CH 151 Extra Credit Assignment

One point per question, up to five points total. Include the final answers to each problem on this sheet at the bottom. On separate paper, provide detailed steps showing all work required to solve each problem. Staple these page(s) to the back of this sheet.

This assignment is due at 8 AM on Monday, July 8. Late assignments will not be accepted.

The questions:

1. Calculate the weight percent of lead in PbS, lead(II) sulfide. What mass of lead (in grams) is present in 10.0 g of PbS?
2. Succinic acid occurs in fungi and lichens. Its empirical formula is C_2H_3O_2 and its molar mass is 118.1 g/mol. What is its molecular formula?
3. A large family of boron-hydrogen compounds has the general formula B\_xH\_y. One member of this family contains 88.5% B; the remainder is hydrogen. Which of the following is its empirical formula: BH\_2, BH\_3, B\_2H\_5, B\_3H\_7, or B\_5H\_11?
4. If Epsom salt, MgSO\_4\cdot xH\_2O, is heated to 250 °C, all the water of hydration is lost. On heating a 1.687 g sample of the hydrate, 0.824 g of MgSO\_4 remains. How many molecules of water occur per formula unit of MgSO\_4?
5. Fluorocarbonyl hypofluorite is composed of 14.6% C, 39.0% O and 46.3% F. If the molar mass of the compound is 82 g/mol, determine the empirical and molecular formulas for the compound.

The answers: (provide all work on separate pages, stapled to the back of this sheet)

Answer #1: Weight percent Pb in PbS: __________ Mass of lead (g): __________

Answer #2: Molecular Formula: ________________

Answer #3: Empirical Formula: ________________

Answer #4: Number of water molecules per MgSO\_4: __________

Answer #5: Empirical Formula: ________________
Molecular Formula: ________________