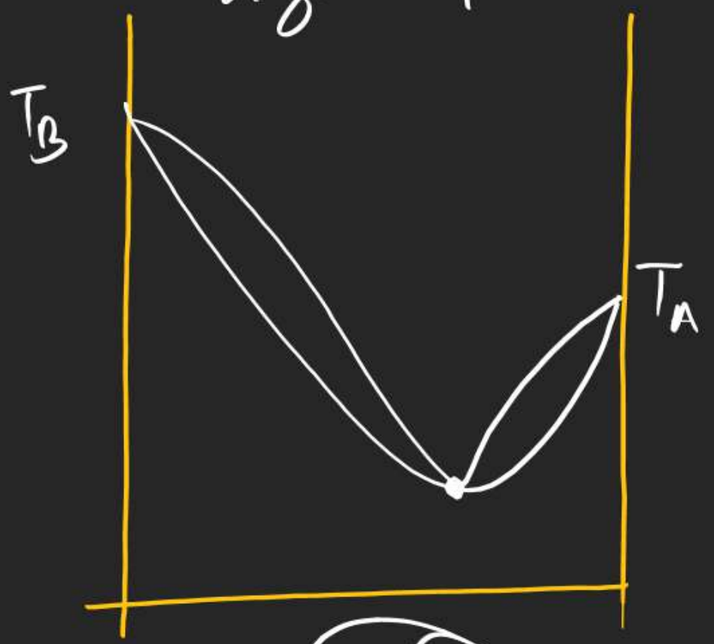
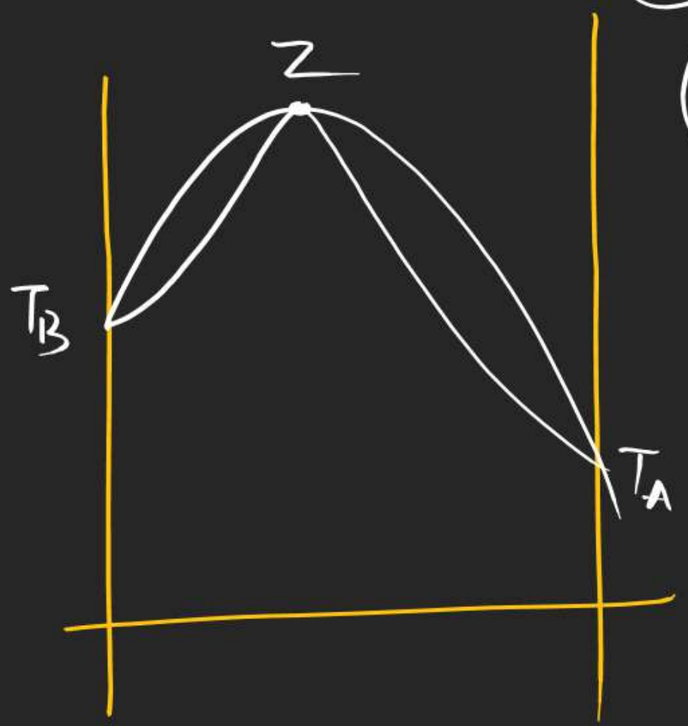
Nishant Jindal

minimum b.pt azeotrope



+ive

max b.pt



-ive deviation

0-1

53-75

$\Delta T_f \propto m \times i$

$(m \times i) \uparrow \quad \Delta T_f \uparrow \quad T_f$

(55) $KNO_3 \Rightarrow 1 + (2-1)\alpha$

$= 2$

(57)

1 lit	1 lit	
$BaCl_2$ +	Na_2SO_4 →	$BaSO_4$ + 2NaCl
0.1 mol	0.1 mol	0.2 mol
0	0	

X

$\frac{0.2}{2} = 0.1M$

0.1M NaCl

$A > B = C > D$

Nishant Jindal

(63)

$$\frac{P_0 - P_s}{P_0} = 0.5 = \frac{n \times i}{n \times i + N}$$

$$0.5 = \frac{2 \times i}{2 \times i + 3}$$

$$i = 1.5 = 1 + (2-1)\alpha$$

$$0.5 = \alpha$$

$Cl^- + AgNO_3 \rightarrow AgCl$

$[Cu(NH_3)_3Cl]Cl \rightarrow$

A_2B_3 A_3B_2

(64)

$i = 4 = 1 + (n-1)\,0.75$

$n = 5$

Ba^{2+} $[Co(CN)_6]^{4-}$

$Ba_2[Co(CN)_6]$

$n = 3$

Ba^{2+} $[Co(CN)_5]^{3-}$

$Ba_3[Co(CN)_5]_2$

Nishant Jindal

(65) $M_{avg} = \frac{\text{Total mass}}{\text{Total moles}}$

$$M_{avg} \propto \frac{1}{i}$$

$$\text{theoretical Mol. wt} = 170 \propto \frac{1}{i_1}$$

$$\text{observed mol wt} = 92.64 \propto \frac{1}{i_2}$$

$$1+\alpha = \frac{170}{92.64} = \frac{i_2}{i_1} = i_2 = 1 + (2-1)\alpha$$

Solution of gas in liq:→

All the gases are soluble in all the liquids.

Solubility of gas :→ max. molarity of a gas in liq

Solubility depends on

① **Nature of solute**:→ gases having higher T_c are more soluble. i.e which can be liquified easily.

$T_c = \frac{8a}{27Rb}$

$T_c \propto$ attraction $\propto$ polarity

$\propto$ molar mass

$NH_3 > O_2$

$O_2 > N_2$

$He < H_2 > N_2$

② Nature of solvent

As dielectric constant ↑es

Solubility ↑es

Nishant Jindal

(3) Temperature

dissolution of gas in liq is an exothermic process

therefore as T ↑es solubility ↓

As K_H ↑ x ↓

(4) Pressure

As P ↑ solubility

Acc. to Henry's law

$$P = K_H x$$

x ← mole fraction of gas in liq

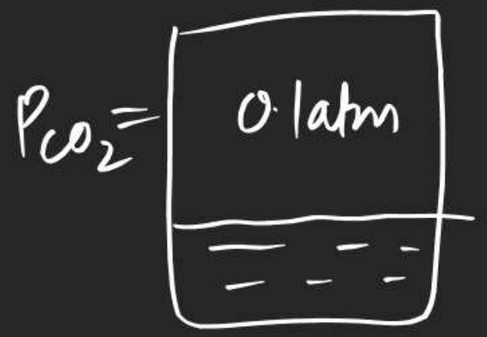
K_H ← Henry's const

It fails if (i)

(ii)

Nishant Jindal

find molarity of CO_2 in $H_2O(\ell)$ kept at 0.1 atm in a container half filled with $H_2O(\ell)$



$K_H = 1000$ atm.

$P = K_H x$

$0.1 = 1000\ x$

$x = 10^{-4}$

1 mol solution contains 10^{-4} mol CO_2

$n_{H_2O} = 1 - 10^{-4}$

$= 1$ mol

$= 18$ gm $= \underline{18\text{ml}}$

10^{-4}

$\frac{100}{18} \times 10^{-6}$

$M = \frac{10^{-4}}{18} \times 1000$

$= \frac{1}{18} \times 10^{-1}$

$= \frac{100}{18} \times 10^{-3}$

$= 5.55 \times 10^{-3}$

Nishant Jindal