Practice with Calculating Formulas

On your own paper answer the following questions on empirical and molecular formulas, and show all work where appropriate!!!

1. Find the percent composition of a compound that contains 2.63 g of Carbon, 0.370 g of Hydrogen, and 0.580 g of Oxygen in a 3.58 g sample of the compound.
2. Find the percent composition of a compound that contains 2.7369 g of Chlorine, 0.4116 g of Oxygen and 0.7971 g of Phosphorus in a 3.9460 g sample of the compound.
3. A sample of an unknown compound with a mass of 0.847 g has the following composition: 50.51 % Fluorine and 49.49% Iron. When this compound is decomposed into its elements, what mass of each element would be recovered?
4. What is the empirical formula for $C_{12}H_{24}O_6$? And Hg_2I_2? And C_6H_6?
5. Find the empirical formula of a compound, given that the compound is found to be 47.9 % Zinc and 52.1 % Chlorine by mass.
6. Chemical analysis of citric acid shows that it contains 37.51% C, 4.20% H, and 58.29% O. What is its empirical formula?
7. Chemical analysis of tetraethyl lead, an additive once used in gasoline, shows that it contains 29.71% C, 6.22% H, and 64.07% Pb. What is its empirical formula?
8. A 175.0g sample of a flavor enhancer, monosodium glutamate (MSG), contains 56.15 g C, 9.43 g H, 74.81 g O, 13.11 g N, and 21.49 g Na. What is its empirical formula?
9. What is the molecular formula of the molecule that has an empirical formula of CH_2O and a molar mass of 120.12g/mol?
10. A compound was analyzed in a lab to determine its empirical formula. Decomposition of the compound at STP produced 9.00 g C, 16.8 L H_2, and 2.80 L O_2.
    a. What is the empirical formula for this compound?
    b. The molar mass of the compound is 188 g/mol. What is its molecular formula?

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