

IX  
CBSE/GSEB

PT-45

ATOMS  
SOLUTION

• Very Short Answer Type Questions [6×1=6]

1. What is the difference between cation and an anion.

Ans Cation - It is the positively charged ion eg - Na<sup>+</sup>, K<sup>+</sup>, Ca<sup>2+</sup>  
Anion - It is the negatively charged ion eg - Cl<sup>-</sup>, Br<sup>-</sup>, O<sup>2-</sup> etc

2. Define atomicity

Ans It is defined as the no. of atoms present in a molecule

3. How many atoms are present in 1 mole of Ozone?

Ans - Avogadro's no. i.e.  $6.022 \times 10^{23}$  atoms.

4. State one difference between atom and molecule?

| ANS. | ATOM   | MOLECULE  |
|------|--|---|
|      | It is the smallest particle of an element which may or may not have independent existence.<br>eg - Na, K, Zn | It is made up of atoms which is capable of independent existence<br>eg. H <sub>2</sub> , Cl <sub>2</sub> , Br <sub>2</sub> , O <sub>2</sub> etc |

5. What is the chemical symbol of Hydrogen gas?

Ans H<sub>2</sub>

6. Which is octa atomic, carbon or sulphur?

Ans - Sulphur (S<sub>8</sub>).

## Section B

- Short answer type question [2×2=4]

7. Calculate the mass of  $3.011 \times 10^{23}$  N atoms.  
(at.mass of nitrogen = 14)

Ans - 1 mole of N atoms = 14g of N atoms

1 mole of N atoms =  $6.022 \times 10^{23}$  atoms

∴  $6.022 \times 10^{23}$  atoms of N = 14g

1 atom " " =  $\frac{14}{6.022 \times 10^{23}}$  g

$3.011 \times 10^{23}$  N atoms =  $\frac{14}{6.022 \times 10^{23}} \times 3.011 \times 10^{23}$

= 7g

8. Calculate the no. of moles for the following

(a) 64g of  $O_2$  molecule

Ans - 
$$\text{no. of moles} = \frac{\text{given mass}}{\text{Mol. mass}}$$

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

n = 2 moles

(b)  $24.088 \times 10^{21}$  no. of Oxygen atoms

$6.022 \times 10^{23}$  atoms of oxygen = 1 mole

1 atom " " =  $\frac{1}{6.022 \times 10^{23}}$  moles

$24.088 \times 10^{21}$  atoms " " =  $\frac{1}{6.022 \times 10^{23}} \times 24.088 \times 10^{21}$   
=  $4 \times 10^{-2}$  = 0.04 moles

## Section C

• Long answer type questions [4×3=12]

9. (a) Explain the law of constant proportion

Ans- This law was put forward by Joseph Proust.

This law states that "A pure chemical compound always consist of the same elements that are combined together in a fixed (or definite) proportion by mass.

10 (b) State 4 ~~elements~~ <sup>features</sup> of 'Dalton's Atomic theory'.

~~Ans~~ - 1. Atoms ~~is~~ no longer considered as the smallest individual particle. It has been established that it is made up of electrons, protons and neutrons.

2. Atoms of the same element may have slightly different masses (Isotopes).

3. Atoms of different elements may have the same masses (Isobars).

4. The ratio in which the different atoms combine to form compound may be fixed and integral but may not be simple.