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NEET SOLUTIONS — PYQS

Max. Marks: 212 **Questions:** 53

Section A (MCQ) — 53 questions

Q.1 Mixture of chloroform and acetone forms a solution with negative deviation from Raoult's law due to : [NEET (UG) 2026]

(1) Stronger intermolecular forces between chloroform molecules than those between chloroform and acetone molecules

(2) Formation of hydrogen bonding between acetone and chloroform

(3) Repulsive forces

(4) Increase in escaping tendency of molecules of each component

Scan or tap for the full solution

Q.2 Identify the correct statements :
Choose the correct answer from the options given below :

A. The molality of 2.5 g of ethanoic acid (Molar mass : 60 g mol^{-1}) in 75 g of benzene solution is 0.556 m.

B. The molarity of a solution containing 5 g of NaOH (molar mass : 40 g mol^{-1}) in 450 mL of solution is 0.278 M at 298 K.

C. Aquatic species are more comfortable in cold water.

D. The solubility of gas increases with decrease in pressure.

E. For a binary mixture of A and B, the number of moles of A and B are n_A and n_B respectively. The mole fraction of B will be $x_B = \frac{n_A}{n_A + n_B}$.

[NEET (UG) 2026]

(1) A, B and C only (2) A, D and E only
(3) A and B only (4) A and C only

Scan or tap for the full solution

Q.3 Consider the following statements about the solutions formed by mixing two liquids.

A. An ideal solution thus formed obeys Raoult's law throughout the composition range.

B. Mixture of chloroform and acetone shows negative deviation from Raoult's law.

C. Mixture of aniline and phenol shows positive deviation from Raoult's law

[RE-NEET (UG) 2026]

(1) A and C only (2) A and B only
(3) B and C only (4) A only

Scan or tap for the full solution

Q.4 **Assertion (A):** For an ideal solution formed by mixing liquids P and Q, $\Delta_{mix}H = 0$ and $\Delta_{mix}V = 0$
Reason (R): No interactions occur between P and Q

In the light of the above statements, choose the most appropriate answer from the options given below. [RE-NEET (UG) 2026]

(1) A is not correct but R is correct

(2) Both A and R are correct and R is the correct explanation of A

(3) Both A and R are correct but R is NOT the correct explanation of A

(4) A is correct but R is not correct

Scan or tap for the full solution

Q.5 Which of the following aqueous solution will exhibit highest boiling point? [NEET (UG) 2025]

(1) 0.01 M Na_2SO_4 (2) 0.015 M $C_6H_{12}O_6$
(3) 0.01 M Urea (4) 0.01 M KNO_3

Scan or tap for the full solution

Q.6 Match **List-I** with **List-II**

List - I (Example)		List - II (Type of Solution)	
A.	Humidity	I.	Solid in solid
B.	Alloys	II.	Liquid in gas
C.	Amalgams	III.	Solid in gas
D.	Smoke	IV.	Liquid in solid

Choose the correct answer from the options given below: [NEET (UG) 2025]

(1) A-III, B-I, C-IV, D-II

(2) A-III, B-II, C-I, D-IV

(3) A-II, B-IV, C-I, D-III

(4) A-II, B-I, C-IV, D-III

Solution

Q.7 5 moles of liquid X and 10 moles of liquid Y make a solution having a vapour pressure of 70 torr. The vapour pressures of pure X and Y are 63 torr and 78 torr respectively. Which of the following is true regarding the described solution? [NEET (UG) 2025]

(1) The solution is ideal.
(2) The solution has volume greater than the sum of individual volumes.
(3) The solution shows positive deviation.
(4) The solution shows negative deviation.

Scan or tap for the full solution

Q.8 The Henry's law constant (K_H) values of three gases (A, B, C) in water are 145, 2×10^{-5} and 35 kbar respectively. The solubility of these gases in water follows the order: [NEET (UG) 2024]

(1) B > A > C (2) B > C > A
(3) A > C > B (4) A > B > C

Scan or tap for the full solution

Q.9 The plot of osmotic pressure (Π) vs concentration (mol L^{-1}) for a solution gives a straight line with slope 25.73 L bar mol^{-1}. The temperature at which the osmotic pressure measurement is done is
(Use R = 0.083 L bar mol^{-1} K^{-1}) [NEET (UG) 2024]

(1) 37°C (2) 310°C
(3) 25.73°C (4) 12.05°C

Scan or tap for the full solution

Q.10 Arrange the following compounds in increasing order of their solubilities in chloroform:
NaCl, CH_3OH, cyclohexane, CH_3CN
[RE-NEET (UG) 2024]

(1) NaCl < CH_3CN < CH_3OH < Cyclohexane
(2) CH_3OH < CH_3CN < NaCl < Cyclohexane
(3) NaCl < CH_3OH < CH_3CN < Cyclohexane
(4) Cyclohexane < CH_3CN < CH_3OH < NaCl

Scan or tap for the full solution

Q.11 Mass of glucose ($C_6H_{12}O_6$) required to be dissolved to prepare one litre of its solution which is isotonic with 15 g L^{-1} solution of urea (NH_2CONH_2) is (Given: Molar mass in g mol^{-1} C : 12, H : 1, O : 16, N : 14) [RE-NEET (UG) 2024]

(1) 55 g (2) 15 g (3) 30 g (4) 45 g

Scan or tap for the full solution

Q.12 K_H value for some gases at the same temperature 'T' are given :

Gas	K_H/kbar
Ar	40.3
CO_2	1.67
HCHO	1.83×10^{-5}
CH_4	0.413

where K_H is Henry's Law constant in water. The order of their solubility in water is :
[NEET (UG) 2022 (Phase 2)]

(1) HCHO < CH_4 < CO_2 < Ar
(2) Ar < CO_2 < CH_4 < HCHO
(3) Ar < CH_4 < CO_2 < HCHO
(4) HCHO < CO_2 < CH_4 < Ar

Solution

Q.13 The following solutions were prepared by dissolving 10 g of glucose ($C_6H_{12}O_6$) in 250 ml of water (P_1), 10 g of urea (CH_4N_2O) in 250 ml of water (P_2) and 10 g of sucrose ($C_{12}H_{22}O_{11}$) in 250 ml of water (P_3). The right option for the decreasing order of osmotic pressure of these solutions is :
[NEET (UG) 2021]

(1) $P_3 > P_1 > P_2$ (2) $P_2 > P_1 > P_3$
(3) $P_1 > P_2 > P_3$ (4) $P_2 > P_3 > P_1$

Scan or tap for the full solution

Q.14 The correct option for the value of vapour pressure of a solution at 45°C with benzene to octane in molar ratio 3 : 2 is :
[At 45°C vapour pressure of benzene is 280 mm Hg and that of octane is 420 mm Hg. Assume ideal solution] [NEET (UG) 2021]

(1) 350 mm of Hg (2) 160 mm of Hg
(3) 168 mm of Hg (4) 336 mm of Hg

Scan or tap for the full solution

Q.15 The freezing point depression constant (K_f) of benzene is 5.12 K kg mol^{-1}. The freezing point depression for the solution of molality 0.078 m containing a non-electrolyte solute in benzene is rounded off upto two decimal places :
[NEET (UG) 2020]

(1) 0.80 K (2) 0.40 K (3) 0.60 K (4) 0.20 K

Scan or tap for the full solution

Q.16 The mixture which shows positive deviation from Raoult's law is : [NEET (UG) 2020]

(1) Benzene + Toluene
(2) Acetone + Chloroform
(3) Chloroethane + Bromoethane
(4) Ethanol + Acetone

Solution

Q.17 For an ideal solution, the **correct** option is : [NEET (UG) 2019]

(1) $\Delta_{mix}H = 0$ at constant T and P
(2) $\Delta_{mix}G = 0$ at constant T and P
(3) $\Delta_{mix}S = 0$ at constant T and P
(4) $\Delta_{mix}V \neq 0$ at constant T and P

Solution

Q.18 The mixture that forms maximum boiling azeotrope is : [NEET (UG) 2019]

(1) Ethanol + Water
(2) Acetone + Carbon disulphide
(3) Heptane + Octane
(4) Water + Nitric acid

Solution

Q.19 If molality of the dilute solution is doubled, the value of molal depression constant (K_f) will be [NEET 2017]

(1) halved (2) tripled
(3) unchanged (4) doubled.

Scan or tap for the full solution

Q.20 Which of the following is dependent on temperature? [NEET 2017]

(1) Molarity (2) Mole fraction
(3) Weight percentage (4) Molality

Scan or tap for the full solution

Q.21 Which of the following statements about the composition of the vapour over an ideal 1 : 1 molar mixture of benzene and toluene is correct? Assume that the temperature is constant at 25°C. (Given, vapour pressure data at 25°C, benzene = 12.8 kPa, toluene = 3.85 kPa) [NEET 2016 (Phase 1)]

(1) The vapour will contain equal amounts of benzene and toluene.
(2) Not enough information is given to make a prediction.
(3) The vapour will contain a higher percentage of benzene.
(4) The vapour will contain a higher percentage of toluene

Scan or tap for the full solution

Q.22 At 100°C the vapour pressure of a solution of 6.5 g of a solute in 100 g water is 732 mm. If $K_b = 0.52$, the boiling point of this solution will be [NEET 2016 (Phase 1)]

(1) 102°C (2) 103°C (3) 101°C (4) 100°C

Scan or tap for the full solution

Q.23 The van't Hoff factor (i) for a dilute aqueous solution of the strong electrolyte barium hydroxide is [NEET 2016 (Phase 2)]

(1) 0 (2) 1 (3) 2 (4) 3

Scan or tap for the full solution

Q.24 Which one of the following is incorrect for ideal solution? [NEET 2016 (Phase 2)]

(1) $\Delta H_{mix} = 0$
(2) $\Delta U_{mix} = 0$
(3) $\Delta P = P_{obs} - P_{calculated\ by\ Raoult's\ law} = 0$
(4) $\Delta G_{mix} = 0$

Scan or tap for the full solution

Q.25 What is the mole fraction of the solute in a 1.00 m aqueous solution? [AIPMT 2015]

(1) 1.770 (2) 0.0354 (3) 0.0177 (4) 0.177

Scan or tap for the full solution

Q.26 The boiling point of 0.2 mol kg^{-1} solution of X in water is greater than equimolal solution of Y in water. Which one of the following statements is true in this case? [AIPMT 2015 (Cancelled)]

(1) Molecular mass of X is less than the molecular mass of Y.
(2) Y is undergoing dissociation in water while X undergoes no change.
(3) X is undergoing dissociation in water.
(4) Molecular mass of X is greater than the molecular mass of Y.

Scan or tap for the full solution

Q.27 Which one of the following electrolytes has the same value of van't Hoff factor (i) as that of $Al_2(SO_4)_3$ (if all are 100% ionised)? [AIPMT 2015 (Cancelled)]

(1) $Al(NO_3)_3$ (2) $K_4[Fe(CN)_6]$
(3) K_2SO_4 (4) $K_3[Fe(CN)_6]$

Scan or tap for the full solution

Q.28 Which of them is not equal to zero for an ideal solution? [AIPMT 2015 (Cancelled)]

(1) ΔV_{mix} (2) $\Delta P = P_{observed} - P_{Raoult}$
(3) ΔH_{mix} (4) ΔS_{mix}

Scan or tap for the full solution

Q.29 Of the following 0.10 m aqueous solutions, which one will exhibit the largest freezing point depression? [AIPMT 2014]

(1) KCl (2) $C_6H_{12}O_6$
(3) $Al_2(SO_4)_3$ (4) K_2SO_4

Scan or tap for the full solution

Q.30 Which condition is not satisfied by an ideal solution? [NEET 2013 (Karnataka)]

(1) $\Delta_{mix}V = 0$

(2) $\Delta_{mix}S = 0$

(3) Obeyance to Raoult's Law

(4) $\Delta_{mix}H = 0$

Solution

Q.31 Vapour pressure of chloroform ($CHCl_3$) and dichloromethane (CH_2Cl_2) at 25 °C are 200 mm Hg and 41.5 mm Hg respectively. Vapour pressure of the solution obtained by mixing 25.5 g of $CHCl_3$ and 40 g of CH_2Cl_2 at the same temperature will be (Molecular mass of $CHCl_3$ = 119.5 u and molecular mass of CH_2Cl_2 = 85 u) [AIPMT 2012 (Mains)]

(1) 173.9 mm Hg (2) 615.0 mm Hg

(3) 90.6 mm Hg (4) 285.5 mm Hg

Scan or tap for the full solution

Q.32 p_A and p_B are the vapour pressures of pure liquid components, A and B, respectively of an ideal binary solution. If x_A represents the mole fraction of component A, the total pressure of the solution will be [AIPMT 2012 (Prelims)]

(1) $p_A + x_A(p_B - p_A)$ (2) $p_A + x_A(p_A - p_B)$

(3) $p_B + x_A(p_B - p_A)$ (4) $p_B + x_A(p_A - p_B)$

Scan or tap for the full solution

Q.33 A 0.1 molal aqueous solution of a weak acid is 30% ionized. If K_f for water is 1.86 °C/m, the freezing point of the solution will be [AIPMT 2011 (Mains)]

(1) −0.18 °C (2) −0.54 °C

(3) −0.36 °C (4) −0.24 °C

Scan or tap for the full solution

Q.34 200 mL of an aqueous solution of a protein contains its 1.26 g. The osmotic pressure of this solution at 300 K is found to be 2.57×10^{-3} bar. The molar mass of protein will be (R = 0.083 L bar mol^{-1} K^{-1}) [AIPMT 2011 (Mains)]

(1) 51022 g mol^{-1} (2) 122044 g mol^{-1}

(3) 31011 g mol^{-1} (4) 61038 g mol^{-1}

Scan or tap for the full solution

Q.35 The freezing point depression constant for water is 1.86 °C m^{-1}. If 5.00 g Na_2SO_4 is dissolved in 45.0 g H_2O, the freezing point is changed by −3.82 °C. Calculate the van't Hoff factor for Na_2SO_4. [AIPMT 2011 (Prelims)]

(1) 2.05 (2) 2.63 (3) 3.11 (4) 0.381

Scan or tap for the full solution

Q.36 The van't Hoff factor i for a compound which undergoes dissociation in one solvent and association in other solvent is respectively [AIPMT 2011 (Prelims)]

(1) less than one and greater than one

(2) less than one and less than one

(3) greater than one and less than one

(4) greater than one and greater than one

Scan or tap for the full solution

Q.37 An aqueous solution is 1.00 molal in KI. Which change will cause the vapour pressure of the solution to increase? [AIPMT 2010 (Prelims)]

(1) Addition of NaCl

(2) Addition of Na_2SO_4

(3) Addition of 1.00 molal KI

(4) Addition of water

Solution

Q.38 A solution of sucrose (molar mass = 342 g mol^{-1}) has been prepared by dissolving 68.5 g of sucrose in 1000 g of water. The freezing point of the solution obtained will be (K_f for water = 1.86 K kg mol^{-1}) [AIPMT 2010 (Prelims)]

(1) −0.372 °C (2) −0.520 °C

(3) +0.372 °C (4) −0.570 °C

Scan or tap for the full solution

Q.39 A 0.0020 m aqueous solution of an ionic compound $[Co(NH_3)_5(NO_2)]Cl$ freezes at −0.00732°C. Number of moles of ions which 1 mol of ionic compound produces on being dissolved in water will be (K_f = 1.86°C/m) [AIPMT 2009]

(1) 3 (2) 4 (3) 1 (4) 2

Scan or tap for the full solution

Q.40 0.5 molal aqueous solution of a weak acid (HX) is 20% ionised. If K_f for water is 1.86 K kg mol^{-1}, the lowering in freezing point of the solution is [AIPMT 2007]

(1) 0.56 K (2) 1.12 K

(3) −0.56 K (4) −1.12 K

Scan or tap for the full solution

Q.41 During osmosis, flow of water through a semipermeable membrane is [AIPMT 2006]

(1) from solution having lower concentration only

(2) from solution having higher concentration only

(3) from both sides of semipermeable membrane with equal flow rates

(4) from both sides of semipermeable membrane with unequal flow rates.

Scan or tap for the full solution

Q.42 A solution of acetone in ethanol [AIPMT 2006]

(1) obeys Raoult's law

(2) shows a negative deviation from Raoult's law

(3) shows a positive deviation from Raoult's law

(4) behaves like a near ideal solution.

Scan or tap for the full solution

Q.43 1.00 g of a non-electrolyte solute (molar mass 250 g mol^{-1}) was dissolved in 51.2 g of benzene. If the freezing point depression constant, K_f of benzene is 5.12 K kg mol^{-1}, the freezing point of benzene will be lowered by [AIPMT 2006]

(1) 0.2 K (2) 0.4 K (3) 0.3 K (4) 0.5 K

Scan or tap for the full solution

Q.44 A solution containing 10 g per dm^3 of urea (molecular mass = 60 g mol^{-1}) is isotonic with a 5% solution of a nonvolatile solute. The molecular mass of this nonvolatile solute is [AIPMT 2006]

(1) 200 g mol^{-1} (2) 250 g mol^{-1}

(3) 300 g mol^{-1} (4) 350 g mol^{-1}

Scan or tap for the full solution

Q.45 The mole fraction of the solute in one molal aqueous solution is [AIPMT 2005]

(1) 0.009 (2) 0.018 (3) 0.027 (4) 0.036

Scan or tap for the full solution

Q.46 The vapour pressure of two liquids P and Q are 80 and 60 torr, respectively. The total vapour pressure of solution obtained by mixing 3 mole of P and 2 mole of Q would be [AIPMT 2005]

(1) 72 torr (2) 140 torr

(3) 68 torr (4) 20 torr

Scan or tap for the full solution

Q.47 A solution has a 1 : 4 mole ratio of pentane to hexane. The vapour pressures of the pure hydrocarbons at 20°C are 440 mm Hg for pentane and 120 mm Hg for hexane. The mole fraction of pentane in the vapour phase would be [AIPMT 2005]

(1) 0.200 (2) 0.549 (3) 0.786 (4) 0.478

Scan or tap for the full solution

Q.48 A solution of urea (mol. mass 60 g mol^{-1}) boils at 100.18°C at the atmospheric pressure. If K_f and K_b for water are 1.86 and 0.512 K kg mol^{-1} respectively, the above solution will freeze at [AIPMT 2005]

(1) 0.654°C (2) −0.654°C

(3) 6.54°C (4) −6.54°C

Scan or tap for the full solution

Q.49 Formation of solution from two components can be considered as

(i) Pure solvent ⟶ separated solvent molecules, ΔH_1

(ii) Pure solute ⟶ separated solute molecules, ΔH_2

(iii) Separated solvent and solute molecules ⟶ solution, ΔH_3

Solution so formed will be ideal if [AIPMT 2003]

(1) $\Delta H_{soln} = \Delta H_1 + \Delta H_2 + \Delta H_3$

(2) $\Delta H_{soln} = \Delta H_1 + \Delta H_2 - \Delta H_3$

(3) $\Delta H_{soln} = \Delta H_1 - \Delta H_2 - \Delta H_3$

(4) $\Delta H_{soln} = \Delta H_3 - \Delta H_1 - \Delta H_2$

Solution

Q.50 A solution containing components A and B follows Raoult's law when [AIPMT 2002]

(1) A–B attraction force is greater than A–A and B–B

(2) A–B attraction force is less than A–A and B–B

(3) A–B attraction force remains same as A–A and B–B

(4) volume of solution is different from sum of volumes of solute and solvent

Scan or tap for the full solution

Q.51 A solution contains non-volatile solute of molecular mass M_2. Which of the following can be used to calculate the molecular mass of solute in terms of osmotic pressure? [AIPMT 2002]

(1) $M_2 = \left(\frac{m_2}{\pi}\right)VRT$ (2) $M_2 = \left(\frac{m_2}{V}\right)\frac{RT}{\pi}$

(3) $M_2 = \left(\frac{m_2}{V}\right)\pi RT$ (4) $M_2 = \left(\frac{m_2}{V}\right)\frac{\pi}{RT}$

Scan or tap for the full solution

Q.52 Pure water can be obtained from sea water by [AIPMT 2001]

(1) centrifugation (2) plasmolysis

(3) reverse osmosis (4) sedimentation

Scan or tap for the full solution

Q.53 From the colligative properties of solution, which one is the best method for the determination of molecular weight of proteins and polymers?

[AIPMT 2000]

(1) Osmotic pressure

(2) Lowering in vapour pressure

(3) Lowering in freezing point

(4) Elevation in boiling point

Solution

ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	**2**	**1**	**2**	**4**	**1**	**4**	**4**	**2**	**1**	**1**	**4**
Ques.	12	13	14	15	16	17	18	19	20	21	22
Ans.	**2**	**2**	**4**	**2**	**4**	**1**	**4**	**3**	**1**	**3**	**3**
Ques.	23	24	25	26	27	28	29	30	31	32	33
Ans.	**4**	**4**	**3**	**3**	**2**	**4**	**3**	**2**	**3**	**4**	**4**
Ques.	34	35	36	37	38	39	40	41	42	43	44
Ans.	**4**	**2**	**3**	**4**	**1**	**4**	**2**	**4**	**3**	**2**	**3**
Ques.	45	46	47	48	49	50	51	52	53		
Ans.	**2**	**1**	**4**	**2**	**1**	**3**	**2**	**3**	**1**		

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