Section 2C Review

Part 1: Determine the molar mass of the following compounds:

1) ammonium chloride _____

2) potassium phosphate _____

3) copper (II) carbonate _____

4) magnesium iodide _____

5) lithium sulfide _____

6) manganese (V) iodate _____

Part 2: Answer the following questions about percent composition:

7) Determine the percent composition of each element in the compound $AgNO_3$

8) A 3.05 g compound is made of 21.6 % Mg, 21.4 % C and 57.0 % O. What is the mass of each element in the compound?

Part 3: Perform the following mole conversions (show set up with unit factors):

9) 42.0 g of sodium hydroxide ----> moles

10) 45.0 g chlorine gas -----> liters (at STP)

11) 7.67×10^{25} atoms helium ---> liters (at STP)

12) 98.0 g strontium nitrate ----> molecules

13) 7.35×10^{22} atoms copper ----> moles

14) 1.2045 moles fluorine gas ---> liters (at STP)

Part 4: Answer the following questions about empirical and molecular formulas:

15) The analysis of an organic compound finds the materials make up is 40.7 % C, 5.1% H and 54.2% O by mass. The molar mass of the compound is 236.18 g/mol. What is the empirical and molecular formula for the compound?

16) Determine the empirical and molecular formula of the compound listed in number 8 above if the molar mass of the compound is 112.3 g/mol.

Part 5: Answer the following questions about concentrations:
17) Calculate the molarity of a solution in which 60 g of $CaCl_2$ is dissolved in 250 ml of water.

18) How many mL of 0.90 M HCl solution need to be measured out in order for the solution to contain 1.5 g of HCl?

19) What is the mass of $NaClO_3$ solute dissolved in 3.0 kg of water to make a 0.25 m solution.

20) Calculate the mole fraction of sulfur dioxide in air when a sample of air has 1.5 g of SO_2 in 40 g of nitrogen and 15 g of oxygen.