CHE 101 - Homework - Ch 3i

p. 68-70 **Heat and Specific Heat** Score: _____/35

Name: _____ Date: _____

Show all work for problems to receive full credit.

[4 pt] 1. Define the terms Heat and Temperature. Include the typical units for both. Which is an intensive property and which is an extensive property?

[4 pt] 2. 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. 2. _____

[4 pt] 3. How many joules of energy are required to heat a 250.0 gram gold brick from 20.℃ to 250.℃. 3. _____

[4 pt] 4. How many joules of energy are required to heat 2.5 L of ethyl alcohol from 20.0℃ to 80.0℃? 4. _____

[4 pt] 5. What mass of lead (in grams) when heated from 25 ℃ to 225 ℃ requires 466 kJ of energy? 5. _____

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[5 pt] 6. A 200.0 gram metal bar is heated from 20.0 ℃ to 100.0 ℃. The process used 5.866 kJ of energy. Show work to support your answer.

(a) What is the specific heat of the metal? 6(a) _____

(b) What is the most likely identity of the unknown metal? 6(b) _____

[5 pt] 7. What is the amount of energy required to to heat a cup of water weighing 400.0 grams from 20.0 ℃ to 90.0 ℃? What mass of coal in grams must be burned to accomplish this? (The heat of combustion (energy created when a gram of coal is burned) of a sample of coal is 5500 cal/g.)

(a) Amount of energy required to heat a cup of water 7(a) _____

(b) Amount of coal (grams) required. 7(b) _____

[5 pt] 8. At 6:00 p.m., you put a 250.0 gram copper pan containing 750.0 mL of water (all at room temperature, 25 ℃) on the stove. The stove supplies 628 J/s of heat. How long (in minutes) will it take the water to boil? (Hint: break the problem into three steps, how much heat is required to heat the pan, the water, and how long will it take the stove to supply that total amount of heat.) Explain. 8. _____