BOARD ZONE

RBSE

CHAPTERWISE PYQ

CHEMISTRY

2013 - 2025

Class 12

Content

01

Solutions

[Section-A]

Multiple Choice Questions:-

1. The pair of non-ideal solutions exhibiting negative deviation from Raoult's law is - [1M]
   (A) Methanol + Water (B) Acetone + Ethanol
   (C) Methanol + Carbon tetrachloride (D) Water + Hydrochloric acid
   (RBSE 2021)

2. The compound having the highest value of van't Hoff factor (i) for complete dissociation of solute in aqueous solution is- [1M]
   (A) Kcl (B) NaCl
   (C) K_2SO_4 (D) $MgSO_4$
   (RBSE 2023)

3. The value of Van't Hoff factor (i) for complete dissociation of $MgSO_4$ is -
   (A) 1 (B) 2
   (C) 3 (D) 4 [0.5M]
   (RBSE 2025)

4. The products of the electrolysis of molten sodium chloride are -
   (A) Na(s) and H_2(g) (B) NaOH and H_2SO_4
   (C) H_2(g) and Cl_2(g) (D) Na(s) and Cl_2(g) [0.5M]
   (RBSE 2025)

Fill in the Blanks:-

5. A homogeneous mixture of two or more chemical substances is called_____.
   (RBSE2021)

6. The mathematical form of Henry's Law is_____. [0.5M]
   (RBSE 2024)

7. The unit of molarity is_____. [0.5M]
   (RBSE 2024)

8. The unit of freezing point depression constant, (K_f) is _____. [0.5M] (RBSE 2025)

Very Short Answer Type Questions:-

9. 5g of NaOH are dissolved in 500 ml water. Find the molarity of the solution. [1M] (RBSE 2013)

10. Write the formula to calculate the molality. [1M] (RBSE 2015)

11. Write the formula to calculate the mole fraction. [1M] (RBSE 2016)

12. What will be the value of Van't Hoff factor for ethanoic acid in benzene? [1M] (RBSE 2016)

13. What happens when a raw mango placed in concentrated salt solution? [1M] (RBSE 2016)

14. Write definition of azeotropic mixture. [1M] (RBSE 2019)

15. Write definition of osmotic pressure. [1M] (RBSE 2018,RBSE 2023,RBSE 2020)

16. Explain the reason for exhibiting negative deviation from Raoult's law by the solution of chloroform and acetone. [1M] (RBSE 2022)

17. Write names of solute and solvent present in sodium amalgam solution. [1M] (RBSE 2024)

18. Define saturated solution. [1M] (RBSE 2024)

19. Write the definition of molality. [1M] (RBSE 2025)

20. Write the mathematical form of Raoult's law. [1M] (RBSE 2025)

[Section-B]

Short Answer Type Questions:-

21. 0·2 L of aqueous solution of a protein contains 1·26 g of the protein. The osmotic pressure of such a solution at 300 K is found to be 2.57×10^{-3} bar. Calculate the molar mass of the protein. [R=0.083 L bar mol^{-1} K^{-1}] [2M]
(RBSE 2013)

22. Osmotic pressure of a solution is 0·0821 atm at a temperature of 400 K. Calculate the concentration of solution in mol/litre. [R=0.0821 L atm K^{-1} mol^{-1}] [2M]
(RBSE 2015)

23. (A) Due to low concentration of oxygen in blood, climber become weak and unable to think clear-
(i) Write specific name of above condition.
(ii) Explain the reason of such condition.

(B) 30 gm of ethanoic acid present in 100gm of water, determine molality of ethanoic acid in water. [1+1=2M]
(RBSE 2016)

24. (A) Generally solution of gases in liquids is decreases as increasing temperature, Give reasons.
(B) How many gram of NaCl is required to make 200mL aqueous solution of 5% (w/v) NaCl. [1+1=2M]
(RBSE 2018)

25. Calculate the osmotic pressure of 0.01 M solution of urea at 27 °C temperature. [R=0.0821 L atm K-1 mol^{-1}] [2M]
(RBSE 2020)

26. 250 mL solution is prepared by dissolving 5.0 g of sodium chloride in water. Calculate the mass - volume percentage of the solution. [2M]
(RBSE 2021)

27. Calculate the molarity of 250mL solution formed by dissolving 5g of NaOH in water. [1.5M]
(RBSE 2022)

28. Explain the reason for exhibiting negative deviation from Raoult's law by the solution of chloroform and acetone.

29. 1.25g protein is present in 300mL aqueous solution of a protein. The osmotic pressure of such a solution at 300k is found to be 2.50×10^{-3} bar. Calculate the molar mass of protein. [R=0.0821 L bar mol^{-1} K^{-1}] [1.5M]
(RBSE 2022)

30. Write the definition of osmosis. Write name of method used in desalination of sea water. [1.5M]
(RBSE 2023)

31. A 35% (V/V) solution of ethylene glycol is used in vehicle for cooling the engine. Determine the volume of water in millilitre. [1.5M]
(RBSE 2023)

32. Calculate the mole fraction of gas A in the solution made on mixing 0.5 moles of gas A and 4.5 moles of gas B. [1.5M]
(RBSE 2024)

33. 0.05 moles of ethanoic acid is dissolved in 250 g benzene. Calculate the molality of the solution. [1.5M]
(RBSE 2024)

34. 500 mL solution was prepared by dissolving 4.0 g of NaOH in water. Calculate the molarity of the solution. [1.5M]
(RBSE 2025)

35. Draw a diagram showing reverse osmosis. [1.5M]
(RBSE 2025)

[Section-C]

Long Answer Type Questions:-

36. (A)(i) What happens to vapour pressure of water if a tablespoon of sugar is added to it ?
(ii) Which colligative property is preferred for the molar mass determination of macromolecules ?

(B) Will the elevation in boiling point be same if 0·1 mole of sodium chloride or 0·1 mole of sugar is dissolved in 1 L of water ?

(C) Can we separate the compounds of azeotropic mixture by fractional distillation ? Explain. [3M]
(RBSE 2014)

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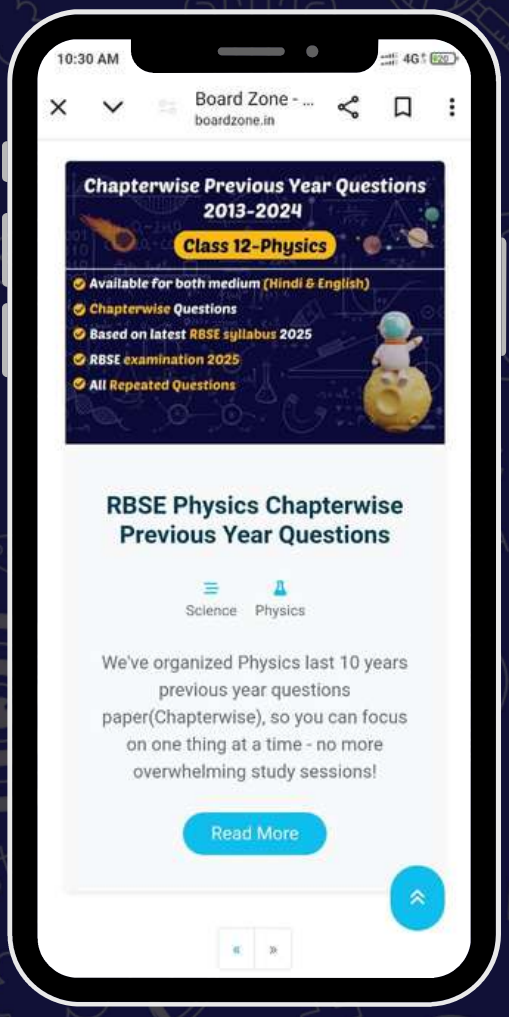

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