OER 9.1-9.2

CHE 111 - Homework - Ch 9a
Thermodynamics and Energy - Basics

Score: _____/45

Name: _____ Date: _____

[4 pt] 1. Define the term Energy (using words, and an equation). What are the typical units of Energy (3 at least)? What are the two classifications of Energy?

[4 pt] 2. Define kinetic energy and potential energy. Give an example of each.

[4 pt] 3. Define heat and temperature. What are the typical units for each? Which is an Intensive property and which is an Extensive property?

[2 pt] 4. What is the first law of thermodynamics? What is an alternate name for this law?

[10 pt] 5. Sketch a picture showing what is meant by the terms System and Surroundings. Include in your sketch the sign conventions for energy flowing into or out of they system. Include in your sketch the sign conventions for work flowing into or out of the system. In addition, complete the following table.

Statement	**Sign of ΔE**
Energy that flows from the system to the surrounding	
The change in energy for an exothermic reaction	
If energy in a chemical equation is written as a product	
If energy being added to a system	
Work is performed on the system	

[4 pt] 6. For each of the variables in the equation $q = ms\Delta T$ ($q = mC_s\Delta T$ in OER), define what each represents and the typical units of each.

[4 pt] 7. How many joules of energy are required to heat a cup of coffee from 20.℃ to 80.℃. Assume the cup of coffee contains 100.0 grams of water. 7. _____

[4 pt] 8. How many joules of energy are required to heat a 250.0 gram gold brick from 20.℃ to 250.℃. 8. _____

[4 pt] 9. A 200.0 gram metal bar is heated from 20.0 ℃ to 100.0 ℃. The process used 5.866 kJ of energy, what is the specific heat of the metal? What is the most likely identity of the unknown metal? Show work to support your answer. 9. _____

[5 pt] 10. What is the final temperature of a system where 125.0 grams of Pb is heated to 125 ℃and is dropped into 100.0 mL of water at 20.0℃? 10. _____