**CHE1031 Lecture 8 Quiz**

Please read questions carefully, answer as completely as possible, and ask for clarification (by email) if needed. Since this is a take-home quiz, use all the resources at your command, including a periodic table. Remember that you’ll be taking exams on your own.

**8.2: Transferring energy as heat & work**

1. Energy can be transferred as either \_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_.

**8.3: System vs. Surroundings**

2. Thinking back to our any of our experiments, describe:  
a. the system

b. the surroundings

**8.4: First law of thermodynamics**

3. State the First Law of Thermodynamics as completely as possible.

**8.5: Enthalpy**

4. A chemical reaction that absorbs heat from its surroundings is said to be \_\_\_\_\_\_\_\_\_\_\_\_ and has a \_\_\_\_\_\_\_\_\_ΔH at constant pressure.

a. endothermic, positive

b. endothermic, negative

c. exothermic, negative

d. exothermic, positive

e. exothermic neutral

5. Consider the following reaction:

2Mg(s) + O2(g) 🡪 2MgO(s) ΔH = -1204 kJ

a. Is the reaction endo- or exothermic?

b. How much heat is transferred when 2.4 g of Mg reacts completely at constant

pressure?

**8.6: Calorimetry**

6. The specific heat of ethylene glycol is 2.42 J/g-C. How many J of heat are needed to raise the temperature of 62.0 g of ethylene glycol from 13.1 to 40.5 C?

7. Given the data provided (equations 1 & 2), use Hess’s Law to calculate the enthalpy of reaction for equation 3.

(1) Fe2O3(s) + 3CO(s) 🡪 2Fe(s) + 3CO2(g) ΔH = - 28.0 kJ

(2) 3Fe(s) + 4CO2(g) 🡪 4CO(g) + Fe3O4(s) ΔH = + 12.5 kJ

(3) 3Fe2O3(s) + CO(s) 🡪 CO2(g) + 2Fe3O4(s) ΔH = ???