

## Answers to Even # Homework Problems (8<sup>th</sup> Edition)

### Chapter 6

$$6.32 \quad V = \frac{nRT}{P} = \frac{(0.0100 \text{ mol})(0.0821)(308 \text{ K})}{(0.980 \text{ atm})} = 0.258 \text{ L}$$

$$6.40 \quad n = \frac{PV}{RT} = \frac{(0.967 \text{ atm})(0.660 \text{ L})}{(0.0821)(300 \text{ K})} = 0.0259 \text{ moles}$$

$$\text{M.W.} = \frac{\text{grams}}{\text{mole}} = \frac{3.30 \text{ g}}{0.0259 \text{ moles}} = 127 \frac{\text{g}}{\text{mol}}$$

$$6.60 \quad \text{Standard temperature} = 0^\circ\text{C}, \text{ liquid } 6.64 \quad q = m s \Delta T = (200.6 \text{ grams}) (0.0332 \frac{\text{cal}}{\text{g}^\circ\text{C}}) (36 \text{ C}^\circ) = 240 \text{ cal}$$

$$6.68 \quad (18 \text{ g})(80 \frac{\text{cal}}{\text{g}}) + (18 \text{ g})(1.0 \frac{\text{cal}}{\text{g}^\circ\text{C}})(23 \text{ C}^\circ) = 1900 \text{ cal}$$

$$6.70 \quad (\text{a}) \quad (10 \text{ g})(540 \frac{\text{cal}}{\text{g}}) + (10 \text{ g})(1.0 \frac{\text{cal}}{\text{g}^\circ\text{C}})(63 \text{ C}^\circ) = 6000 \text{ cal}$$

$$(\text{b}) \quad (10 \text{ g})(1.0 \frac{\text{cal}}{\text{g}^\circ\text{C}})(63 \text{ C}^\circ) = 630 \text{ cal}$$

(c) Steam releases more heat

6.98 Water has stronger intermolecular forces (hydrogen bonds) than H<sub>2</sub>S

### Chapter 7

7.14 Water

7.16 (a) Both solids (b) Coffee is a solid dissolved in a liquid

(c) Both gas (d) CO<sub>2</sub> gas in a liquid

7.22 Only (c) is non-polar (like benzene)

7.24 (a) Yes (b) No (c) Yes (d) No (CCl<sub>4</sub> is non-polar)

7.26 Warmer water doesn't dissolve as much gas (O<sub>2</sub>) as cooler water

$$7.36 \quad (\text{a}) \quad \frac{0.630 \text{ mol}}{0.375 \text{ L}} = 1.68 \text{ M}$$

$$(\text{b}) \quad \frac{0.241 \text{ mol}}{0.725 \text{ L}} = 0.333 \text{ M}$$

$$(\text{c}) \quad \frac{0.0704 \text{ mol}}{2.35 \text{ L}} = 0.0300 \text{ M}$$

$$7.38 \quad 0.00025 \text{ g HCl} = 6.9 \times 10^{-6} \text{ moles}; V = \frac{n}{M} = \frac{6.9 \times 10^{-6}}{0.1} = 6.9 \times 10^{-5} \text{ L} = 0.069 \text{ mL}$$

$$7.62 \quad \frac{3.80 \text{ mol}}{1 \text{ L}} \approx 3.80 \text{ M}; \Delta T \approx k_f m_i = (1.86 \frac{\text{C}^\circ}{\text{M}})(3.80 \text{ M})(1) = 7.1 \text{ C}^\circ; \text{Freezes at } -7.1^\circ\text{C}$$

$$7.64 \quad m = \frac{\Delta T}{k_f i} = \frac{5 \text{ C}^\circ}{(1.86)(2)} = 1.34 \text{ moles}; 1.34 \text{ moles} \times 58.4 \frac{\text{g}}{\text{mol}} = 78.3 \text{ grams}$$