PRACTICE#3/An Even MORE Invigorating Reaction Writing Experience/Ap Chemistry

1. - For the following 5 reactions, label what TYPE of reaction each one is:
Double Displacement, Single Displacement, Combustion, Combination or Decomposition.
- For each reaction, indicate if it is a redox reaction or not.

a. C_2H_6 (g) + O_2 (g) -----> 4 CO_2 (g) + 6 H_2O (l)
b. 2 KBr (aq) + Cl_2 (g) ----> 2 KCl (aq) + Br_2 (l)
c. $Pb(NO_3)_2$ (aq) + 2 NH_4Cl (aq) ----> NH_4NO_3 (aq) + $PbCl_2$ (s)
d. 2 $KClO_3$ (s) ----> 2 KCl (s) + 3 O_2 (g)
e. $Al(OH)_4^-$ (aq) ----> AlO_2^- (aq) + 2 H_2O (l)

2. For the following expressions, a) label what type of rxn it is and b) write out the reactants and predict the products. Write the NET ionic equation. You do not need to balance the equations. Watch out! Not all the reactions proceed. If a reaction does not proceed, just write "no rxn." You may need to refer to your own Activity Series and don't forget your friend, the solubility table in your notes and on the Collins website.

** All of the reaction types are mixed up! And, don't forget. No makin' up your own weird compounds....

a. Hydrogen sulfide gas is bubbled into a solution of mercury (II) chloride.
b. A strip of silver is added to a solution of magnesium nitrate..
c. Phosphorus (V) oxide is sprinkled over distilled water.
d. A small piece of barium metal is added to distilled water.
e. Carbon disulfide vapor is burned in excess oxygen.
f. Solutions of sodium iodide and lead nitrate are mixed.
g. Acetic acid is added to s solution of potassium carbonate.
h. A solution of hydrogen peroxide is heated.
i. A bar of zinc is immersed in a solution of copper (II) sulfate.
j. Dichlorine heptoxide is bubbled into distilled water.
k. Carbon dioxide gas is reacted with solid barium oxide.
l. Solid lithium hydride is added to water.
m. An excess of sodium hydroxide solution is added to a solution of magnesium nitrate.
n. A piece of bismuth is strongly heated in oxygen.
o. Equal molar amounts of sulfuric acid and potassium hydroxide solutions are mixed.
p. Oxalic acid is exposed to a small amount of ammonia gas.
q. A solid sample of magnesium carbonate is heated.
r. Bromine is dripped into an aqueous sodium chloride solution.
s. Ammonium chloride and sodium hydroxide are mixed.
t. Excess chlorine gas is passed over hot iron filings.
u. Solid calcium oxide is sprinkled onto a hydrochloric acid solution.

3. Using the 1/2 reaction method, balance the following unbalanced Redox reactions. Consequently, this reaction is the exact one that takes place in breath analyzers. The $Cr_2O_7^{2-}$ ion is orange where as the Cr^{3+} ion is blue-ish. So, by interpreting these colors, a police officer can gage how much alcohol (C_2H_5OH) was consumed.

$Cr_2O_7^{2-}$ (aq) + C_2H_5OH (l) ------> Cr^{3+} + CO_2 (g) (acidic solution)

KEY TO . . . An Even MORE Invigorating Reaction Writing Experience

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- For each reaction, indicate if it is a redox reaction or not.

a. C2H6 (g) + O2 (g) -----> 4 CO2 (g) + 6 H2O (l) **COMBUSTION/REDOX**
b. 2 KBr (aq) + Cl2 (g) ----> 2 KCl (aq) + Br2 (l) **SING.DISPL/REDOX**
c. Pb(NO3)2 (aq) + 2 NH4Cl (aq) ----> NH4NO3 (aq) + PbCl2 (s) **DBL.DIS/NO REDOX**
d. 2 KClO3 (s) ----> 2 KCl (s) + 3 O2 (g) **DECOMPOSITION/REDOX**
e. Al(OH)4- (aq) ----> AlO2- (aq) + 2 H2O (l) **DECOMPOSITION/ NO REDOX**

2. For the following expressions, a) label what type of rxn it is and b) write out the reactants and predict the products. Write the NET ionic equation. You do not need to balance the equations. Watch out! Not all the reactions proceed. If a reaction does not proceed, just write "no rxn." You may need to refer to your own Activity Series and don't forget your friend, the solubility table on page 113 in your book.

**** All the reaction types are mixed up! And, don't forget. No makin' up your own weird compounds....**

a. Hydrogen sulfide gas is bubbled into a solution of mercury (II) chloride.
$H_2S(g) + Hg^{2+} + 2Cl^-(aq) \rightarrow HgS(s) + 2H^+ + 2Cl^-$

b. A strip of silver is added to a solution of magnesium nitrate. No rxn

c. Phosphorus (V) oxide is sprinkled over distilled water.
$P_2O_5(s) + 3H_2O(l) \rightarrow 2H_3PO_4(aq)$

d. A small piece of barium metal is added to distilled water.
$Ba(s) + 2H_2O(l) \rightarrow Ba^{2+}(aq) + 2OH^-(aq) + H_2(g)$

e. Carbon disulfide vapor is burned in excess oxygen.
$CS_2(g) + 3O_2(g) \rightarrow CO_2(g) + 2SO_2(g)$

f. Solutions of sodium iodide and lead nitrate are mixed.
$Pb^{2+}(aq) + 2I^-(aq) \rightarrow PbI_2(s)$

g. Acetic acid is added to a solution of potassium carbonate.
$2CH_3COOH(aq) + CO_3^{2-}(aq) \rightarrow CO_2(g) + H_2O(l) + 2CH_3COO^-(aq)$

h. A solution of hydrogen peroxide is heated.
$2H_2O_2(aq) \rightarrow 2H_2O(l) + O_2(g)$

i. A bar of zinc is immersed in a solution of copper (II) sulfate.
$Zn(s)\ Cu^{2+}(aq) + Zn^{2+}(aq) + Cu(s)$

j. Dichlorine heptoxide is bubbled into distilled water.
$Cl_2O_7(g) + H_2O(l) \rightarrow 2H^+(aq) + 2ClO_4^-(aq)$

k. Carbon dioxide gas is reacted with solid barium oxide.
$CO_2(g) +\_ BaO(s) \rightarrow BaCO_3(s)$

l. Solid lithium hydride is added to water.
$LiH(s) + H_2O(l) \rightarrow Li^+(aq) + OH^-(aq) + H_2(g)$

m. An excess of sodium hydroxide solution is added to a solution of magnesium nitrate.
$2OH^-(aq) + Mg^{2+}(aq) \rightarrow Mg(OH)_2(s)$

n. A piece of bismuth is strongly heated in oxygen.
$4Bi(s) + 5O_2(g) \rightarrow 2Bi_2O_5(s)$

o. Equal molar amounts of sulfuric acid and potassium hydroxide solutions are mixed.
If stoichiometrically =, then $H^+(aq) + OH^-(aq) \rightarrow H_2O(aq)$

p. Oxalic acid is exposed to a small amount of ammonia gas.
$H_2C_2O_4(aq) + 2NH_4OH(aq) \rightarrow 2NH_4^+ + C_2O_4^{2-}(aq) + 2H_2O(aq)$

q. A solid sample of magnesium carbonate is heated.
$MgCO_3(s) \rightarrow MgO(s) + CO_2(g)$

r. Bromine is dripped into an aqueous sodium chloride solution. No rxn

s. Ammonium chloride and sodium hydroxide are mixed.
$NH_4^+(aq) + OH^-(aq) \rightarrow NH_3(g) + H_2O(l)$

t. Excess chlorine gas is passed over hot iron filings.
$2Fe(s) + 3Cl_2(g) \rightarrow 2FeCl_3(s)$

u. Solid calcium oxide is sprinkled onto a hydrochloric acid solution.
$CaO(s) + 2H^+(aq) \rightarrow Ca^{2+}(aq) + H_2O(l)$ not balanced