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Section **A**

Department **BS MLT**

Paper **Basic Lab Calculation**

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Q 1.

Ans. Percent concentration calculation.

Percentage concentration can be expressed by

1. Weight percent (% w/w)
2. Volume percent (% v/v)
3. Weight/ volume (% w/v)

Weight percent or mass percent (percentage weight in weight)

It is defined as number Of gram of a solute present in 100 g of solution of preparation

Percent (%) concentration

% (w / v) concentration

mass of solute in grams contained by 100 mL solution

% (w / w) concentration

mass of solute in grams contained in 100 g of solution

% (v / v) concentration

volume of solute in mL in 100 mL solution

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Q 2.

Ans. Basic unit: the SI unit is called basic unit

Current	A	Ampere
Length	m	meter
Time	s	second
Temperatur	k	Kelvin
Quantity	mol	mole

Derived unit: are those unit which are not derived from other unit

Example. Velocity , acceleration , speed

Suspension:

Solute are not dissolvable in solvent suspend form is called suspension

Example. Soil + water not dissolvable

Ionic solution. An ionic solution, as the name suggests, is a solution containing ions. ... An example of an ionic solution is common salt (sodium chloride, NaCl) dissolved in water. When ionic compounds are dissolved in water, they dissociate into cations and anions.

Super saturated solution. In which we dissolve solute with the help of more heat again and again more and more temperature.

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Q 3.

Ans. Dilution ratio: the dilution ratio is the ratio of solute to solvent. It is often used for simple dilutions, one in which a unit volume of a liquid material of interest is combined with an appropriate volume of a solvent liquid to achieve the desired concentration. The diluted material must be thoroughly mixed to achieve the true dilution. For example, in a 1:5 dilution, with a 1:5 dilution ratio, entails combining 1 unit volume of solute (the material to be diluted) with 5 unit volumes of the solvent to give 6 total units of total volume.

Concentration of dilution. To make a fixed amount of a dilute solution from a stock solution, you can use the formula: C1V1 = C2V2 where:

V1 = Volume of stock solution needed to make the new solution

C1 = Concentration of stock solution

V2 = Final volume of new solution

C2 = Final concentration of new solution

Example: Make 5 mL of a 0.25 M solution from a 1 M solution

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Q 4.

Ans. A serial dilution is any dilution in which the concentration decreases by the same factor in each successive step.

In serial dilutions, you multiply the dilution factors for each step.

The dilution factor or the dilution is the initial volume divided by the final volume.

DF=ViVf

For example, if you add a 1 mL sample to 9 mL of diluent to get 10 mL of solution,

DF=ViVf = 1mL10mL=110. This is a 1:10 dilution.

Example 1

What is the dilution factor if you add 0.2 mL of a stock solution to 3.8 mL of diluent?

Vf = 0.2 mL + 3.8 mL = 4.0 mL

DF=ViVf = 0.2mL4.0mL=120. This is a 1:20 dilution.

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Q 5.

Ans. PH : is a scale of acidity from 0 to 14 it tell how to acidic or alkaline substance acidic solution have lower pH more alkaline solution have higher pH substance that are not alkaline is natural solution.

Example. Battery acid, gastric acid , lemon juice vinegar, orange juice soda

POH : pOH is a measure of hydroxide ion (OH^-) concentration. It is used to express the alkalinity of a solution.

Aqueous solutions at 25 degrees Celcius with pOH less than 7 are alkaline, pOH greater than 7 are acidic and pOH equal to 7 are neutral.

Examples of POH • What is the pOH in solution if the OH- concentration is 3.4×10^{-6} M?

pOH = -log [OH-]

pOH = -log (3.4×10^{-6} M)

pOH = 5.5

What is the concentration of OH-base with pOH 2.0?

[H-] = 10 poH

[OH-] = 10^{-2}

[OH-] = 0.010 M or 1.0×10^{-2} M

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