LAKSHYA (JEE)

Solution

DPP-07

1. For which of the following pair, the heat of mixing, ΔH_{mix}, is approximately zero?

(A) $CH_3COOCH_3+CHCl_3$

(B) $CH_3COOH+H_2O$

(C) $C_2H_5OH + CH_3OH$

(D) $CH_3COCH_3+C_6H_6$

2. Each of the following pair shows a positive deviation from the Raoult's law except

(A) $(C_2H_5)O + HCI$

(B) $CCl_4 + CH_3OH$

(C) $CHCl_3 + C_2H_5OH$

(D) $C_2H_5OH + H_2O$

3. The vapour pressure of a solution of two liquids, A(P° = 80 mm, X = 0.4) and B (P° = 120 mm. X= 0.6) is found to be 100 mm. It shows that the solution exhibits

(A) negative deviation from ideal ehaviour.

(B) positive deviation from ideal ehaviour.

(C) ideal behaviour.

(D) positive deviation at lower concentration

4. A binary liquid solution is prepared by mixing n-heptane and ethanol. Which one of the following statements is correct regarding the behaviour of the solution?

(A) The solution formed is an ideal solution

(B) The solution is non-ideal, showing positive deviation from Raoult's law

(C) The solution is non-ideal, showing negative deviation from Raoult's law

(D) n-heptane shows positive deviation while ethanol show negative deviation from Raoult's law **[AIEEE 2009]**

5. When 25 ml of CCl_4, and 25 ml of toluene is mixed. the total volume of the solution will be

(A) 50 ml (B) >50 ml

(C) <50 ml (D) indefinite

6. Azeotropic mixture of liquids can only be separated by

(A) simple distillation.

(B) fractional distillation.

(C) distillation under reduced pressure.

(D) chemical means.

7. Which of the following can be separated into its pure components by fractional distillation?

(A) $C_6H_6 + C_7H_8$ (B) $H_2O + HCl$

(C) H_2O+HNO_3 (D) $H_2O + C_2H_5OH$

8. Pure water boils at 373 K and nitric acid at 359 K. The azeotropic mixture of water and nitric acid boils at 393.5 K. On distillation of the azeotropic mixture,

(A) pure nitric acid will distil over first.

(B) pure water will distil over first.

(C) one of them will distil over with small amount of the other.

(D) both of them will distil over in the same composition as they are in the mixture.

9. Formation of a solution from two components can be considered as:

1. Pure solvent $\rightarrow$ separated solvent molecules, ΔH_1
2. Pure solute $\rightarrow$ separated solute molecules, ΔH_2
3. Separated solvent and solute molecules $\rightarrow$ solution, ΔH_3 Solution so formed will be ideal if

(A) $\Delta H_{solution} = \Delta H_3 - \Delta H_1 - \Delta H_2$

(B) $\Delta H_{solution} = \Delta H_1 - \Delta H_2 - \Delta H_3$

(C) $\Delta H_{solution} = \Delta H_1 + \Delta H_2 - \Delta H_3$

(D) $\Delta H_{solution} = \Delta H_1 + \Delta H_2 + \Delta H_3$

10. The boiling point of an azeotropic mixture of water and ethanol is less than that of water and ethanol, separately. The mixture shows

(A) no deviation from Raoult's law.
(B) positive deviation from Raoult's law.
(C) negative deviation from Raoult's law.
(D) that the solution is unsaturated.

ANSWERS

1. (C)
2. (D)
3. (A)
4. (B)
5. (B)
6. (D)
7. (A)
8. (D)
9. (D)
10. (B)

***Note* - If you have any query/issue**

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