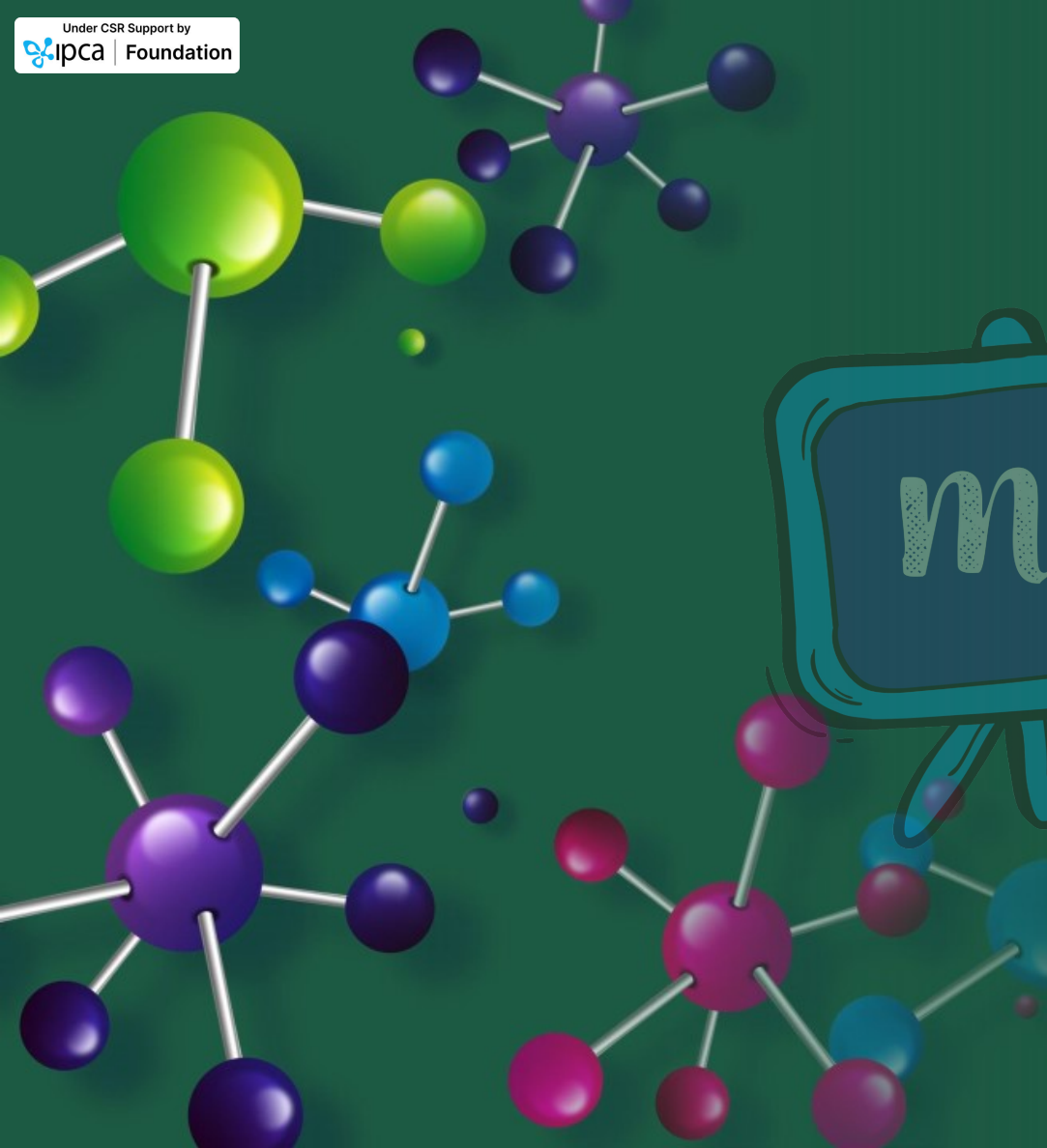
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Class–9

SCIENCE

Chapter – 3

ATOMS AND MOLECULES

Part – 5

Exercise

Deeksha Pahilajani

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EXERCISE



1. A 0.24 g sample of compound of oxygen and boron was found by analysis to contain 0.096 g of boron and 0.144 g of oxygen. Calculate the percentage composition of the compound by weight.

$$\frac{\text{Mass of Boron}}{\text{Mass of Compound}} \times 100$$

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EXERCISE



1 A 0.24 g sample of compound of oxygen and boron was found by analysis to contain 0.096 g of boron and 0.144 g of oxygen. Calculate the percentage composition of the compound by weight.

Answer :

Mass of boron = 0.096 g

Mass of oxygen = 0.144 g

Mass of sample = 0.24 g

Percentage of boron by weight in the compound

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EXERCISE



$$= \frac{0.095 \times 100}{0.24} \%$$

$$= 40\ \%$$

Percentage of oxygen by weight in the compound

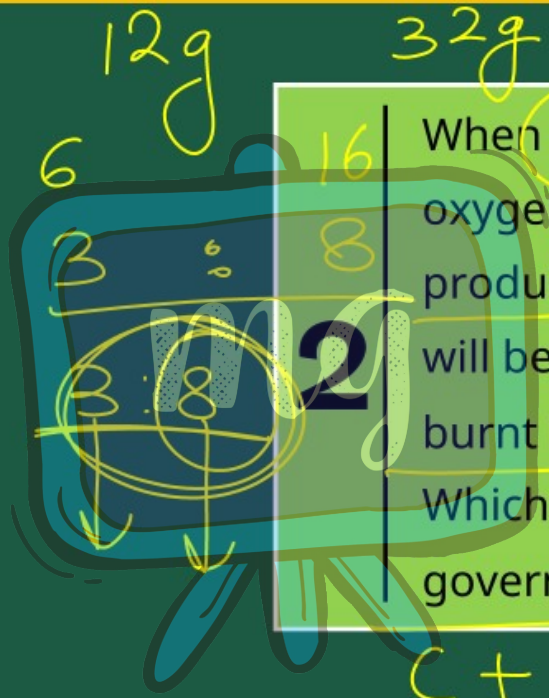
$$= \frac{0.144 \times 100}{0.24} \%$$

$$= 60\ \%$$

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EXERCISE





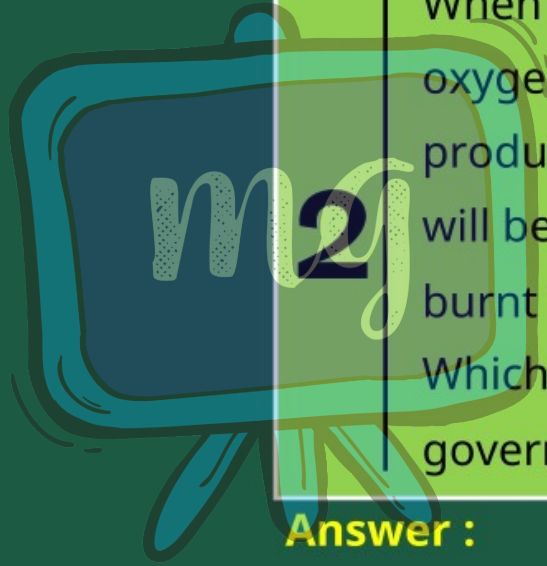
2 When 3.0 g of carbon is burnt in 8.00 g oxygen, 11.00 g of carbon dioxide is produced. What mass of carbon dioxide will be formed when 3.00 g of carbon is burnt in 50.00 g of oxygen? Which law of chemical combination will govern your answer?

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EXERCISE





When 3.0 g of carbon is burnt in 8.00 g oxygen, 11.00 g of carbon dioxide is produced. What mass of carbon dioxide will be formed when 3.00 g of carbon is burnt in 50.00 g of oxygen?
Which law of chemical combination will govern your answer?

Answer :

Carbon + Oxygen = Carbon dioxide

3 g of carbon reacts with 8 g of oxygen to produce 11 g of carbon dioxide.

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EXERCISE

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3 : 8

If 3 g of carbon is burnt in 50 g of oxygen, then 3 g of carbon will react with 8 g of oxygen. The remaining 42 g of oxygen will be left un-reactive.

In this case also, only 11g of carbon dioxide will be formed. The above answer is governed by the law of constant proportions.

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EXERCISE





Many

3 | What are polyatomic ions? Give examples.

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EXERCISE



3 What are polyatomic ions? Give examples.

Answer :

A polyatomic ion is a group of atoms carrying a charge (positive or negative).

Example : Ammonium ion (NH_4^+), Hydroxide ion (OH^-), Carbonate ion (CO_3^{2-}), Sulphate ion (SO_4^{2-}).

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EXERCISE

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4 Write the chemical formulae of the following.

(a) Magnesium chloride
(b) Calcium oxide
(c) Copper nitrate
(d) Aluminium chloride
(e) Calcium carbonate.

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EXERCISE



Answer :

(a) Magnesium chloride → $MgCl_2$

(b) Calcium oxide → CaO

(c) Copper nitrate → $Cu(NO_3)_2$

(d) Aluminium chloride → $AlCl_3$

(e) Calcium carbonate → $CaCO_3$

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EXERCISE



5 Give the names of the elements present in the following compounds.

(a) Quick lime
(b) Hydrogen bromide
(c) Baking powder
(d) Potassium sulphate

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EXERCISE



Answer :

Compound	Chemical formula	Elements present
Quick lime (Calcium oxide)	CaO	Calcium, Oxygen
Hydrogen Bromide	HBr	Hydrogen, Bromine
Baking powder (Sodium bicarbonate)	$NaHCO_3$	Sodium, hydrogen, carbon, Oxygen
Potassium sulphate	K_2SO_4	Potassium, Sulphur, oxygen

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EXERCISE



6 Calculate the atomic/molecular mass of the following substances.

(a) Ethyne, C_2H_2

(b) Sulphur molecule, S_8

(c) Phosphorus molecule, P_4 (Atomic mass of phosphorus = 31)

(d) Hydrochloric acid, HCl

(e) Nitric acid, HNO_3

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EXERCISE



Answer :

(a) Ethyne, C_2H_2

$= 2 \times 12 + 2 \times 1 = 28$ u

(b) Sulphur molecule, S_8

$= 8 \times 32 = 256$ u

(c) Phosphorus molecule, P_4

$= 4 \times 31 = 124$ u

(d) Hydrochloric acid, HCl

$= 1 + 35.5 = 36.5$ u

(e) Nitric acid, HNO_3

$= 1 + 14 + 3 \times 16 = 63$ u