**Homework #7: Chemistry 1013 Spring 2015**

**Due Friday 10 April**

**\_\_\_\_\_/35**

**Your name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Show work for all problems or you will receive no credit/ 2 pts per problem**

1) Double Replacement (Precipitation) Reactions (11 pts)

a) Use the solubility rules from table 4.1 of your text (or the rules from the April 3 Power point) and decide what phase(s) [(aq) or (s)] the products of a metatheses (double replacment) reaction would be starting from the reactants below. Make sure your reactions are balanced ! (2 pts each/8 pts total)

Reactants Products (include phases/ check for balance)

a) NaCl(aq) + LiNO3(aq) 🡪

b) AgNO3(aq) + KCl(aq) 🡪

c) CaCl2(aq) + Na2SO4(aq) 🡪

d) \_\_\_Na3PO4(aq) + \_\_\_Ba(NO3)2🡪

b) Write the complete molecular (formula ), complete ionic and net ionic

equations when the components below are mixed: (3 pts)

NaCl(aq), AgNO3(aq)

Complete molecular

Complete ionic

Net ionic

**2) Acid-Base Theory (11 pts)**

An Arrhenius acid is a \_\_\_\_\_\_\_\_\_\_\_donor

An Arrhenius base is a \_\_\_\_\_\_\_\_\_\_\_donor

A Bronsted acid is a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A Bronsted base is a(n)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2) acid-base theory (continued)**

Identify the acid (A), base (B), conjugate acid (CA) and conjugate base (CB) in each reaction below: (2 pts each/4 pts total)

a) H2PO4‑ + HNO3 🡪 H3PO4 + NO3-

b) HPO32- + CO32- 🡪 PO33- + HCO3-

acid-base reactions are characterized by:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**3) Redox concepts (13 pts)**

Oxidation => an element \_\_\_\_\_\_\_\_\_\_\_electrons

Reduction=> an element \_\_\_\_\_\_\_\_\_\_\_ electrons

What are the oxidation numbers of all the elements in the compounds below:

(1 pt each/ 7 pts total)

a) NO3 N oxidation #=\_\_\_\_ O oxidation # = \_\_\_\_\_\_

b) CuCl2 Cu oxidation #=\_\_\_ Cl oxidation #=\_\_\_\_\_\_

c) H2SO4 H oxidation #=\_\_\_ O oxidation # =\_\_\_\_S oxidation #=\_\_\_\_

What are elements oxidized and reduced in the reactions below: (4 pts total)

CH4 + 2O2 🡪 CO2 + 2H2O

\_\_\_\_\_oxidized \_\_\_\_\_\_ reduced

Ag2O + Zn 🡪 ZnO + 2Ag

\_\_\_\_ oxidized \_\_\_\_\_ reduced