Name: _____   Section: _____

Data and Calculations for Experiment 4

A. Qualitative Determination of the Released Liquid

    1. Record observations regarding the solid before, during, and after heating the copper(II) sulfate pentahydrate.

    2. Compare and record observations after adding liquid to the anhydrous cobalt(II) chloride test strips.

    3. Compare and record observations after adding liquid to the residue on the watch glass.

    4. What conclusions can you draw from the above observations?

    5. Write the balanced chemical equation for the decomposition of copper(II) sulfate pentahydrate, include phases.

B. Quantitative Determination of Mass Lost in a Hydrate

                              Sample number: _____

    1. Mass of crucible and cover   _____

    2. Mass of crucible, cover and sample   _____

    3. Mass of crucible, cover and sample after 1st heating   _____

    4. Mass of crucible, cover and sample after 2nd heating   _____

    5. Mass of crucible, cover and sample after 3rd heating   _____

    6. Mass of sample after final heating   _____

    7. Mass of original sample   _____

    8. Total mass lost by sample   _____

    9. Percentage of water in sample   _____

10. Ask your instructor for the name of the anhydrous salt of your residue and solve for the formula and name of your original unknown hydrate.

Formula: _____   Name: _____

11. Is it possible that the decrease in mass from heating is something other than water?

Yes or *No* Explain and include an example.

Pre-Lab (to be completed before coming to lab)

A student heated a hydrated salt sample with an initial mass of 2.244 grams. After the second heating, the mass had decreased to 1.798 grams. Make the assumption that all the lost mass is water.

a) Solve for the mass lost.

b) Calculate the percentage of water in the original hydrated salt sample.

c) The instructor has informed you that the sample is a hydrate of $ZnSO_3$. Use the information above and molar masses from the periodic table to solve for the moles of $ZnSO_3$ in the residue and the moles of H_2O lost.

d) Solve for the X in the formula of the hydrate of $ZnSO_3 \cdot XH_2O$ and name it.

Moles of water / moles of $ZnSO_3 = X$

Formula: _____   Name: _____