Class: XI   **Subject: CHEMISTRY**

1. Write the electronic configurations (orbital diagram method) of Ni (Z = 27), Ge (Z = 32), Ba (Z = 52).

2. An electron is in one of the $3d$ orbitals. Give the possible values of n, l and m_l for this electron.

3. Which atoms are indicated by the following configurations?

   (i) [He] $2s^1$ (ii) [Ne] $3s^2$ $3p^3$ (iii) [Ar] $4s^2$ $3d^1$.

4. An atomic orbital has $n = 3$. What are the possible values of l and m_l?

5. List the quantum numbers (m_l and l) of electrons for $3d$ orbital.

6. Using s, p, d notations, describe the orbital with the following quantum numbers.

   (a) $n = 1, l = 0$ (b) $n = 3, l = 1$ (c) $n = 4, l = 2$ (d) $n = 4, l = 3$.

7. How many electrons in an atom may have the following quantum numbers?

   (a) $n = 4, m_s = -\frac{1}{2}$ (b) $n = 3, l = 0$.

8. Express the following in the scientific notation:

   (i) 0.0048 (ii) 234,000 (iii) 8008 (iv) 500.0 (v) 6.0012.

9. How many significant figures are present in the following?

   (i) 0.0025 (ii) 208 (iii) 5005 (iv) 126,000 (v) 500.0 (vi) 2.0034.

10. Round up the following up to three significant figures: (i) 34.216 (ii) 10.4107 (iii) 0.04597 (iv) 2808.

11. Calculate the average atomic mass of hydrogen using the following data:

Isotope	% Natural abundance	Mass (u)
^{1}H	99.985	1
^{2}H	0.015	2

12. Calculate the molecular masses or formula masses of the following:

   (a) Baking soda, $NaHCO_3$ (b) Slaked lime, $Ca(OH)_2$

   (c) Cane sugar, $C_{12}H_{22}O_{11}$ (d) Epsom salt, $MgSO_4.7H_2O$