

1991

Don't worry about "colligative properties" ... later

$$(a) 7.2 \text{ g H}_2\text{O} \times \frac{2.0 \text{ g H}}{18.0 \text{ g H}_2\text{O}} \times \frac{1.0 \text{ mol H}}{1.0 \text{ g H}} = .80 \text{ mol H}$$

$$\begin{array}{cc} \text{C} & \text{H} \\ \frac{.32}{.32} & \frac{.80}{.32} \end{array}$$

$$7.2 \text{ L CO}_2 \times \frac{1 \text{ mol CO}_2}{22.4 \text{ L CO}_2} \times \frac{1 \text{ mol C}}{1 \text{ mol CO}_2} = .32 \text{ mol C}$$

$$\begin{array}{cc} \text{C}_1 & \text{H}_2.49 \\ \times 2 & \times 2 \\ \hline \text{C}_2 & \text{H}_5 \end{array}$$

2000

a)	B.e	9.012	} = 97.034
	C2	24.022	
	O4	64.00	
	3H2O	54.05	
		<u>151.084</u>	g/mol

$$\% \text{C} = \frac{24.022 \text{ g C}}{151.084 \text{ g}} \times 100 = \boxed{15.90\% \text{ C}}$$

$$b) (i) 3.21 \text{ g BeC}_2\text{O}_4 \cdot 3\text{H}_2\text{O} \times \frac{1 \text{ mol BeC}_2\text{O}_4 \cdot 3\text{H}_2\text{O}}{151.084 \text{ g}} \times \frac{1 \text{ mol BeC}_2\text{O}_4}{1 \text{ mol}} \times \frac{97.034 \text{ g}}{1 \text{ mol}} = \boxed{2.06 \text{ g BeC}_2\text{O}_4}$$

$$(ii) 3.21 \text{ g BeC}_2\text{O}_4 \cdot 3\text{H}_2\text{O} \times \frac{1 \text{ mol BeC}_2\text{O}_4 \cdot 3\text{H}_2\text{O}}{151.084 \text{ g}} \times \frac{3 \text{ mol H}_2\text{O}}{1 \text{ mol}} \times \frac{22.4 \text{ L}}{1 \text{ mol}} = \boxed{1.43 \text{ L H}_2\text{O}}$$

2001
(a) $\frac{.325 \text{ g}}{2.00 \text{ g}} \times 100 = \boxed{16.3\%}$

(b)

$3.000 \text{ g Compound} - 1.99 \text{ g C} - .134 \text{ g H} = \boxed{0.876 \text{ g O}}$

$1.200 \text{ g H}_2\text{O} \times \frac{1 \text{ mol H}_2\text{O}}{18.01 \text{ g H}_2\text{O}} \times \frac{2 \text{ mol H}}{1 \text{ mol H}_2\text{O}} \times \frac{1.0079 \text{ g H}}{1 \text{ mol H}} = .134 \text{ g H}$

$3.72 \text{ L CO}_2 \times \frac{1 \text{ mol CO}_2}{22.4 \text{ L CO}_2} \times \frac{1 \text{ mol C}}{1 \text{ mol CO}_2} \times \frac{12.011 \text{ g C}}{1 \text{ mol C}} = 1.99 \text{ g C}$