

W-GC General Chemistry Y5

HW/A 13

Percent Composition

KCN

K → 39.098 g/mol

C → 12.011 g/mol

N → 14.007 g/mol

65.116

K → $\frac{39.098}{65.116} = 60.0\%$

C → $\frac{12.011}{65.116} = 18.4\%$

N → $\frac{14.007}{65.116} = 21.6\%$

Acetic Acid → Empirical formula

39.9% C → $\frac{39.9 \text{ g}}{12.011 \text{ g/mol}} = \frac{3.32}{3.32} = 1$

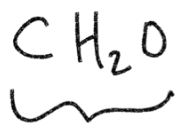
6.7% H → $\frac{6.7 \text{ g}}{1.008 \text{ g/mol}} = \frac{6.64}{3.32} = 2$

53.4% O → $\frac{53.4 \text{ g}}{15.999 \text{ g/mol}} = \frac{3.33}{3.32} = 1$

CH₂O empirical formula

If acetic acid has a molar mass of what is the molecular formula?

60 g/mol



C: 1 * 12.011 = 12.011

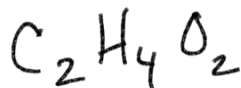
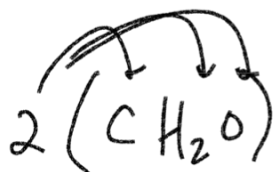
H: 2 * 1.008 = 2.016

O: 1 * 15.999 = 15.999

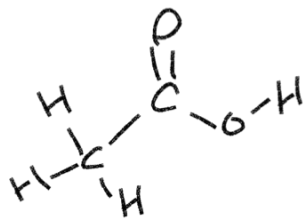
≈ 30g

$\frac{60 \text{ g/mol}}{30 \text{ g/mol}}$

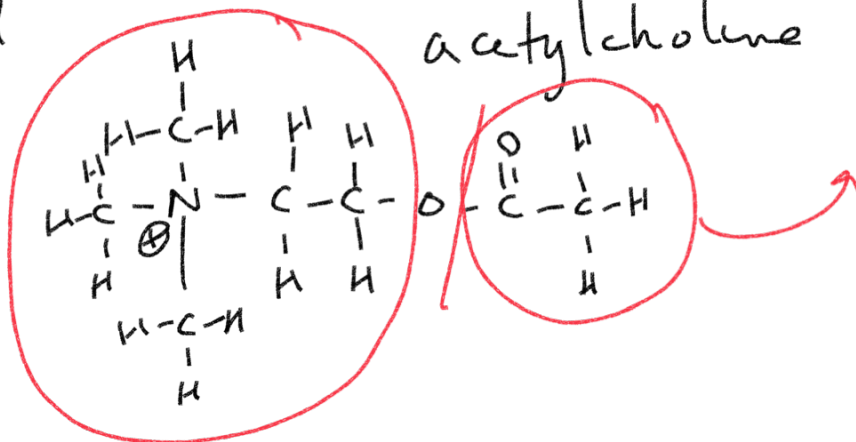
2



acetic acid



acetylcholine



Compound contains 5.9265% H
94.0735% O

Empirical formula
Molecular formula

molar mass 34.01468 g/mol

$$\frac{5.9265 \text{ g}}{1.008 \text{ g/mol}} = 5.87 \text{ mol} \quad \frac{5.87}{5.87} = 1$$

$$\frac{94.0735 \text{ g}}{15.999 \text{ g/mol}} = 5.87 \text{ mol} \quad \frac{5.87}{5.87} = 1$$

HO

$$\frac{34.01468}{17.007} \approx 2$$

$$\text{H: } 1 * 1.008 = 1.008 = 17.007$$

$$\text{O: } 1 * 15.999 = 15.999$$

