

Chem II - % Composition and Empirical Formulas

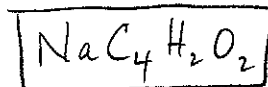
①

Element	mass/100g	mol	mol ratio	Simplest Ratio
C	50.5 g	4.21 mol	1.33	4
H	5.26 g	5.26 mol	1.66	5
N	44.2 g	3.16 mol	1	3

$C_4H_5N_3$

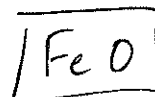
②

Element	mass/100g	mol.	mol. ratio	simplest ratio
Na	21.9 g	0.952	1	1
C	45.7 g	3.81	4	4
H	1.9 g	1.9	2	2
O	30.5 g	1.91	2	2



③

Element	Mass/100g	mol	mol. ratio	simplest ratio
Fe	77.7 g	1.39	1	1
O	22.3 g	1.39	1	1



④ $15.0 \text{ kg} \times 0.72 = 10.8 \text{ kg Pb fr. Galena ore.}$

⑤ $250.0 \text{ g} \times 0.70 = 175 \text{ g } Ag_2S$

Find % comp of silver in Ag_2S : $\frac{2 \times 107.9}{247.9} = \frac{215.8 \text{ g/mol}}{247.9 \text{ g/mol}} = 0.871$

$0.871 \times 175 \text{ g } Ag_2S = 152 \text{ g Ag} = 87.1\% Ag$

(6) Molar mass $P_4O_6 = 220 \text{ g/mol}$

% comp. O = $\frac{96 \text{ g/mol}}{220 \text{ g/mol}} = 0.436 = 43.6\% \text{ Oxygen}$

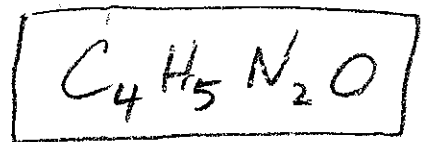
$0.436 \times \underline{6.0g} = \boxed{2.6 \text{ g oxygen}}$

(7)*

ELEMENT	MASS/100g	MOLES	MOLE RATIO	SIMPLEST RATIO
C	49.46g	4.122 mol	4	4
H	5.15g	5.15 mol	5	5
N	28.89g	2.064 mol	2	2
O	16.51g	1.032 mol	1	1

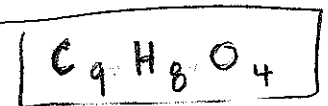
1st step:

C = 74.3 mg \rightarrow 49.46% C
 H = 7.73 mg \rightarrow 5.15% H
 N = 43.4 mg \rightarrow 28.89% N
 O = 24.8 mg \rightarrow 16.51% O
 150.23 mg



(8)

ELEMENT	Mass/100g	mol.	mol. ratio	simplest ratio.	
C	60.0g	5	2.27	} $\times 4$ 9	
H	4.48g	4.48	2.04		8
O	35.2g	2.2	1		4



(9)

ELEMENT	mass/100g	mol.	mol ratio	simplest ratio
C	37.5	3.13	2	4
H	3.15	3.15	2	4
N	21.87	1.56	1	2
O	37.47	2.34	1.5	3

