**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 10/19/22**

**CH 111 Workshop 5 – Chapter 5**

1. A 25.5 g aluminum block is warmed to and plunged into an insulated beaker containing 55.2 g of water initially at 22.2 . Immediately after, 50.0 mL of ethanol (density = 0.789 g/mL) at 17.0 is added to the beaker, and the mixture of aluminum, water, and ethanol reach thermal equilibrium. What is the final temperature of the mixture? The specific heats of aluminum, water, and ethanol are 0.900 , 4.184 , and 2.46 , respectively.
2. In a coffee-cup calorimeter, 100.0 mL of 0.500 M HCl and 300.0 mL of 0.400 M are mixed to yield the following reaction

The two solutions were initially at and the final temperature is 24.40. Calculate the heat of this reaction in kJ/mol of formed. Assume that the solution has a density of 1.00 g/mL and a specific heat capacity of 4.184 .

1. If the enthalpies of formation of and are kJ and kJ, respectively, determine the standard enthalpy of formation of at 25 and 1 bar.
2. Determine for the reaction

from these data

1. Answer the following about the reaction below
   1. How many grams of are necessary to produce kJ of energy?
   2. How many molecules of carbon dioxide are produced in a reaction producing kJ of energy?
   3. Calculate the enthalpy (in kJ) associated with the combustion of 13.2 g of .