PLI Sheet #3

Monday, 7 June 2021

1. When the following elements or compounds are present in ionic compounds, what will their charge be? Write the symbol and charge, e.g. Chlorine: Cl^-

   a. Nitrogen:
   b. Oxygen:
   c. Bromine:
   d. Magnesium:
   e. Rubidium:
   f. Silver:
   g. Nitrite:
   h. Phosphate:
   i. Ammonium:

2. Balance the following ionic compounds:

   Na_NO_2 Be(ClO)_

   $Mg_3(PO_4)$_ Li(OH)_ Na_(HPO_4)

3. Mercury forms a compound with chlorine that is 73.9% mercury and 26.1% chlorine by mass. What is the empirical formula?

4. Complete combustion of a 20.10g sample of naphthalene in oxygen yields 69.00g of CO_2 and 11.30g of H_2O. Determine the empirical formula of naphthalene.

5. Isoprene is a compound that can be polymerized to form synthetic rubber. It is composed (by mass) of 88.17% carbon and 11.83% hydrogen. Its molar mass is 136.10g/mol. What are the empirical and molecular formulae for isoprene?

6. A large family of boron-hydrogen compounds has the general formula B_xH_y. One member of this family contains 88.5% boron (by mass); the remainder is hydrogen. What is its empirical formula?

7. Valproic acid, which is used to treat seizures and bipolar disorder, is composed of C, H, and O. A 0.165-gram sample is combusted, yielding 0.166g of H_2O and 0.403g of CO_2. The molar mass of valproic acid is 144g/mol. What are the empirical and molecular formulas?

   General combustion reaction: $C_xH_yO_z + O_2 \rightarrow CO_2 + H_2O$