Name: _____

1. Balance the following reactions:

a. ___ Fe *(s)* + __ O_2 *(g)* → __ Fe_2O_3 *(s)*

b. ___ H_2SO_4 *(aq)* +__ $LiOH$ *(aq)* → __ Li_2SO_4 *(aq)* +__ H_2O *(l)*

c. __ NH_4I *(aq)* + __$PbNO_3$ *(aq)* → __ PbI_2 *(s)* + __ NH_4NO_3 *(aq)*

d. ___ C_2H_2 *(g)* + ___ O_2 *(g)* → ___ CO_2 *(g)* + ___ H_2O *(g)*

e. ___ C_3H_8 *(g)* + ___ O_2 *(g)* → ___ CO_2 *(g)* + ___ H_2O *(g)*

2. Determine if <u>precipitation</u> occurs for each equation below. Use the table of solubility rules on the back page of this homework. (Please remove the table for use, and do <u>not</u> submit a printed copy back to me. I have plenty of solubility tables already, thanks.)

If a precipitation reaction occurs:

1. Complete the <u>products</u> with <u>physical states</u> (*s, l, aq, g)*,
2. <u>balance</u> the equation, and
3. provide the <u>net ionic</u> equation below the balanced equation.

If no precipitant (insoluble chemical species) forms, the correct answer is simply "n.r." meaning that <u>no</u> <u>r</u>eaction occurs.

$AgNO_3$ *(aq)* + HCl *(aq)* →

$AgNO_3$ *(aq)* + NaBr *(aq)* →

$AgNO_3$ *(aq)* + Na_2SO_4 *(aq)* →

$Ba(NO_3)_2$ *(aq)* + Na_2SO_4 *(aq)* →

NH_4Cl *(aq)* + KCH_3COO *(aq)*→

NaCl *(aq)* + $PbSO_4$ *(aq)* →

3. Complete and balance the neutralization reactions. Write out the net ionic reaction for each in the space provided.

a. ___ HCl *(aq)* + __ $NaOH$ *(aq)* →

Net ionic equation:

b. ___ H_2SO_4 *(aq)* + __ $NaOH$ *(aq)* →

Net ionic equation:

c. ___ H_3PO_4 *(aq)* + __ KOH *(aq)* →

Net ionic equation:

d. ___ HNO_3 *(aq)* + __ $Mg(OH)_2$ *(aq)* →

Net ionic equation:

e. ___ HCH_3COO *(aq)* + __ $NaOH$ *(aq)* →

Net ionic equation:

4. Circle the chemical species that is:

a. the oxidizing agent

$2\ Mg\ (s) + O_2\ (g) \rightarrow 2\ MgO\ (s)$

$Zn\ (s) + Cu^{2+}\ (aq) \rightarrow Zn^{2+}\ (aq) + Cu\ (s)$

$2\ NO\ (g) + 2\ CO\ (g) \rightarrow N_2\ (g) + 2\ CO_2\ (g)$

b. reduced

$2\ C\ (s) + O_2\ (g) \rightarrow 2\ CO\ (g)$

$H_2O\ (s) + CO\ (g) \rightarrow H_2\ (g) + CO_2\ (g)$

$I^-\ (aq) + ClO^-\ (aq) \rightarrow IO^-\ (aq) + Cl^-\ (aq)$

$2\ NaClO_2\ (s) + Cl_2\ (g) \rightarrow 2\ ClO_2\ (g) + 2\ NaCl\ (s)$

5. Calculate the oxidation state of carbon in the following:

CO_2	_____	CH_2O	_____
CH_4	_____	HCN	_____
C_2H_6	_____	CO_3^{2-}	_____
CCl_4	_____	CBr_4	_____

Table of solubility rules for Chem 30A – DO NOT SUBMIT

Soluble	Exceptions
Ammonium compounds (NH^+_4)	None
Lithium compounds (Li^+)	None
Sodium compounds (Na^+)	None
Potassium compounds (K^+)	None
Nitrates (NO^-_3)	None
Perchlorates (ClO^-_4)	None
Acetates ($CH_3CO^-_2$)	None
Chlorides (Cl^-)	Ag^+, Hg^{2+}_2, and Pb^{2+} compounds
Bromides (Br^-)	
Iodides (I^-)	
Sulfates (SO^{2-}_4)	Ba^{2+}, Hg^{2+}_2, and Pb^{2+} compounds