Chemistry 65 NAME:_____

EXPERIMENT # 11

FORMULA OF A HYDRATE
REPORT FORM

Part 1: Determining the Water of Hydration

Data & Observation:

(All data should be recorded with the proper units and number of significant digits)

Mass of empty crucible & cover: _____

Mass of crucible, cover & sample: _____

Mass of crucible, cover & sample (after 1st heating) _____

Mass of crucible, cover & sample (after 2nd heating) _____

Calculations:

(For each step show calculations with proper number of significant figures)

Mass of hydrated crystals (sample): _____

(Show work here)

Mass of anhydrous crystals: _____

(Show work here)

Percent of water in sample: _____

(Show work here)

Identity of unknown sample: _____

(Briefly but clearly explain the rationale and justification for your identification)

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Part 2: Hygroscopic and Efflorescent Samples:
Briefly describe the changes you observe for each sample after sitting in air for1 hour:

calcium chloride: _____

zinc sulfate heptahydrate:_____

iron (III) chloride:_____

Based on your observations above, determine which samples are hygroscopic and which are efflorescent.

Hygroscopic samples:_____

Efflorescent samples:_____

Part 3: Determining Hydrates

Identify each substance listed below as hydrate or not, and describe observations that led you to this determination:

Compound	Hydrate (Y/N)	Observations
$CuSO_4$		
NaCl		
$CaCO_3$		
$MgSO_4$		

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Questions:

1. Describe the criteria and method used to identify your unknown in this experiment.

2. A sample of sodium sulfate hydrate weighing 63.50 g is placed in a crucible and heated till a constant mass of 45.99 g is obtained. Based on this information, determine the formula of the hydrate.

3. A hydrate is determined to be 45.43% water and 54.57% $CoCl_2$. Find the chemical formula and name for this hydrate.

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4. Two students in class are given different masses of 2 unknowns and asked to identify them. Student 1 claims that the unknowns are different solely based on the fact that the mass of water lost for each are different. Student 2 disagrees. Which student is correct? Give supporting explanations for your choice.