Chemistry 141 Name

Cary Willard

Quiz 5a (20 points) October 8, 2009

All work must be show to receive credit. Remember, significant figures are important!

|  |  |  |
| --- | --- | --- |
| Specific heat ice | 2.06 J/g oC | 37.1 J/mol oC |
| Specific heat water | 4.184 J/g oC | 75.4 J/mol oC |
| Specific heat steam | 2.0 J/g oC | 36 J/mol oC |
| Heat of fusion (water) | 333 J/g | 6.01 kJ/mol |
| Heat of vaporization (water) | 2260 J/g | 40.7 kJ/mol |

1. (10 points) Steam at a temperature of 110oC is bubbled through cool water with a temperature of 25oC. If 350 grams of water is heated to 72.3oC by the steam, what mass of steam was added to the water. (All of the steam condenses into the water.)
2. (10 points) When a 15.3 gram sample of a acetylene, C2H2, is burned with excess oxygen in a bomb calorimeter the temperature increases from 21.2oC to 84.6oC. The calorimeter contains 750.0 g of water and has a calorimeter constant of 1.20 kJ/K.
   1. Calculate the q of the reaction. (Remember sign conventions!)
   2. Calculate q in kJ/g for the reaction.
   3. Calculate H in kJ/mol for the reaction.

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Quiz 5b (20 points) October 8, 2009

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|  |  |  |
| --- | --- | --- |
| Specific heat ice | 2.06 J/g oC | 37.1 J/mol oC |
| Specific heat water | 4.184 J/g oC | 75.4 J/mol oC |
| Specific heat steam | 2.0 J/g oC | 36 J/mol oC |
| Heat of fusion (water) | 333 J/g | 6.01 kJ/mol |
| Heat of vaporization (water) | 2260 J/g | 40.7 kJ/mol |

1. (10 points) Steam at a temperature of 110oC is bubbled through cool water with a temperature of 25oC. If 450 grams of water is heated to 62.3oC by the steam, what mass of steam added to the water. (All of the steam condenses into the water.)
2. (10 points) When a 15.3 gram sample of a ethane, C2H6, is burned with excess oxygen in a bomb calorimeter the temperature increases from 21.2oC to 84.6oC. The calorimeter contains 850.0 g of water and has a calorimeter constant of 0.790 kJ/K.
   1. Calculate the q of the reaction. (Remember sign conventions!)
   2. Calculate q in kJ/g for the reaction.
   3. Calculate H in kJ/mol for the reaction.