Thermochemistry & Calorimetry

STUDENT PRACTICE WORKSHEET

Name: _____ Date: _____

Directions: Circle the best answer for 1–6. Show your full reasoning and units for 7–8. Compare with the separate key after completing the page.

Part A — Concept checks

1. **An exothermic reaction has…**

   A. positive ΔH B. negative ΔH C. zero ΔH always D. no heat transfer

2. **What is ΔT when Tinitial = 22 °C and Tfinal = 31 °C?**

   A. −9 °C B. 9 °C C. 53 °C D. 0 °C

3. **Heat capacity is used to connect heat with…**

   A. volume only B. pressure only C. temperature change D. atomic number

4. **A 10.0 g sample with c = 2.0 J/(g °C) warms by 5.0 °C. q = …**

   A. 4.0 J B. 25 J C. 100 J D. 0.25 J

5. **The surroundings gain +200 J in an insulated idealization. The system loses…**

   A. +200 J B. −200 J C. 0 J D. +400 J

6. **Which quantity is a state function?**

   A. heat q B. work w C. enthalpy H D. path length

Part B — Application and explanation

7. How much heat warms 75.0 g of water from 20.0 °C to 28.0 °C?

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8. Explain why this guideline matters, with an example of what could go wrong if you ignore it: The heat gained by water is not automatically the reaction enthalpy. In an insulated calorimeter, $q_{reaction} \approx -q_{surroundings}$ after considering all relevant heat capacities.

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REFERENCE RELATIONSHIP

$q = mc\Delta T$; at constant pressure with only PV work, $\Delta H = q_p$