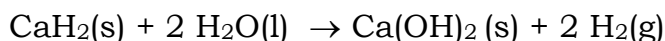
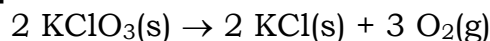


**CHEM-1105****STOICHIOMETRY**

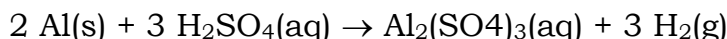
1. A portable hydrogen generator utilizes the following reaction. How many grams of hydrogen gas can be produced by a 50.0 g cartridge of CaH<sub>2</sub>? **[4.80 g]**



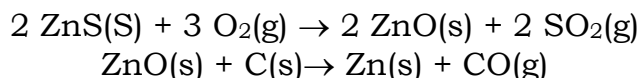
2. How many grams of KClO<sub>3</sub> must be decomposed to 3.50 g of O<sub>2</sub>(g). The reaction is: **[8.94 g]**



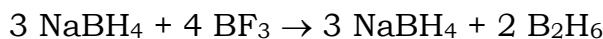
3. An impure sample of Al is treated with an excess of H<sub>2</sub>SO<sub>4</sub>. If 0.0852 g of H<sub>2</sub> is produced from a 0.780 g of the sample, what is the percent purity of the sample? The reaction is: **[97.3%]**



4. Zinc is produced from its principal ore sphalerite, ZnS, by the two step process. How many kg of zinc can be produced from 2.00 kg of ore that is 80.5% ZnS and the yield of each reaction is 90.0%? **[0.875 kg]**

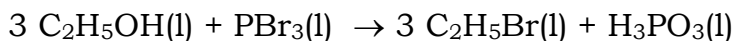


5. Diborane, B<sub>2</sub>H<sub>6</sub>, can be prepared by the reaction of NaBH<sub>4</sub> and BF<sub>3</sub>. If 3.20 g of NaBH<sub>4</sub> and 5.42 g of BF<sub>3</sub> are reacted, calculate the amount of B<sub>2</sub>H<sub>6</sub>. **[LR is BF<sub>3</sub>, 1.106 g B<sub>2</sub>H<sub>6</sub>]**



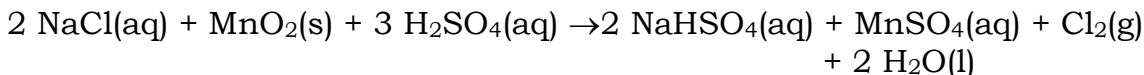
6. Ethyl bromide, C<sub>2</sub>H<sub>5</sub>Br, can be prepared by reacting ethyl alcohol, C<sub>2</sub>H<sub>5</sub>OH, and phosphorous tribromide, PBr<sub>3</sub>.

- a) Calculate the amount of ethyl bromide formed by the reaction of 34.0 g ethyl alcohol and 59.0 g of PBr<sub>3</sub>. The reaction is **[71.2 g]**



- b) If the actual yield is 26.0 g, what is the percent yield? **[36.5%]**  
c) How many grams of which reactant, if any, remain unreacted? **[4.0 g]**

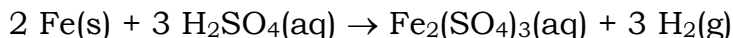
7. Chlorine can be prepared in the lab by the following reaction:



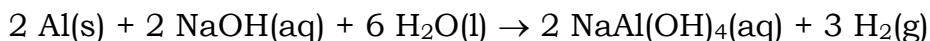
To a solution containing 5.85 g of NaCl and excess of MnO<sub>2</sub> is added 1.50 L of 0.200 M H<sub>2</sub>SO<sub>4</sub>.

- a) Which is the limiting reagent? **[NaCl]**  
b) How many grams of Cl<sub>2</sub> can be prepared? **[3.55 g]**

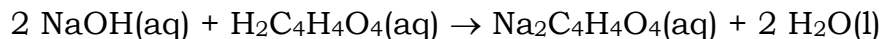
8. An alloy of iron and carbon was treated with sulfuric acid, in which only iron reacts. If a sample of an alloy weighing 2.358 g gave 0.1228 g of H<sub>2</sub>(g), what is the percent of iron in the sample? **[95.8%]**



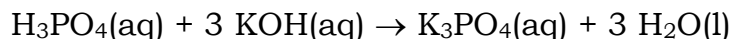
9. An alloy of aluminum and magnesium was treated with NaOH in which only Al reacts. If a sample of an alloy weighing 1.118 g gave 0.1068 g of H<sub>2</sub>(g), what is the percent of Al in the sample? The reaction is: **[85.2%]**



10. Calculate the molarity of a NaOH solution if 18.65 mL of the NaOH solution were used to titrate 25.0 mL of 0.1085 M succinic acid, H<sub>2</sub>C<sub>4</sub>H<sub>4</sub>O<sub>4</sub>. **[0.291 M]**



11. 35.00 mL of 0.100 M H<sub>3</sub>PO<sub>4</sub> required 60.00 mL of KOH for complete neutralization. Calculate the molarity of KOH. The reaction is: **[0.175 M]**



12. In a titration of 0.3825 g of phthalic acid 28.55 mL of 0.1613 M NaOH are needed to reach the equivalence point. Calculate the molar mass of phthalic acid. **[166 g/mol]**

