Name: _____

Unit 4 Hand-In Assignment #2

This assignment covers sections 4.4-4.5. Make sure you show *all states for products and remember to balance equations*. When using a formula, write down the formula then substitute values with units. **Your answer must have the correct units and significant figures in all of your final answers.**

1. What is the solubility of a saturated solution of:
    a. Ammonium chloride at 80^{o}C in g/100mL of water. (1)

    b. NH_3 at 15^{o}C in mols/L water (show your work). (2)

2. You mix 20g of potassium nitrate with 100mL of water at 20^{o}C. Describe the solution in terms of saturation. (1)

3. There is more dissolved oxygen in the ocean the at greater depths when compared to dissolved oxygen at the surface. Using Henry's Law, describe this observation. (2)

4. State whether the following compounds are soluble or insoluble in water. (3)
    a. Sodium hydroxide

    b. Ammonium acetate

    c. Calcium sulfate

    d. Lead (II) chloride

    e. Potassium chloride

    f. Calcium bromide

5. Why are spectator ions removed to form net ionic equations? (1)

6. Write the **balanced chemical equation** for the following reactions. Then change each reaction to ionic form (if you need); finally to **net ionic equations** (each is worth 2). If no reaction occurs, please include the spectator ions.

    a. $FeSO_{4(aq)} + (NH_4)_2S_{(aq)} \rightarrow$

    b. lead (II) nitrate and potassium bromide→

    c. $KOH_{(aq)} + NaCl_{(aq)} \rightarrow$

    d. $Pb(C_2H_3O_2)_{2(aq)} + K_2SO_{4(aq)} \rightarrow$

7. Devise a procedure for selectively precipitating the following ions from each other in a common solution. Record your table, the order the solutions must be added and the precipitate that forms at each step. (4 each)

    a. Cl^- and PO_4^{3-}

    b. Ca^{2+} and Ag^+

    c. Cu^{2+} and Ca^{2+}