Stoichiometry Review

1. Potassium reacts with oxygen to produce potassium oxide.

    a. Write the balanced equation for this reaction.

    b. What type of reaction is this?

    c. What is the mass of 5.0 L of oxygen at STP?

    d. What is the mass of 2.0×10^{22} molecules of potassium oxide?

    e. Use the balanced equation to determine the mass of oxygen necessary to produce 4.0 g potassium oxide.

2. Sodium chloride reacts with silver (I) nitrate to yield silver (I) chloride and sodium nitrate.

    a. Write the balanced equation for this reaction.

    b. What type of reaction is this?

    c. Write the complete ionic equation for this reaction.

    d. Write the net ionic equation for this reaction.

    e. If 10.0 grams of silver (I) nitrate reacts with 15.0 grams of sodium chloride, what mass of sodium nitrate is produced?

    f. What is the limiting reagent? What is the excess reagent?

    g. What mass of excess reagent is left over?

3. Lithium reacts with calcium carbonate.

    a. Write the balanced equation for this reaction.

    b. What type of reaction is this?

    c. If 20.0 grams of lithium reacts with 20.0 grams of calcium carbonate, what is the theoretical yield of lithium carbonate?

    d. If 13.7 g lithium carbonate is produced in the lab, what is the percent yield?

4. Iron (III) nitrate reacts with calcium phosphate.

    a. Write the balanced equation for this reaction.

    b. What type of reaction is this?

    c. You perform this reaction using 3.0 g iron (III) nitrate and 6.2 g calcium phosphate. What is your percent yield if you produce 2.9 g iron (III) phosphate in the lab?