AP Chem **Name:**
Quiz: Ch 3 & 4 **Date:** **Period:**
Version E (40 pts)

Show your work for all questions; answer all parts of all questions. No work = no credit.

1. (20 pts) Ascorbic acid, or vitamin C ($C_6H_8O_6$), is an essential vitamin. It cannot be stored by the body and must be present in the diet.
   a. (4 pts) Calculate the percent composition by mass of oxygen in ascorbic acid.

Ans = _____

   b. (4 pts) Combustion of ascorbic acid produces carbon dioxide and water according to the equation below. Balance the equation and reduce coefficients to the smallest whole number ratio.

___ $C_6H_8O_6$ (s) + ___ O_2 (g) → ___ CO_2 (g) + ___ H_2O (g)

In one particular reaction, 20.00 g ascorbic acid burns with 3.00 g of oxygen gas.

   c. (4 pts) Determine the limiting reactant.

Ans = _____

   d. (4 pts) What mass of the excess reactant remains when the reaction is complete?

Ans = _____

   e. (4 pts) If the reaction is 90.0% percent efficient, what mass of water would be produced?

Ans = _____

2. (8 pts)
    a. (4 pts) Describe how 400.0 mL of 0.100 M magnesium hydroxide solution can be from 800.0 mL of a 2.50 M solution.

    b. (4 pts) Will the solution conduct electricity? Why or why not?

3. (12 pts) Give the formulas to show the reactants and the products for the following chemical reactions. Each of the reactions occurs in aqueous solution unless otherwise indicated. Represent substances in solution as ions if the substance is extensively ionized. Omit formulas for any ions or molecules that are unchanged by the reaction. In all cases a reaction occurs. You need not balance or include states of matter.

    a. A solution of potassium sulfide is mixed with a solution of nickel (II) nitrate.

    b. A solution of iron (III) sulfate is mixed with a solution of calcium chloride.

    c. A solution of ammonium chromate is mixed with a solution of mercury (II) iodide.

AP Chem **Name:**
Quiz: Ch 3 & 4 **Date:** **Period:**
Version F (40 pts)

Show your work for all questions; answer all parts of all questions. No work = no credit.

1. (20 pts) Acetylsalicylic acid, or aspirin ($C_9H_8O_4$), is a commonly used pain reliever.
   a. (4 pts) Calculate the percent composition by mass of oxygen in acetylsalicylic acid.

Ans = _____

   b. (4 pts) Combustion of acetylsalicylic acid produces carbon dioxide and water according to the equation below. Balance the equation and reduce coefficients to the smallest whole number ratio.

___ $C_9H_8O_4$ (s) + ___ O_2 (g) → ___ CO_2 (g) + ___ H_2O (g)

In one particular reaction, 20.00 g acetylsalicylic acid burns with 3.00 g of oxygen gas.

   c. (4 pts) Determine the limiting reactant.

Ans = _____

   d. (4 pts) What mass of the excess reactant remains when the reaction is complete?

Ans = _____

   e. (4 pts) If the reaction is 60.0% percent efficient, what mass of carbon dioxide would be produced?

Ans = _____

2. (8 pts)
    a. (4 pts) Describe how 300.0 mL of 0.200 M hydrogen phosphate solution can be from 900.0 mL of a 2.00 M solution.

    b. (4 pts) Will the solution conduct electricity? Why or why not?

3. (12 pts) Give the formulas to show the reactants and the products for the following chemical reactions. Each of the reactions occurs in aqueous solution unless otherwise indicated. Represent substances in solution as ions if the substance is extensively ionized. Omit formulas for any ions or molecules that are unchanged by the reaction. In all cases a reaction occurs. You need not balance or include states of matter.

    a. A solution of lithium hydroxide is mixed with a solution of manganese (II) acetate.

    b. A solution of lead (II) perchlorate is mixed with a solution of ammonium oxalate.

    c. A solution of potassium carbonate is mixed with a solution of silver nitrate.