Brain International School
Vikas Puri, New Delhi

ASSIGNMENT NO. 4

SUBJECT: CHEMISTRY CLASS-IX NOVEMBER'2026

Chapter-9: Atomic Foundations of Matter

1. **MULTIPLE CHOICE QUESTIONS :**

i. The chemical formula for a molecule of nitrogen gas is:
(a)N
(b) N_2
(c) N^{-3}
(d) N_3

ii. Which of the following compounds is formed by the sharing of electrons (covalent bonding)?
(a) NaCl
(b) MgO
(c) CO_2
(d) $CaCl_2$

iii. A bivalent cation among the following is:
(a) Na+
(b) Al^{3+}
(c) Ca^{2+}
(d) Cl^-

2.Answer the following questions:

1. A student burns 10 g of ethanol in an open beaker. After the reaction, the beaker is completely empty with no residue left behind.
(a) Does this experiment violate the Law of Conservation of Mass?
(b) Provide a scientific justification for your conclusion.

2. Explain the formation of a water molecule using an electron-sharing diagram. Why is it classified as a covalent compound?

3. Compare the properties of **ionic compounds** and **covalent compounds** with respect to their:
(a) Melting and boiling points
(b) Electrical conductivity in aqueous solutions

4. **Formula Writing:** Criss-cross the valencies/charges to derive the chemical formulas for the following:

(a) Aluminium oxide

(b) Calcium bromide

(c) Potassium sulphate

(d) Ammonium chloride

(e) Calcium hydroxide

5. **Mass Calculations:** (Given atomic masses: H = 1u, C = 12 u, O =16 u, Na = 23 u, Mg = 24 u)\

(a) Calculate the molecular mass of Methane .

(b) Calculate the formula unit mass of Magnesium hydroxide .

(c) Determine the ratio by mass of the constituent atoms present in a molecule of Carbon dioxide .

6. What is an ion? Name the two types of ions based on their net charge.

7.State the **Law of Constant Proportions** as proposed by Joseph Proust.

8.Why do noble gases like Neon (Ne, atomic number = 10) neither lose, gain, nor share valence electrons?