Chemistry 121 **Stoichiometry Practice Problems**

1. 25.0 g of $K_2C_2O_4$ is reacted with $KMnO_4$ according to the following chemical equation.

$$5\ K_2C_2O_4\,(aq) + 2\ KMnO_4\,(aq) + 8\ H_2O \rightarrow 10\ CO_2\,(g) + 2\ Mn(OH)_2\,(s) + 12\ KOH\,(aq)$$

MW	166.2	158.04	44.01	88.96	56.11

   a. How many grams of $KMnO_4$ are required for this reaction?
   b. How many grams of $Mn(OH)_2$ will be produced?
   c. If the reaction is done in 2.5 L of solution, what will be the concentration of OH^- at the end?
   d. If CO_2 is collected, and its density is 1.98 kg/m^3, how many liters of CO_2 will be formed?

2. What volume of 0.150 *M* NaOH solution is required to react completely with 50.0 mL of 0.200 *M* HCl solution? [Write the chemical equation first.]

3. What volume of 0.120 *M* NaOH solution is required to react completely with 40.0 mL of 0.200 *M* H_2SO_4 solution? [Write the chemical equation first.]

4. A 0.5010 g sample of diprotic acid H_2A (MW 120.0) is titrated with 35.0 mL of an NaOH solution. What is the concentration of the NaOH solution? [Write the chemical equation first.]

5. If, in a titration, 0.7520 g of an unknown diprotic acid "H_2X" requires 15.00 mL of 0.2390 *M* NaOH to reach the equivalence point, what is the molar mass of H_2X? [Write the chemical equation first.]

6. How many liters of air with density 1.23 kg/m^3 is needed to completely burn 350 g of propane (C_3H_8, MW 44.1)? [What are the reactants? Write the chemical equation first.]

Answers

1. a. 9.51 g b. 5.35 g c. 0.144 M d. 6.7 L

2. 66.7 mL

3. 133 mL

4. 0.239 M

5. 419.4 g/mol

6. 4920 L