

$$17.1 \text{ (1)} \quad \frac{200.0 \text{ Calories}}{1} \cdot \frac{10^3 \text{ cal}}{1 \text{ Cal}} \cdot \frac{4.184 \text{ J}}{1 \text{ cal}} \cdot \frac{1 \text{ kJ}}{10^3 \text{ J}} = \boxed{836.8 \text{ kJ}}$$

$$2 \quad C = ?$$

$$m = 25.0 \text{ g}$$

$$q = 525.0 \text{ cal}$$

$$\Delta T = 15.0^\circ \text{C}$$

$$q = mc\Delta T$$

$$525.0 = 25.0 c (15.0)$$

$$c = \boxed{1.40 \text{ cal/g}^\circ \text{C}}$$

$$\boxed{5.85 \text{ J/g}^\circ \text{C}} \text{ or}$$

$$3 \quad m = 100.0 \text{ g}$$

$$q = 1255.0 \text{ J}$$

$$c = 2.06 \text{ J/g}^\circ \text{C}$$

Handout  $\rightarrow 2.1 \text{ J/g}^\circ \text{C}$

$$\Delta T = ?$$

$$q = mc\Delta T$$

$$1255.0 = 100.0 (2.06) \Delta T$$

$$\Delta T = \boxed{6.09^\circ \text{C}} \text{ or}$$

$$w/c = 2.1 \text{ then } \Delta T = \boxed{6.0^\circ \text{C}}$$

$$4 \quad q = ?$$

$$m = 100.0 \text{ g}$$

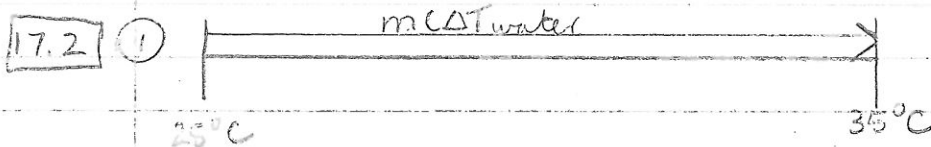
$$\Delta T = 120.0^\circ \text{C}$$

$$c = 0.90 \text{ J/g}^\circ \text{C}$$

$$q = mc\Delta T$$

$$= 100.0 (0.90) (120.0)$$

$$= \boxed{10800 \text{ J or } 11,000 \text{ J}}$$



$$q = 150.0 (4.18) (10^\circ) = 6270 \text{ J} \Rightarrow 6300 \text{ J} = \boxed{6.3 \text{ kJ}}$$

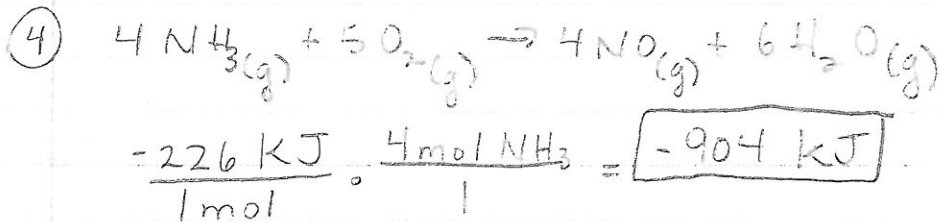
$$2 \quad \frac{15.0 \text{ g Ca(OH)}_2}{1} \cdot \frac{1 \text{ mol Ca(OH)}_2}{74.10 \text{ g}} = \frac{202 \text{ mol}}{1} \cdot \frac{-65.2 \text{ kJ}}{1 \text{ mol}} = \boxed{-13.2 \text{ kJ}}$$

$$\text{or } \boxed{-13,200 \text{ J}}$$

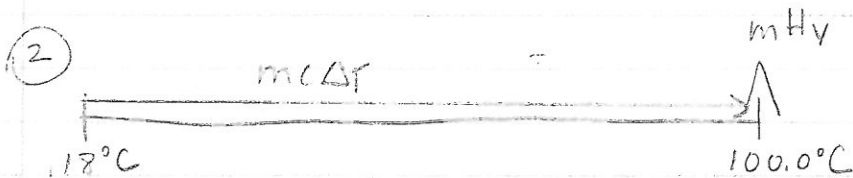
$$3 \quad \frac{52.4 \text{ g CH}_4}{1} \cdot \frac{1 \text{ mol CH}_4}{16.05 \text{ g}} = \frac{3.26 \text{ mol}}{1} \cdot \frac{-390.2 \text{ kJ}}{1 \text{ mol}} = \boxed{-2902 \text{ kJ}}$$

$$= \boxed{-2900 \text{ kJ}}$$

$$= \boxed{-2,900,000 \text{ J}}$$



17.3 ①  $q_f = m H_f = 35.0 \text{ g} (334 \text{ J/g}) = 11,690 \text{ J} \Rightarrow 11,700 \text{ J} = \boxed{11.7 \text{ kJ}}$



$q = 190.0 (4.18) (82.0) + 190.0 (2260) = 494,524$

$= \boxed{494,000 \text{ J}} = \boxed{494 \text{ kJ}}$

③  $\frac{2.543 \text{ mol NaOH}}{1} \cdot \frac{-445.1 \text{ kJ}}{1 \text{ mol}} = -1131.8593 \rightarrow \boxed{-1132 \text{ kJ}}$