CHEMISTRY

AAKASH INSTITUTE ENGLISH

MOCK_TEST_17

Example

1. Benzene and toluene form an ideal solution at room temperature. Which Of the following is not true for this process?

A. $\Delta V_{mix} = 0$

B. $\Delta H_{mix} = 0$

C. ΔS_{mix} for system=0`

D. $\Delta G_{mix} < 0$

Answer: C

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2. Azeotropic mixture of water (B.P. = 100°C) and nitric acid (B P = 83°C) boils at 393.5 K

During fractional distillation of mixture, it is possible to obtain

A. Neither HNO_3 nor H_2O

B. PureHNO_3

C. Pure H_2O

D. Both HNO3 and H2O in pure state

Answer: A

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3. The total vapour pressure of a mixture of 1 mole of A ($P_A = 200 mmHg$) and 3 mole of B ($P_B = 360$ mm Hg) is 350 mm Hg. Then

A. There is no deviation from Raoult's law

B. There is positive deviation from Raoult's law

C. There is negative deviation from Raoult's law

D. Molecular masses of A and B are also required

Answer: B

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4. Define Elementary step in a reaction

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5. The vapour pressure of a given liquid will increase if

A. Temperature is increased

B. Surface area of liquid is increased

C. Volume of liquid in the container is increased

D. Volume of the vapour phase is decreased

Answer: A

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6. The liquid A and B form ideal solutions. At 300 K, the vapour pressure of solution containing 1 mole of A and 3 mole of B is 550

mm Hg. At the same temperature, if one more mole of B is added to this solution, the vapour pressure of the solution increases by 10 mm Hg. Determine the vapour pressure of A and B in their pure states (in mm Hg).

A. 400, 600

B. 500, 500

C. 200, 400

D. 300, 600

Answer: A

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7. Identify the incorrect statement about supersaturated solutions

A. It contains more solute than the amount of solute it can dissolve at a particular temperature

B. The solutions is always in equilibrium with the solid substance

C. If a crystal is added to supersaturated solution, crystallization occurs rapidly

D. It is obtained by cooling a hot concentrated solution of a solid in a liquid in the absence of traces of solids

Answer: B

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8. The vapour pressure of two pure liquids A and B are 200 and 400 tor respectively at 300K. A liquid solution (ideal) of A and B for which the mole fraction of A is 0.40 is contained in a cylinder. The composition of components A and B in vapour phase after equilibrium is reached between vapour & liquid phase, respectively is

A. $X_A = 0.62, X_B = 0.38$

B. $X_A = 0.50, X_B = 0.50$

C. $X_A = 0.25, X_B = 0.75$

D. $X_A = 0.30, X_B = 0.70$

Answer: C

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9. If common salt is dissolved in water, the vapour pressure of the solution will

A. Increase

B. Decrease

C. Remain unchanged

D. Can not be predicted

Answer: B

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10. If a non-volatile solute is dissolved in a volatile solvent relative lowering of vapour pressure is equal to

A. Moles of solute

B. Moles of solvent

C. Mole fraction of solute

D. Mole fraction of solvent

Answer: C

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11. Which is not a colligative property?

A. Relative lowering of vapour pressure

B. Freezing point

C. Osmotic pressure

D. Elevation of boiling point

Answer: B

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12. Which of the following solutions has highest bolling point?

A. 0.1 m glucose in water

B. 0.1 m sucrose in water

C. 0.1 m NaCl in water

D. $0.1mCaCl_2 \in water$

Answer: D

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13. The osmotic pressure of equimolar solutions of glucose, KCI, MgC12 follows the order

A. $MgCl_2 > KCI > Glu\cos e$

B. $Glu\cos e > KCI > MgCl_2$

C. $KCI_MgCl_2Glu\cos e$

D. $MgCl_2 > Glu\cos e > KCl$

Answer: A

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14. The osmotic pressure of 5% (mass/volume) solution of cane sugar at 50-C is

A. 2.51 atm

B. 3 atm

C. 3.88 atm

D. 3.45 atm

Answer: C

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15. The freezing point of 0.05 m solution of glucose in water is $\left(K1 = 1.86^{\circ} Cm^{-1}\right)$

A. 0.093°C

B. -1.86°C

C. -0.093 °C

D. -0.93°C

Answer: C

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16. The values of observed and calculated molecular weights of silver nitrate are 90 and 170 respectively. The degree of dissociation of silver nitrate is

A. 0.8

B. 0.7546

C. 0.9573

D. 0.8889

Answer: D

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17. A weak electrolyte, AB is 5% dissociated in aqueous solution. What is the freezing point

of 0.1 111 aqueous solution of AB? (K1 of water = 1.86 K m-1)

A. -2.7°C

B. - 0.195°C

C. -0.534°C

D. 0.15°C

Answer: B

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18. A dilute solution of a non-volatile solute in water freezes at — 0.2°C. At what temperature (in °C) the same solution will boil? (Kt for H_2O = 1.86°C m ˆ $(-1)$and K0 for H_2O = 0 515°C m^{-1})

A. 100.121

B. 100.217

C. 100.056

D. 101.562

Answer: C

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19. van't Hoff factor of 0.1 molal $CaCl_2$ solution will be (Assume $CaCl_2$ dissociates completely in solution)

A. 2

B. 4

C. 1

D. 3

Answer: D

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20. The freezing point of a solution that contains 10 g urea in 100 g water is ($K_1$for $H_2O = 1.86^\circ C$ m ˆ (-1))

A. -5.1°C

B. -2.5°C

C. -3.6°C

D. -3.1°C

Answer: D

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21. Of the following 0.2 m aqueous solutions, which one will exhibit largest freezing point depression?

A. Giucose

B. Sucrose

C. Urea

D. NaCI

Answer: D

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22. Desalination of sea water can be done by

A. Filtration

B. Osmosis

C. Reverse osmosis

D. Diffusion

Answer: C

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23. 10% (w/v) solution of sucrose (M.W = 342) is isotonic with 5% (w/v) solution of a solute X under identical conditions. The molecular weight of X is

A. 171

B. 242

C. 684

D. 342

Answer: A

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