ CLASS _____

YOU MUST SHOW ALL WORK TO RECEIVE FULL CREDIT. BE SURE TO INCLUDE PROPER UNITS OF MEASUREMENT ON ALL VALUES, ESPECIALLY YOUR FINAL ANSWERS. CIRCLE OR BOX ALL ANSWERS! <u>Complete on your own paper if you have large writing</u>.

1. 187 g of Copper (II) sulfide reacts with 5.06g of oxygen to produce copper (II) oxide and sulfur dioxide.
    a. Write the balanced equation.

    b. What is the limiting reactant?

    c. What mass of copper (II) oxide can be produced?

    d. Determine the mass of excess reactant remaining.

2. 11.75 grams of lithium bromide reacts with excess chlorine gas.
    a. Write the balanced equation.

    b. How many grams of bromine could be produced?

    c. How many grams of chlorine would be needed to fully react with the lithium bromide?

3. Sulfur dioxide can be produced in the laboratory by the reaction of hydrochloric acid and a sulfite salt such as sodium sulfite:

    $$\mathbf{Na_2SO_3 + 2\ HCl \rightarrow 2\ NaCl + SO_2 + H_2O}$$

    What mass of sulfur dioxide can be made from the reaction of 2.5 g of Na_2SO_3 and 2.5 g of HCl? (Hint: be careful—must use the limiting)

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4. 56.9 grams of WO_3 reacts with excess hydrogen gas to produce 41.4 grams of tungsten. Water is also a product of this reaction.
   a. Write a balanced equation.

   b. What is the percent yield of tungsten?

   c. If the percent yield for water is 85.3%, how much water would be produced?

5. Heating zinc sulfide in the presence of oxygen yields sulfur dioxide and zinc oxide:

   If 3599 grams of ZnS is heated in the presence of 97.3 grams of O_2,
   a. Which reactant will be used up first?

   b. What mass of sulfur dioxide will be produced?

   c. What mass of excess reactant is left over?

6. The following balanced reaction shows the synthesis of zinc citrate, an ingredient in toothpaste, from zinc carbonate and citric acid ($C_6H_8O_7$).

   $$\mathbf{3\ ZnCO_3 + 2\ C_6H_8O_7 \rightarrow Zn_3(C_6H_5O_7)_2 + 3\ H_2O + 3\ CO_2}$$

   a. What mass of CO_2 is produced by the reaction of 3.48 grams of citric acid if the percent yield is 78.5 %?

   b. What is the percent yield of the reaction if 12.5 grams of citric acid produces 4.75 grams of zinc citrate?

   c. What mass of water is produced from a reaction completing using 5 moles of citric acid?