Chemistry – Chapter 10 Book problems #3 (summer school): % composition, empirical & molecular formulas

1. Which of the following compounds has the highest percent of iron by mass?

   a. $FeCl_2$ b. $Fe(C_2H_3O_2)_3$ c. $Fe(OH)_2$ d. FeO

2. What is an empirical formula? Which of the following molecular formulas are also empirical formulas?

   a. ribose ($C_5H_{10}O_5$)

   b. ethyl butyrate ($C_6H_{12}O_2$)

   c. chlorophyll ($C_{55}H_{72}MgN_4O_5$)

   d. DEET ($C_{12}H_{17}ON$)

3. Which of the following can be classified as an empirical formula?

   a. S_2Cl_2 b. $C_6H_{10}O_4$ c. Na_2SO_3

4. What is the molecular formula for each compound? Each compound's empirical formula and molar mass are given.

   a. CH_2O, 90 g/mol

   b. HgCl, 472.2 g/mol

5. Determine the empirical formulas of compounds with the following percent composition:

   a. 429% C and 57.1% O

   b. 32.00% C, 42.66% O, 18.67% N, and 6.67% H

   c. 71.72% Cl, 16.16% O, and 12.12% C

6. Determine the molecular formula for each compound.

   a. 94.1% O and 5.9% H; molar mass = 34 g/mol

   b. 50.7% C, 4.2% H, and 45.1% O; molar mass = 142 g/mol

   c. 56.6% K, 8.7% C, and 34.7% O; molar mass = 138.2 g/mol