

# Download File PDF Solution Chemistry Grade 11

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= 1 : 1.5

= 2 : 3

∴ The empirical formula of the oxide is Fe<sub>2</sub>O<sub>3</sub>.

Empirical formula mass of Fe<sub>2</sub>O<sub>3</sub> = [2(55.85) + 3(16.00)] g

Molar mass of Fe<sub>2</sub>O<sub>3</sub> = 159.69 g

$$\therefore n = \frac{\text{Molar mass}}{\text{Empirical formula mass}} = \frac{159.69 \text{ g}}{159.7 \text{ g}} = 0.999 = 1 \text{ (approx)}$$

Molecular formula of a compound is obtained by multiplying the empirical formula with  $n$ .

Thus, the empirical formula of the given oxide is Fe<sub>2</sub>O<sub>3</sub> and  $n$  is 1.

Hence, the molecular formula of the oxide is Fe<sub>2</sub>O<sub>3</sub>.

Question 1.9:

Calculate the atomic mass (average) of chlorine using the following data:

|                  | % Natural Abundance | Molar Mass |
|------------------|---------------------|------------|
| <sup>35</sup> Cl | 75.77               | 34.9689    |
| <sup>37</sup> Cl | 24.23               | 36.9659    |

Answer

The average atomic mass of chlorine

$$= \left[ \left( \frac{\text{Fractional abundance of } ^{35}\text{Cl}}{\text{of } ^{35}\text{Cl}} \right) (\text{Molar mass of } ^{35}\text{Cl}) + \left( \frac{\text{Fractional abundance of } ^{37}\text{Cl}}{\text{of } ^{37}\text{Cl}} \right) (\text{Molar mass of } ^{37}\text{Cl}) \right]$$

$$= \left[ \left( \frac{75.77}{100} \right) (34.9689 \text{ u}) + \left( \frac{24.23}{100} \right) (36.9659 \text{ u}) \right]$$

$$= 26.4959 + 8.9568$$

$$= 35.4527 \text{ u}$$

∴ The average atomic mass of chlorine = 35.4527 u

Question 1.10:

In three moles of ethane (C<sub>2</sub>H<sub>6</sub>), calculate the following:

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