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

DPP No.- 04



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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 $\Delta S_{mix} \neq 0$
- 3 Free energy of mixing is zero $\Delta G_{mix} \neq 0$
- 4 Free energy as well as the entropy of mixing are each zero
 $\Delta S_{mix} \neq 0$

Question-



The mixture that forms maximum boiling azeotrope is:

↓
(-)ve deviation

- ~~1~~ Water + Nitric Acid
- 2 Ethanol + Water
- 3 Acetone + Carbon disulphide
- 4 Heptane + Octane

Ans. (1)

An azeotropic mixture of two liquids has boiling point lower than either of them, when it

- ① ~~X~~ Shows a negative deviation from Raoult's law
- ② ~~X~~ Shows no deviation from Raoult's law
- ~~③~~ Shows positive deviation from Raoult's law
- ④ Is saturated

A B

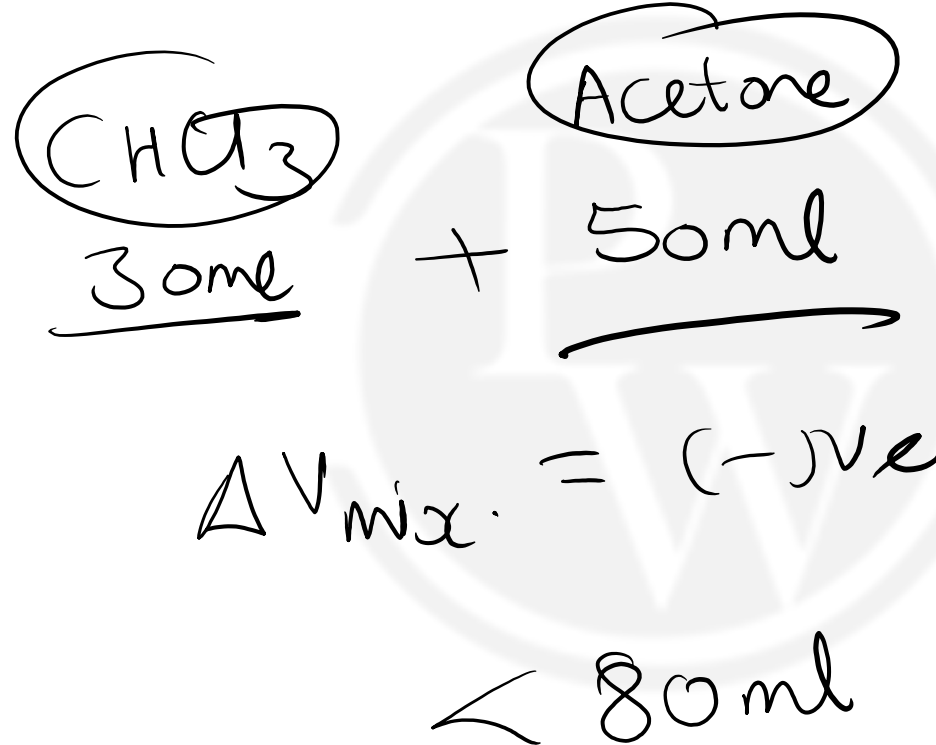
Azeotrope
↓
Minimum
Boiling Azeotrope
(+)ve deviation

Question-



A non-ideal solution was prepared by mixing 30 mL chloroform and 50 mL acetone. The volume of mixture will be

- 1 $> 80 \text{ mL}$
- 2 $< 80 \text{ mL}$
- 3 $= 80 \text{ mL}$
- 4 $\geq 80 \text{ mL}$



Ans. (2)

Question-



Azeotropic mixture of HCl and water has

- 1 48% HCl
- 2 22.2% HCl
- 3 36% HCl
- ☒ 4 20.2% HCl



Ans. (4)

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

1 It must obey Raoult's law

2 $\Delta H_{\text{mix}} = 0$

3 $\Delta V_{\text{mix}} = 0$

~~4 $\Delta H_{\text{mix}} = \Delta V_{\text{mix}} \neq 0$~~

Question-



Which pair from the following will not form an ideal solution

- 1 CCl_4 + SiCl_4
- ~~2 H_2O + $\text{C}_4\text{H}_9\text{OH}$~~
- 3 $\text{C}_2\text{H}_5\text{Br}$ + $\text{C}_2\text{H}_5\text{I}$
- 4 C_6H_{14} + C_7H_{16}

Ans. (2)

Question-



Which of the following form is an ideal solution?

~~1~~ ^{C_2H_5Br C_2H_5I} Ethyl Bromide + Ethyl iodide

2 Ethyl alcohol + Water

3 Chloroform + Benzene

4 HCl + Water

Ans. (1)

Question-



The azeotropic mixture of water (b. pt. 100°C) and HCl (b.pt. 85°C) boils at 108.5°C . When this mixture is distilled it is possible to obtain

- 1 Pure HCl
- 2 Pure water
- 3 Pure water as well as HCl
- 4 Neither HCl nor H_2O in their pure states

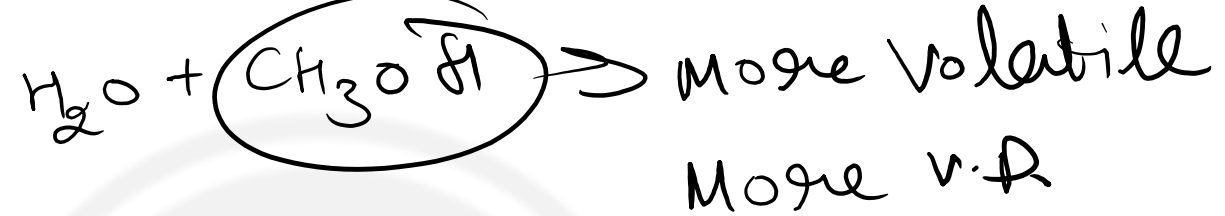
Azeotropes can't be separated by fractional distillation.

Ans .(4)

Question-



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

Ans. (2)

Which of the following is true when components forming an ideal solution are mixed?

1 $\Delta H_{\text{mix}} = \Delta V_{\text{mix}} = 0$

2 $\Delta H_{\text{mix}} < \Delta V_{\text{mix}}$ ✗

3 $\Delta H_{\text{mix}} = \Delta V_{\text{mix}} = 1$ ✗

4 $\Delta H_{\text{mix}} > \Delta V_{\text{mix}}$ ✗

Azeotropic mixture are

- 1 Constant temperature boiling mixture ✓
- 2 Those which boils at different temperatures ✗
- 3 Mixture of two solids ✗
- 4 None of the above ✗

Question-



An ideal solution is that which:

- ☒ **1 Obeys Raoult's law**
- ☐ **2 ~~X~~ Shows positive deviation from Raoult's law**
- ☐ **3 ~~X~~ Shows negative deviation from Raoult's law**
- ☐ **4 ~~X~~ Has no connection with Raoult's law**

Ans. (1)

Positive deviation from Raoult's law is shown by which of the following mixtures?

① ~~X~~ Benzene and toluene

② ~~X~~ CHCl₃ and Acetone

③ ~~/~~ Ethanol and Water

④ ~~X~~ HCl and Water

Question-



When two liquids A and B are mixed then their boiling points becomes greater than both of them. What is the nature of this solution?

- ① Ideal solution
- ② Normal solution
- ③ Negative deviation from ideal solution
- ④ Positive deviation from ideal solution



B.Pt of A
or
B.Pt of B

Ans. (3)



Thank

You...

