## 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 <sub>5</sub> H <sub>10</sub> O <sub>5</sub> )
b. ethyl butyrate (C <sub>6</sub> H <sub>12</sub> O <sub>2</sub> )
c. chlorophyll ( $C_{55}H_{72}MgN_4O_5$ )
d. DEET (C <sub>12</sub> H <sub>17</sub> 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. CH₂O, 90 g/mol

- 5. Determine the empirical formulas of compounds with the following percent composition:
  - a. 42.9% C and 57.1% O

b. HgCl, 472.2 g/mol

- 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