CH1020 Exercises (Worksheet 7)

1. Determine whether each compound is soluble or insoluble. For the soluble compounds, list the ions present in solution

    a. $AgNO_3$

    b. KNO_3

    c. $(NH_4)_2S$

    d. AgI

    e. K_3PO_4

    f. $Cu_3(PO_4)_2$

    g. $CoCO_3$

    h. LiOH

    i. $CaCO_3$

    j. $PbSO_4$

    k. $(NH_4)_3PO_4$

    l. Fe_2S_3

2. Complete and balance each equation. If no reaction occurs, write "No Reaction".

    a. $NaNO_3(aq) + KCl(aq) \rightarrow$

    b. $NaCl(aq) + Hg_2(CH_3CO_2)_2(aq) \rightarrow$

    c. $\left(NH_4\right)_2 SO_4(aq) + SrCl_2(aq) \rightarrow$

    d. $NaOH(aq) + FeCl_3(aq) \rightarrow$

3. Show with appropriate net ionic reactions how Cr^{3+} and Cd^{2+} can be removed from wastewater by treatment with solutions of sodium hydroxide.
4. Write balanced complete ionic and net ionic equations for each reaction

a. $K_2SO_4(aq) + CaI_2(aq) \rightarrow CaSO_4(s) + KI(aq)$

b. $Na_3PO_4(aq) + NiCl_2(aq) \rightarrow Ni_3(PO_4)_2(s) + NaCl(aq)$

c. $AgNO_3(aq) + NaCl(aq) \rightarrow AgCl(s) + NaNO_3(aq)$

d. $CH_3COOH(aq) + K_2CO_3(aq) \rightarrow H_2O(l) + CO_2(g) + KCH_3COO(aq)$

e. $MgS(aq) + CuCl_2(aq) \rightarrow CuS(s) + MgCl_2(aq)$

5. Lead(II) ions can be removed from solution by precipitation with sulfate ions. Suppose that a solution contains lead(II) nitrate. Write complete ionic and net ionic equations to show the reaction of aqueous lead(II) nitrate with aqueous potassium sulfate to form solid lead(II) sulfate and aqueous potassium nitrate.