Name: _____ **?? Pts.**

Chemistry Test: Chemical Equations

1. Answer each question in the space provided. (12pts.)

a.) _____ In a chemical reaction the coefficients represent relative: (Moles / Masses)

b.) _____ Which are conserved in a chemical reaction? (Moles / Masses)

c.) _____ 10.0g of NaCl is decomposed. How many grams of Na are formed if 6.1g of Cl is produced?

d.) _____ How many atoms of O are indicated by 2 $Ba(OH)_2$?

e.) _____ According to appendix D, $Fe(OH)_3$ is listed as "*i*", what phase notation should it have?

f.) _____ According to appendix D, NH_4Cl is listed as "s", what phase notation should it ha?

g.) _____ What phase notation should CO_2 have?

h.) _____ A sample of copper is dropped into a beaker of water. What phase notation should the Cu have?

i.) _____ $H_2O_{(s)} \rightarrow H_2O_{(l)}$, endothermic or exothermic?

j.) _____ $2\ SO_{2(g)} + O_{2(g)} \dashrightarrow 2\ SO_{3(g)}$, Name the product(s)

k.) _____ Which type of container is better to transport HCl, hydrochloric acid in? Zn metal, or glass?

l.) _____ In the reaction of NaCl with HCl, H2O is a reactant o product?

2. Draw or sketch a balanced structural diagram that represents that synthesis of water from its elements. (8 pts.)
Include a "key" and a written balanced chemical equation.

Key	Written balanced equation:
H_2= O_2= H_2O=	

3. Balance and Classify the following equations as either Synthesis, Decomposition, Single Displacement, or Double Displacement. (10 pts.)

a.) _____ $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$

b.) _____ $BaCl_2 + NaOH \rightarrow Ba(OH)_2 + NaCl$

c.) _____ $KClO_3 \rightarrow KCl + O_2$

d.) _____ $PbCO_3 \rightarrow PbO + CO_2$

e.) _____ $K_2O + H_2O \rightarrow KOH$

4. Given the reactants, predict the products and write a balanced chemical equation for these reactions. (6 pts.)

a.) $K_2SO_4 + Pb(C_2H_3O_2)_2 \rightarrow$

b.) $Fe(NO_3)_3 + Zn \rightarrow$

c.) $Al + O_2 \rightarrow$

5. Analyse the reaction below and answer each question in the space to the left. (7 pts.)

$$CuCl_{2(aq)} + K_2CO_{3(aq)} \longrightarrow 2\,KCl_{(aq)} + CuCO_{3(s)}$$

a.) _____ Classify as type of reaction. (i.e., syn., decomp., etc.)

b.) _____ Determine the charge on the copper reactant. ($^{+}1$, $^{+}2$, etc.)

c.) _____ Is the precipitate a reactant or product?

d.) _____ Name the precipitate.

e.) _____ Is potassium chloride soluble in water? (Yes or No)

f.) _____ How many atoms of carbon are represented on the reactant side?

g.) _____ If 5.00 grams of reactants was used, how many grams of products are formed?

6. Given the names of reactants, predict the products and write a balanced chemical equation for these reactions. (15 pts.)

a.) dichlorine monoxide

b.) nickel(III) chloride + zinc

c.) sodium + chlorine

d.) iron(II) nitrate + potassium hydroxide

e.) iron(III) oxide + aluminum

7. Below are three descriptions of chemical reactions, write a complete balanced chemical equation that includes phase notation. (12 pts.)

a.) A piece of copper wire is added to a solution of silver nitrate.

b.) An electrical current is sent through 1200 ml of water. Bubbles are formed as the water decomposes.

c.) 1.5 g of copper(II) sulfate is added to a beaker and dissolved in water. In another beaker, 2.1 grams of barium chloride is dissolved into water. These two solutions are added together and a precipitate is formed. The precipitate is known to contain barium.