

Homework #4

Due Tue Feb 16th

Chem 192 – Spring 2010
Cañada College

Name: _____

Student ID: _____

Total Possible Points: 10

Suggested chapter 4 problems to review: 2, 8a, 8c, 8e, 10a, 10c, 10e, 14, 18, 22, 26

1. (one and ½ points) The following processes either require energy or release it. If the process requires energy label it with a +. If the reaction releases energy label it with a –.

- (a) Boiling water into steam. _____
- (b) A roller coaster being pulled uphill. _____
- (c) A roller coaster running down a hill. _____
- (d) A light stick glowing. _____
- (e) Hydrogen burning in the sun. _____
- (f) An apple growing on a tree. _____

2. (one point) List (a) two physical properties and (b) two chemical property of water.

- (a) _____
- (b) _____

3. (two points) Electricity is run through a sample of 100.0 grams of water (H_2O) consuming all the water and producing 11.2 grams of hydrogen (H_2) gas.

(a) Is this a chemical change or a physical change?

(b) What weight of oxygen (O_2) gas is produced?

(c) Is there more potential energy in the original water or in the resulting mixture of hydrogen and oxygen gas?

(d) If the hydrogen and oxygen gas are ignited they produce water and release heat and light. Is the heat and light an example of potential or kinetic energy?

4. (two and ½ points) If 40.0 kJ of energy are absorbed by 500.0 g of water at 10.0 °C the temperature of the water rises. (a) Is this a physical change or a chemical change? (b) What is the final temperature of the water? The specific heat of water is 4.184 J/g°C.

5. (three points) A 110.0 g sample of a gray colored, unknown pure metal was heated to 92.0° and put into an insulated container containing 75.0 g of water at 21.0 °C. When the heated metal was put into the water the temperature of the water rose until a final temperature of 24.2 °C was reached. The specific heat of water is 4.184 J/g°C. You may need data in the table on page 73 of your textbook.

- a) What is the heat capacity of the metal?
- b) Is the metal more likely iron or lead?