**Stoichiometry AP Problems**

1990 D

An experiment is performed to determine the empirical formula of a copper iodide formed by direct combination of elements. A clean strip of copper metal is weighed accurately. It is suspended in a test tube containing iodine vapor generated by heating solid iodine. A white compound forms on the strip of copper, coating it uniformly. The strip with the adhering compound is weighed. Finally, the compound is washed completely from the surface of the metal and the clean strip is dried and reweighed.

DATA TABLE

Mass of clean copper strip 1.2789 grams

Mass of copper strip and compound 1.2874 grams

Mass of copper strip after washing 1.2748 grams

(a) State how you would use the data above to determine each of the following. (Calculations not required.)

(1) The number of moles of iodine that reacted

(2) The number of moles of copper that reacted

(b) Explain how you would determine the empirical formula for the copper iodide.

(c) Explain how each of the following would affect the empirical formula that could be calculated.

(1) Some unreacted iodine condensed on the strip.

(2) A small amount of the white compound flaked off before weighing.

Question 20

Consider the reaction between Aluminum and Iron (III) oxide to produce Aluminum oxide and Iron metal.

1. Write an equation for the reaction.
2. If 1240g of Al are reacted with 6010g of Iron (III) oxide identify the limiting reagent. Which reagent is in excess?
3. Calculate the mass of Iron formed.
4. How much of the excess reagent is left over at the end of the reaction?

Question 15

Ethylene burns in a combustion reaction:

a. Write the balanced equation for this reaction.

b. How many grams of CO2 form if 2.8 g of C2H4 and 6 g of O2 are combined and

reacted?

c. What is the reactant in excess?

d. How much of the reactant is in excess?