1. What is the mass in grams of 4500 molecules of uranium hexafluoride?

2. How many oxygen atoms are in 0.250 mg of glucose?

3. What is the percent composition of ammonium oxalate?

4. An unknown compound has a percent composition of 49.48% carbon, 5.190% hydrogen, 16.47% oxygen, and 28.85% nitrogen. If it has a molar mass of 194.18 g/mol, find it's molecular formula.

5. In the unbalanced reaction Fe + O2 🡪 Fe2O3, 25.0 g of iron are mixed with 30.0 g of oxygen.

 a. Which is the limiting reactant?

 b. What is the theoretical yield of product?

 c. If 32.5 g of iron (III) oxide are collected from the experiment, what is the percent yield?

6. Aqueous solutions of barium chloride and sodium phosphate are mixed, forming a precipitate.

 a. Write the molecular, ionic, and net ionic equations.

 b. If 25.0 mL of 2.0 M barium chloride are mixed with 40.0 mL of 0.75 M sodium phosphate, find the mass of the precipitate and the molarities of all ions remaining in solution.

7. Show the ionizations of the weak diprotic acid oxalic acid. Label each species as acid or base.

8. Sulfuric acid reacts with calcium hydroxide. Write a molecular, ionic, and net ionic equation for the neutralization.

9. a. How many grams of calcium nitrate are needed to make 500.0 mL of a 0.750 M solution?

 b. How much of the solution must be diluted to make 200.0 mL of a 0.450 M solution?

10. Find the oxidation numbers of the elements in the following.

 a. Na2SO4

 b. N2O5

 c. P2O74-

11. Write an example of a single replacement, combustion, combination, decomposition, and disproportionation reaction. Determine which element is oxidized and reduced in each.