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TENDER HEART HIGH SCHOOL, Sec-33B, Chd.

Class - X

Chap - 5

Subject - Chemistry

Teacher - Anamika

Percentage Composition:- It is percentage by weight of each element present in it.

$$= \frac{\text{Total weight of element in one mol.}}{\text{Gram molecular weight of Comp.}} \times 100$$

Q:-1. Find the percentage of mass of water in washing soda crystals $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$

Ans: Relative molecular mass of $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$

$$23 \times 2 + 12 + 16 \times 3 + 10(2 + 16) \\ = 286$$

286g of washing soda contains 180g of water of crystallisation

$$\therefore 100 \quad " \quad " = \frac{180 \times 100}{286}$$

$$= 62.9\% \text{ of } \text{H}_2\text{O}$$

$\therefore$ The % of H_2O in $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O} = 62.9\%$

Empirical formula of a Comp.:- It is

the simplest formula, which gives the simplest ratio in whole number of atoms of different elements present in one molecule of the Comp.

Q:- 0.5gm of an organic compound contain 0.062g of hydrogen and 0.25g of oxygen. In the vapour state this Comp. weighs 32 times as heavy as the same volume of hydrogen. Determine Molecular formula:

Ans:- Mass of carbon = $0.5 - (0.25 + 0.062)$
 $= 0.188$

Element	Mass in gram	At. mass	No. of gm. atoms.	Simplest Ratio
C	0.188	12	$\frac{0.188}{12} = 0.016$	$\frac{0.016}{0.016} = 1$
H	0.062	1	$\frac{0.062}{1} = 0.062$	$\frac{0.062}{0.016} = 4$
O	0.25	16	$\frac{0.25}{16} = 0.016$	$\frac{0.016}{0.016} = 1$

The empirical formula is CH_4O

Mol. Mass = $2 \times \text{V.D}$

$2 \times 32 = 64$

$$n = \frac{\text{Molecular mass}}{\text{Empirical formula mass}}$$

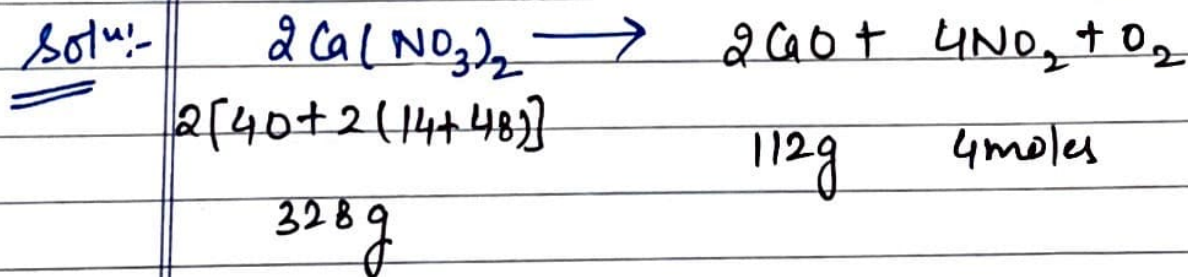
$$\frac{64}{32} = 2$$

$$\therefore \text{Mol. formula} = \text{C}_2\text{H}_8\text{O}_2$$

Chemical Equation:- A chemical eqⁿ is

balanced account of a chemical transaction. It is qualitative statement, but it also give quantitative information of a chemical reaction.

Q:- If 16.4gm of Calcium nitrate is heated, Calculate the Vol. of (a) NO_2 obtained at STP (b) the mass of CaO obtained.



a) 328g of $\text{Ca}(\text{NO}_3)_2$ liberates $4 \times 22.4\text{L}$ of NO_2

$$\therefore 16.4\text{g will } \frac{4 \times 22.4}{328} \times 16.4$$

$$= 44.8\text{L of } \text{NO}_2$$

b) 328g of $\text{Ca}(\text{NO}_3)_2$ gives 112g of CaO

$$\therefore 16.4\text{g will give} = \frac{112 \times 16.4}{328}$$

$$= 5.6\text{g of CaO}$$