LAB(1):PLANT PHYSIOLOGY

PREPARATION THE SOLUTION

THE THIRD STAGE

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Plant physiology:- is the study of the function or physiology of plants fundamental processes such as photosynthesis and respiration.

-Preparation the solution:-

Solution:- **is a mixture, typically consists of the dissolvedmaterial called the solute and the dissolving agent called thesolvent.**

Ex:- sugar (solute) dissolved in water (solvent).

Type of solution (upon concentration):-

1-Molar solution

:- an aqueous solution that contain 1 mole (gram-molecular weight) of solute in 1 liter of the solution.

Molarity(molar concentration): the number of moles of soluteper liter of solution.

2-Normality solution

: - a measure of concentration equal to the gramequivalent weight per liter of solution.

N= M x electron exchanged

Equivalent weight: the weight of a compound that contains one equivalent of a proton (for acid) or one equivalent of anhydroxide (for base).

N= equivalent number

{Hcl, NaoH} n=1

{Ca(oH)2, H2504} n=2

{Fe(oH)3, H3PO4 } n=3

Nacl → n=1

Cacl → n=2

Feclz→ n=3

N= M x electron exchanged

These solution complete to final volume of (1) liter.

$$M = \frac{Wt}{M.wt} \times \frac{1000}{V} \qquad N = \frac{Wt}{Eq.wt} \times \frac{1000}{V}$$

$$eq.wt = \frac{m.wt}{n}$$

m.wt : molecular weight

v : volume (ml)

- **3-Percentage solution (%):-based on percent and they are theeasiest to calculate because they don't depend a knowledge of molecular weight.**
- **1-Weighting sol. (w/w):-** solute in a weight of solvent.prepared by dissolving a weight of
- **2-Volumetric sol. (v/v):-** solute in a volume of solvent.prepared by dissolving a volume of
- **3-Weight-volumetric sol. (w/v):-** of solute in a volume of solvent.
- prepared by dissolving a weightThese solution complete to final volume of (100 ml).

Dilution law :-

$$C_1 V_1 = C_2 V_2$$

C = concentration

V = volume

- **4-Million solution (ppm) part per million(1/1000000) or (10_{-6}).this unite using for very tinycompounds (hormones, enzymes, gases, vitamins)**
- **How to prepare a solution :-**

$Wt = M \times M.wt \times \frac{v}{1000}$	$Wt = N \times eq.wt \times \frac{v}{1000}$

- **Examples:-**
- **Q1:- prepare a solution of Hcl & NaoH with concentration (2M) (M.wt Hcl=36.5)(M.wt NaoH = 40).**
- **Q2:- How to prepare Hcl a solution of Ca(oH)2 . the concentration (2N) . (M.wt = 111).**
- **Q3:- prepare a (2%) solution of methylene blueWeighting 2gm of methylene blue, adding a volume of distiller water, mix well then complete the volume to 100ml.**
- **Q4:- how to prepare a solution 10% of HSO4 in water.Taken a 10ml of H2SO4 then adding a volume of distilled water to it, mix well then complete volume to 100ml.**