

Unit  
2  
 Solutions

### Methods of expressing concentrations:

#### vi) Molarity (M):

No of moles of solute dissolved in one litre of a solution.

$$\text{Molarity (M)} = \frac{\text{No of moles of solute (n)}}{\text{Volume of solution (v)}}$$

$$M = \frac{n}{v} = \frac{m_B}{M_B} \times \frac{1}{v(l)} \quad m_B - \text{Mass of solute}$$

$$\Rightarrow M = \frac{m_B}{M_B} \times \frac{1000}{v(ml)} \quad M_B - \text{Molar mass of solute}$$

#### vii) Molality (m):

No of moles of solute dissolved in one Kg of solvent.

$$\text{Molality (m)} = \frac{\text{No of moles of solute (n)}}{\text{Weight of solvent (m}_A)}$$

$$m = \frac{n}{m_A} = \frac{m_B}{M_B} \times \frac{1}{m_A(\text{Kg})}$$

$$\Rightarrow m = \frac{m_B}{M_B} \times \frac{1000}{m_A}$$

#### viii) Normality (N):

No of gram equivalents of solute dissolved in one litre of solution.

$$\text{Normality (N)} = \frac{\text{No of gram equivalents of solute}(n_g.\text{eq})}{\text{Volume of solution}(v)}$$

$$N = \frac{n_g.\text{eq}}{v} = \frac{m_B}{E_B} \times \frac{1}{v(l)}$$

$$\Rightarrow N = \frac{m_B}{E_B} \times \frac{1000}{v(\text{ml})}$$

