AP Chemistry – reactions - common lab procedures questions

1. A sample of iron ore weighing 1.824g is analyzed by first dissolving in acid, releasing the iron as Fe^{2+}(aq). It is then titrated with a standard potassium dichromate solution in acidic media, converting the Fe^{2+}(aq) into Fe^{3+}(aq).

   a) write the balanced redox reaction for the titration reaction.

   b) If 37.21mL of 0.0213M $K_2Cr_2O_7$ was required to reach the equivalence point, what was the percentage of iron in the ore? (14.56% Fe)

2. To completely neutralize 2.10g of KOH(s), 18.7mL of sulfuric acid was required. Calculate the molarity of the acid. (1.0M)

3. In order to determine the percent chloride in an unknown sample, it was dissolved in water, and the chloride ions were precipitated as silver chloride. To precipitate AgCl, excess silver nitrate was added to 10.0mL of a solution containing the chloride ions, made by dissolving 0.1275g sample of the unknown compound.

   a) If 0.339g of silver chloride was formed, what was [Cl⁻] in the original sample? (0.236M)

   b) What was the %Cl in the original compound? (65.6%)

4. How many liters of 0.50M glucose ($C_6H_{12}O_6$) solution will contain exactly 100.0g of glucose? (1.10L)

5. When aqueous solutions of lead nitrate and sodium sulfate are mixed, a precipitate of lead sulfate is formed.

    a) write a balanced equation for this reaction.

    b) Calculate the mass of lead sulfate formed when 665mL of 0.150M lead nitrate and 525mL of 0.0751M sodium sulfate are mixed. (12.0g)