Student Name: _____ Date: _____

Chemistry 30S

Stoichiometry Review

Answer the following questions in the space provided on this review page or on notebookpaper. Use your periodic table and notes to assist you. Be sure to <u>show ALL work for problems</u>. Put your name and the date on your answer sheet, take photos of your work and send them to me once your work is complete.

(2) 1. When 0.800 moles of O_2 is used up, how many grams of PbO are produced?

$$3O_2 + 2\ PbS \rightarrow 2PbO + 2SO_2$$

(12) 2. Tin(II) fluoride, formerly found in many tooth pastes, is formed in this reaction.

$$Sn(s) + 2HF(g) \rightarrow SnF_2(s) + H_2(g)$$

a) How many grams of SnF_2 can be made by reacting 7.42×10^{24} molecules of HF with tin? (3)

b) How many litres of hydrogen gas (at STP) are produced by reacting 23.4 g of Sn with HF? (3)

c) How many litres of HF are needed to produce 14.2 L of H_2 at STP? (3)

d) How many molecules of H_2 are produced by the reaction of tin with 80.0 L of HF at STP? (3)

(5) 3. When 50.0 g of silicon dioxide is heated with an excess of carbon, 32.2 g of CO gas are made.

$$SiO_2\ (s) + 3C\ (s) \rightarrow SiC\ (s) + 2\ CO\ (g)$$

a) What is the percent yield of this reaction?

b) Suggest why the values for actual yield and theoretical yield are so different

(6) 4. A 500.0g sample of $Al_2(SO_4)_3$ is reacted with 450.0g of $Ca(OH)_2$. A total of 596.0 g of $CaSO_4$ is produced. What is the limiting reagent in this reaction, and how many grams of excess reagent remain after the reaction is complete?

$$Al_2(SO_4)_3(aq) + 3Ca(OH)_2(aq) \rightarrow 2Al(OH)_3\ (s) + 3CaSO_4(s)$$

(5) 5. **Balance** this chemical equation. Interpret the balanced equation in terms of the interaction of relative quantities in the following four ways:

$$H_2S\ (g) + O_2\ (g) \rightarrow SO_2\ (g) + H_2O\ (g)$$

a) Number of representative particles.

b) Number of moles.

c) Masses of reactants and products.

d) Volume of gases at STP.