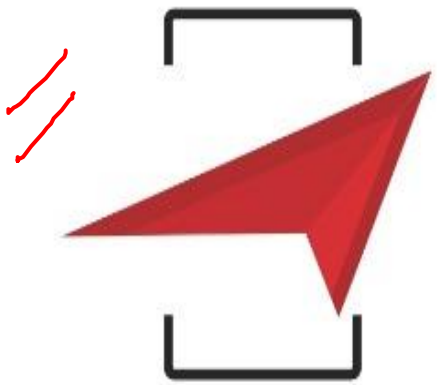
Defence

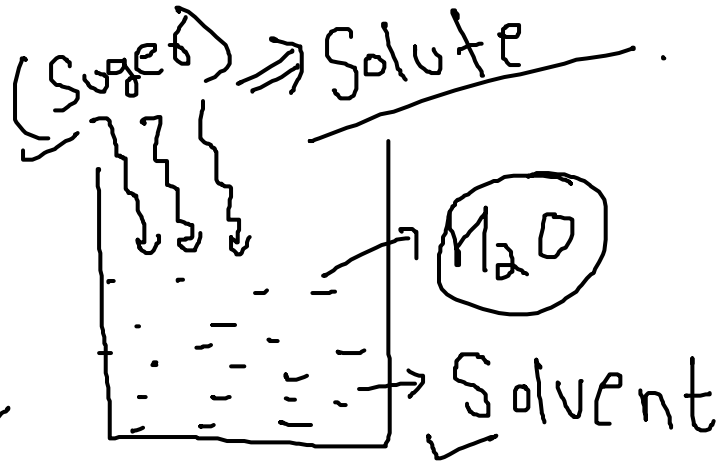


SAFALTA CLASS™

An Initiative by अमर उजाला

Molarity (मोलरता)

* No. of moles of Solute in 1 L of Solution.



$$M = \frac{\text{No. of moles of Solute}}{\text{volume of Solution (L)}}$$

e.g: Molarity of 40 gm of NaOH dissolved in 250 ml Solution?

$n \Rightarrow$ NaOH

$$n = \frac{40}{40} = 1$$

$$\Rightarrow M = \frac{1}{\frac{250}{1000}} = 4 \text{ mol/L}$$

22+16+

Molality (मोलता)

$n = \frac{m}{M} = \frac{20}{40} = \frac{1}{2}$

* No. of moles of solute present in 1 kg Solvent.

$$\left[m = \frac{\text{no. of moles of Solute}}{\text{mass of Solvent (kg)}} \right]$$

$n = \frac{20}{40} = \frac{1}{2}$

e.g.- Molality = ? 20 gm NaOH → 100 gm Solution?

Sol = Solute + Solv.

Solv. = 80 gm

$$m = \frac{1/2}{80/1000} = 6.25 \text{ mol/kg}$$

≠ Gram equivalance mass :-

⇒ Find the gm eq. mass present in 0.4g NaOH?

No. of Grm eq. mass.

$$= \frac{0.4\,gm}{Mol.\ mass} = \frac{0.4}{40}$$

Mol. mass ⇒ Na + O + H

⇒ 23 + 16 + 1 ⇒ 40

$$= 0.01$$

No. of mol:

$$n = \frac{m}{M}$$

$$Eq.\ mass = \frac{mol.\ mass}{X}$$

H_2SO_4 (98gm)

No. of gm eq. mass

$$= \frac{98}{49} = 2$$

0.4 gm NaOH

No. of gm eq. mass = ?

$\Rightarrow$ Equivalant mass $= \frac{\text{Mol. mass}}{X} = \frac{40}{1} = 40\,\text{gm}$

No. of gm eq. mass $= \frac{\text{Given mass}}{\text{Eq. mass}}$

$= \frac{0.4}{40} = 0.01$

98 gm H_2SO_4 ⇒ no. of gm eq. mass = ?

$$\text{Eq. mass} = \frac{\text{Mol. mass}}{x}$$

H_2SO_4

↓

$2H + S + 4O$

$$= \frac{98}{2} = 49$$

$$\text{no. of gm eq.} = \frac{98}{49}$$

$$= 2$$

Normality

$$N = \frac{\text{no. of gm. eq. of Solute}}{\text{volume of Solution (L)}}$$

e.g.:- if 0.98 gm H_2SO_4 ⟶ 500 mL of Solution?

$N = ?$

No. of gm eq. of H_2SO_4

$$= \frac{0.98}{49} = 0.02$$

$$N = \frac{0.02}{1/2} = \frac{0.02}{0.05} = \frac{1}{25}$$