

4/ The text :-

Molar solution:- solution contains the molecular weight in grammes of the substance in a liter of solution.

Molarity (M) :- is the moles of solute per liter of solution .
units of molarity moles / liter .

$$M = \frac{\text{wt}}{\text{M.wt}} \times \frac{1000}{V_{\text{ml}}}$$

$$M = \frac{\text{sp.g} \times \%p \times 10}{\text{M. wt}}$$

ANormal solution :- is the solution which contains the equivalent weight in grammes of the solute in a liter of solution.

eq. wt
الوزن المكافئ
= $\frac{\text{M.wt}}{\text{عدد التكافؤ}}$

Normality (N) :- it is the number of grams equivalent weight of solute dissolved in IL of solution $N = \text{eq.wt} / \text{liter}$

$$N = \frac{\text{wt}}{\text{eq.wt}} \times \frac{1000}{V_{\text{mls}}}$$

$$N = \frac{\text{sp.g} \times \%p \times 10}{\text{Eq.wt}}$$

Sp.g = specific gravity (density)

Exp : prepare 1N H_2SO_4 in 200ml solution.

$$1N = \frac{\text{wt}}{\text{eq.wt}} \times \frac{1000}{200} = \frac{\text{wt}}{49} \times \frac{1000}{200}$$

∴ wt = 9.8 gm for 200 ml

Dissolved in sufficient water to give 200ml of solution.

Exp:- Dilute 0.2M to 0.1 M of a solution and you have only 100ml vol.flask .

$$M_1 V_1 = M_2 V_2$$

Dilution Law

$$0.2 \times V_1 = 0.1 \times 100$$

$$V_1 = 50\text{ml by pipette to vol. flask . (100ml)}$$

Quiz/1

How many grams of glucose are present in 0.5L of 2.0M glucose solution.

Molality (m) :- is the number of moles of solute per 1000 grams of solvent (water)

Molal :- contains 1 gm M.wt (mole) dissolve in 1000 gm of water.

$$m = \frac{\text{wt}}{\text{M.wt}} \times \frac{1000}{\text{gm solvent}}$$

Quiz/2:- what are the molality of KOH solution if dissolve 23gm of KOH in 500gm water .

Parts per million (ppm) :- Used for very Dilute solution

$$\text{Ppm} = \frac{\text{wt of solute} \times 1000}{\text{wt of solution}}$$

$$1\text{ppm} = 1 \text{ mg/L}$$

Quiz/3:- prepare 0.0003% of Ni.