DPP SOLUTION

- **Subject – Physical Chemistry**
- **Chapter – Solutions**

DPP No.- 02

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Question-1

An aqueous solution of methanol in water has vapour pressure

1. Equal to that of water
2. Equal to that of methanol
3. More than that of water
4. Less than that of water

methanol + water

highly volatile

(+)ve deviation $\Rightarrow P_S > P^\circ_A x_A + P^\circ_B x_B$

Ans. (3)

Question-2

Which of the following statement is true for aqueous solution of 0.1 M urea, 0.2 M glucose and 0.3 M sucrose

1. The vapour pressure and freezing point are the lowest for urea.
2. The Osmotic pressure and boiling point are the lowest for urea
3. The depression in freezing point is the highest for urea.
4. The elevation in boiling point is the highest for urea

Ans. (2)

Question-3

The vapour pressure of pure benzene and toluene are 160 and 60 torr respectively. The mole fraction of toluene in vapour phase in contact with equimolar solution of benzene and toluene is

1. 0.50
2. 0.6
3. 0.27
4. 0.73

$P_A^\circ = 160$ torr

$P_B^\circ = 60$ torr

$P_S = \frac{P_A^\circ + P_B^\circ}{2} = \frac{160+60}{2} = 110$ mm of Hg

$P_B = 60 \times \frac{1}{2} = 30$

$Y_B = \frac{P_B}{P_S} = \frac{30}{110} = \frac{3}{11} = 0.27$

$n_A = n_B \Rightarrow x_B = \frac{1}{2}$

Ans. (3)

Question-4

If liquids A and B form an ideal solution, the

1. Enthalpy of mixing is zero $\Delta H_{mix} = 0$
2. Entropy of mixing is zero $\Delta S_{mix} = +ve$
3. Free energy of mixing is zero $\Delta G_{mix} = -ve$
4. Free energy as well as the entropy of mixing are each zero

Ans. (1)

Question-5

Which one of the following is not correct for an ideal solution?

1. It must obey Raoult's law
2. $\Delta H_{mix} = 0$
3. $\Delta V_{mix} = 0$
4. $\Delta H_{mix} = \Delta V_{mix} \neq 0$

Ans. (4)

Question-6

Which of the following form an ideal solution?

1. Ethyl Bromide + Ethyl iodide
2. Ethyl alcohol + Water
3. Chloroform + Benzene
4. HCl + Water

Ans. (1)

Question-7

Which of the following liquid pairs shows a positive deviation from Raoult's law?

1. Water-hydrochloric acid
2. Benzene-methanol
3. Water-nitric acid
4. Acetone-chloroform

Ans. (2)

Question-8

An aqueous solution of methanol in water has vapour pressure

1. Less than that of water
2. More than that of water
3. Equal to that of water
4. Equal to that of methanol

+ve deviation

Ans. (2)

Question-9

An ideal solution is that which:

1. Obeys Raoult's law
2. Shows positive deviation from Raoult's law
3. Shows negative deviation from Raoult's law
4. Has no connection with Raoult's law

Ans. (1)

Question-10

Which pair from the following will not form an ideal solution

1. $CCl_4 + SiCl_4$
2. $H_2O + C_4H_9OH$
3. $C_2H_5Br + C_2H_5I$
4. $C_6H_{14} + C_7H_{16}$

Hexane Heptane

Ans. (2)

Thank You...