SOLUTIONS

CLASS 12 NOTES - 01



MOLARITY

- Moles of solute present in 1L of solution
- $M = \frac{n_B}{V_{sol(L)}}$
- Unit of Molarity = mol/L



Que. Molarity of a solution relates the -

A. Moles of Solute and Solvent
B. Moles of solute and mass of Solution
C. Volume of solute and Volume of solvent
D. Volume of solution and moles of solute



Que. The molarity of a solution of sodium chloride (mol wt. = 58.5) in water containing 5.85 g of sodium chloride in 500ml of solution is :-

A 0.25 B 2.0 C 1.0 D 0.2



Que. What will be the molarity of a solution containing 5g of sodium hydroxide in 250ml solution :-

[PM PET 1999; BHU 1999; KCET 1999; AIIMS 2000; Pb, CET 2000 WB JEE 2010]

A. 0.5
B. 1.0
C. 2.0
D. 0.1



Que. Molecular weight of urea is 60. A solution of urea containing 6g urea in one liter is :-

[BHU 1996, 99]

A 1 molar B 1.5 molar C 0.1 molar D 0.01 molar



MOLALITY

- Moles of solute present in <u>1kg of solvent</u>
- m = $\frac{n_B}{W_{A(kg)}}$
- Unit of Molality = mol/Kg



Que. A molal solution is one that contains one mole of a solute in:-

A 1000 gm of the solution B 1000 C.C of the solution C 1000 C.C of the solvent D 1000 gm of the solvent



Que. What will be the molarity of a solution having 18g of glucose (mol. Wt. = 180) dissolved in 500g of water :-

[MP PET/PMT 1998; CBSE PMT 2000; JIMPER 2001; UPSEAT 2001]

A. 1 M
B. 0.5 M
C. 0.2 M
D. 2 M







Que. The unit of mole fraction of a compound in solution is-

A mol kg⁻¹ B mol litre⁻¹ C g litre⁻¹ D none of these



Que. 5.85g of NaCl are dissolved in 90g of water. The mole fraction of NaCl is-

A 0.1 B 0.01 C 0.2 D 0.0196



Que. In a solution of 7.8 g benzene (C_6H_6) and toluene $(C_6H_5CH_3)$ the mole fraction of benzene is:-

A 1/6 B 1/5 C 1/2 D 1/3



NORMALITY (N)

The No. of gram equivalent present in 1L of solution

• N = $\frac{no.of gm equivalent}{V_{sol(L)}}$



Que. Normality of 2M Sulphuric acid is

[AIIMS 1992; CBSE PMT 2011]

A. 2N
B. 4N
C. N/2
D. N/4



Que. The normality of 10% (weight/volume) acetic acid is

A. 1N
B. 10N
C. 1.7N
D. 0.83N



[CPMT 1983]

RELATIONS BETWEEN CONCENTRATION TERMS

1. Relation b/w M and W/W%



RELATIONS BETWEEN CONCENTRATION TERMS

1. Relation b/w M and χ (chi)



RELATIONS BETWEEN CONCENTRATION TERMS

1. Relation b/w M and m



Que. Find out the molarity of 93% (w/W) H_2SO_4 (density = 1.84 g/ml).

A. 174.6 M
B. 17.46 M
C. 1.746 M
D. All of these



Que. Mole fraction of acetic acid in an aqueous sample is 0.1. The molality of the solution is

A. 7.16 mol Kg⁻¹
B. 1.67 mol Kg⁻¹
C. 6.17 mol Kg⁻¹
D. 5.25 mol Kg⁻¹



Que. The mole fraction of the solute in one molal aqueous solution is [CBSE PMT 2005; CBSE PMT (PRE.) 2001]

A. 0.027
B. 0.036
C. 0.018
D. 0.009



VAPOUR PRESSURE



DEFINITION

The pressure exerted by the vapours over the surface of liquid when liquid and vapour are in equilibrium.

Liq 📥 Vap

Rate of evaporation = Rate of condensation



FACTORS AFFECTING VAPOUR PRESSURE

1. TEMPERATURE

FACTORS AFFECTING VAPOUR PRESSURE

2. Intermolecular Forces



Que. A pressure cooker reduces cooking time for food because

- A. Heat is more evenly distributed in the cooking space
- B. Boiling point of water involved in cooking is increased.
- C. The higher pressure inside the cooker crushes the food material
- D. Cooking involves chemical changes helped by a rise in temperature



Que. Which is temp dependent?

- A. Molality
- B. Molarity.
- C. Mole fraction
- D. Weight percentage



Que. Select the compound with the higher vapour pressure?

A. H_2O B. H_2S



Que. Select the compound with the higher vapour pressure?

A. He B. Xe



Que. Select the compound with the higher vapour pressure?

A. CH_3OCH_3 B. $CH_3CH_2CH_3$



Que. Which factors do not affect the vapour pressure of a liquid at equilibrium?

Intermolecular force of attraction.
 II. The volume of liquid present.
 III. The temperature of the liquid.

A. Only IC. I and II

B. Only IID. II and III

