

Name \_\_\_\_\_

Hydrates

**A) Determine the gram formula mass of the following hydrates:**

1)  $\text{CuSO}_4 \bullet 5 \text{H}_2\text{O}$

2)  $\text{CaCl}_2 \bullet 2 \text{H}_2\text{O}$

**B) Determine the percent by mass of water in the following questions:**

1)  $\text{CaCl}_2 \bullet 2 \text{H}_2\text{O}$  (use your answer from B2 to help you!)

% of water: \_\_\_\_\_

2) A 8.60 gram sample of hydrated crystal is heated to a constant mass of 6.22 grams. This means all of the water has been driven out by the heat.

a) Calculate the mass of water that was driven out: \_\_\_\_\_

b) Calculate the percent, by mass, of water in this hydrate.

% of water: \_\_\_\_\_

3) An empty evaporating dish is found to have a mass of 32.982 grams. A sample of hydrated crystal is placed into the evaporating dish, and the combined mass is 36.553 grams. The evaporating dish is placed on a ring stand and heated gently over a Bunsen burner flame, stirring constantly so that the water does not cause the drying crystal to clump together. The dish is removed from the flame, and massed, then reheated, then massed again, until the mass remains a constant 35.378 grams.

a) What was the mass of hydrated crystal that was put into the dish? \_\_\_\_\_

b) What is the substance called after the water has been driven out? \_\_\_\_\_

c) What was the mass of water that was driven out of the hydrate? \_\_\_\_\_

d) Calculate the percent, by mass, of water in the hydrate.

% of water: \_\_\_\_\_