Name: \_\_\_\_\_

## Science and Technology 404/448

## **Chemical Equations**

## 1. Balance the following equations.

Example:  $K + S \rightarrow K_2S$ 

- a) Na +  $Cl_2 \rightarrow NaCl$
- b) S +  $O_2 \rightarrow SO_2$
- c)  $H_2O \rightarrow H_2 + O_2$
- d)  $Cu + O_2 \rightarrow CuO$
- e) Na +  $O_2 \rightarrow Na_2O$
- f) Mg +  $Cl_2 \rightarrow MgCl_2$
- g) P +  $Cl_2 \rightarrow PCl_3$
- h) P +  $O_2$   $\rightarrow$   $P_2O_5$
- $i) \hspace{.1in} N_2 \hspace{.1in} + \hspace{.1in} H_2 \hspace{.1in} \rightarrow \hspace{.1in} NH_3$
- $j) \hspace{.1in} N_2 \hspace{1.5in} + \hspace{1.5in} O_2 \hspace{.1in} \rightarrow \hspace{.1in} N_2O_5$
- k)  $NH_3$  +  $Cl_2$   $\rightarrow$  HCl +  $N_2$

2.	Represent each of the following reactions with a chemical equation and then balance the equation.
	Example: Hydrogen gas $(H_2)$ reacts with oxygen gas $(O_2)$ to form water.
	a) Copper(Cu) reacts with oxygen ( $O_2$ ) to produce copper oxide (CuO)
	b) Zinc (Zn) reacts with hydrochloric acid (HCl) to produce zinc chloride (ZnCl2) and hydrogen gas (H2).
	c) Sodium (Na) reacts with water to form sodium hydroxide (NaOH) and hydrogen gas (H $_{\rm 2}$ ).
	d) Hydrochloric acid (HCl) reacts with potassium hydroxide (KOH) to form potassium chloride (KCl) and water.
	e) Methane (CH4) is burned in the presence of oxygen (O2) to produce carbon dioxide (CO2) and water,
	f) Propane ( $C_3H_8$ ) reacts with oxygen gas ( $O_2$ ) to produce carbon dioxide gas ( $CO_2$ ) and water.