Chemistry Study Materials for Class 9

(NCERT Questions – Answers)

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Atoms and Molecules

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

Answer 1: Mass of boron = 0.096g (Given)

Mass of oxygen = 0.144g (Given)

Mass of sample = 0.24g (Given)

Thus, percentage of boron by weight in the compound = $\frac{0.096 \times 100}{0.24}$ % = 40%

Thus, percentage of oxygen by weight in the compound = $\frac{0.144 \times 100}{0.24}$ % = 60 %

Question 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 combinations will govern your answer?

Answer 2: Carbon + Oxygen → Carbon dioxide

3g of carbon reacts with 8 g of oxygen to produce 11g of carbon dioxide. If 3g of carbon is burnt in 50g of oxygen, then 3g 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.

Question 3: What are polyatomic ions? Give examples?

Answer 3: A polyatomic ion is a group of atoms carrying a charge (positive or negative).

For example, Ammonium ion - NH_4^+ Hydroxide ion - OH^-

Carbonate ion - CO_3^{2-} Sulphate ion - SO_4^{2-}

Question 4: Write the chemical formula of the following:

(a) Magnesium chloride (b) Calcium oxide (c) Copper nitrate

(d) Aluminium chloride (e) Calcium carbonate

Answer 4: (a) Magnesium chloride →$MgCl_2$ (b)Calcium oxide →CaO

(c)Copper nitrate →$Cu(NO_3)_2$ (d)Aluminium chloride →$AlCl_3$

(e)Calcium carbonate →$CaCO_3$

Question 5: Give the names of the elements present in the following compounds:

(a) Quick lime (b) Hydrogen bromide

(c)Baking powder (d)Potassium sulphate.

Answer 5:

Compound	Chemical formula	Elements present
Quick lime	**CaO**	**Calcium, Oxygen**
Hydrogen bromide	**HBr**	**Hydrogen, Bromine**
Baking powder	**$NaHCO_3$**	**Sodium, Hydrogen, Oxygen**
Potassium sulphate	**K_2SO_4**	**Potassium, Sulphur, Oxygen**

Question 6: Calculate the molar mass of the following substances:

(a) Ethyne, C2H2 (b) Sulphur molecule, S8 (c) Phosphorus molecule, P4

(d) Hydrochloric acid, HCl (e) Nitric acid, HNO3

Answer 6:

(a) Molar mass of Ethyne, C2H2 = 2 × 12 + 2 × 1 = 28g

(b) Molar mass of sulphur molecule, S8 = 8 × 32 = 256g

(c) Molar mass of phosphorus molecule, P4 = 4 × 31 = 124g

(d) Molar mass of hydrochloric acid, HCl = 1 + 35.5 = 36.5g

(e) Molar mass of nitric acid, HNO3 = 1 + 14 + 3 × 16 = 63g

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