

③

$$\Delta H_s = -q_{H_2O} \quad *$$

$$nH_s = -vC\Delta T$$

⑤

Cu

$$m = 100. \text{g}$$
$$T_i = 80.0^\circ\text{C}$$

H₂O

$$m = 30.0 \text{g}$$
$$T_i = 25.0^\circ\text{C}$$

$$T_f = ?$$

$$q_{\text{Cu}} = -q_{\text{H}_2\text{O}}$$

$$mC\Delta T = -mC\Delta T$$

$$(100. \text{g})(0.385 \frac{\text{J}}{\text{g}^\circ\text{C}})(T_f - 80.0^\circ\text{C}) =$$

$$-(30.0 \text{g})(4.19 \frac{\text{J}}{\text{g}^\circ\text{C}})(T_f - 25.0^\circ\text{C})$$

$$38.5(T_f - 80.0^\circ\text{C}) = -125.7(T_f - 25.0^\circ\text{C})$$

$$38.5T_f - 3080 = -125.7T_f + 3142.5$$

$$38.5T_f + 125.7T_f = 3142.5 + 3080$$

$$164.2T_f = 6222.5$$

$$T_f = 37.9^\circ\text{C}$$

$$-4(x-2) = -3(x-3)$$

$$-4x + 8 = -3x + 9$$

$$\boxed{-1 = x}$$

⑥ NaCl

$$m = 45.0 \text{ g}$$

$$H_f = 0.93 \text{ kJ/mol}$$

H₂O

$$V = 75.0 \text{ mL}$$

$$\Delta T = ?$$

$$\Delta H_s = -q$$

$$nH_s = -vC\Delta T$$

$$\left(\frac{45.0 \text{ g}}{58.44 \text{ g/mol}}\right)\left(0.93 \frac{\text{kJ}}{\text{mol}}\right) = -(0.0750 \text{ L})(4.19 \frac{\text{kJ}}{\text{L}\cdot^\circ\text{C}})(\Delta T)$$

$$0.716 = -0.314(\Delta T)$$

$$\Delta T = -\frac{0.716}{0.314}$$

$$\boxed{\Delta T = -2.28^\circ\text{C}}$$

