YAKEEN NEET 2.0

2026

Solutions

Physical Chemistry | Lecture -03

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Topics to be covered

1. Revision of Last Class
2. Vapor Pressure
3. Factors affecting vapor pressure
4. Home work from modules

Rules to Attend Class

1. Always sit in a peaceful environment with headphone and be ready with your copy and pen.
2. Never ever attend a class from in between or don't join a live class in the middle of the chapter.
3. Make sure to revise the last class before attending the next class & always complete your Magarmach Practice Questions.
4. Never ever engage in chat whether live or recorded on the topic which is not being discussed in current class as by doing so u can be blocked by the admin team or your subscription can be cancelled.

Rules to Attend Class

5. Try to make maximum notes during the class if something is left then u can use the notes pdf after the class to complete the remaining class.
6. Always ask your doubts in doubt section to get answer from faculty. Before asking any doubt please check whether same doubt has been asked by someone or not.


There is one big flaw in your Preparation that's name is Backlog ? What do we say to Backlog ?
NOT TODAY !!!

Revision of Last class

Henry's law

$S_A \propto P_A$

$S_A = K P_A$

$\frac{1}{K} = K_H$

$P_A = \frac{1}{K} S_A$

$P_A = K_H S_A$

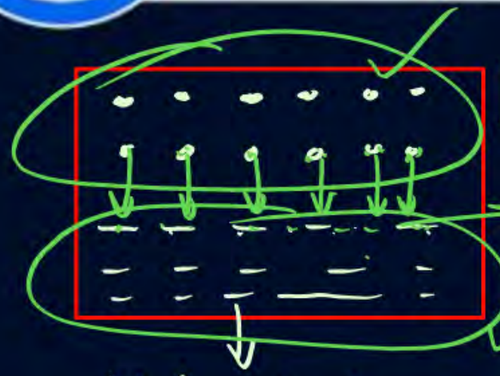
$\frac{1}{K_H}$

$S_A \rightarrow m_A$

$S_A \rightarrow S_A$

$S_A \rightarrow \chi_A$

Vapor Pressure



$H_2O(l) \underset{\text{Condensation}}{\overset{\text{evaporation}}{\rightleftharpoons}} H_2O(g)$

→ Vapor particles

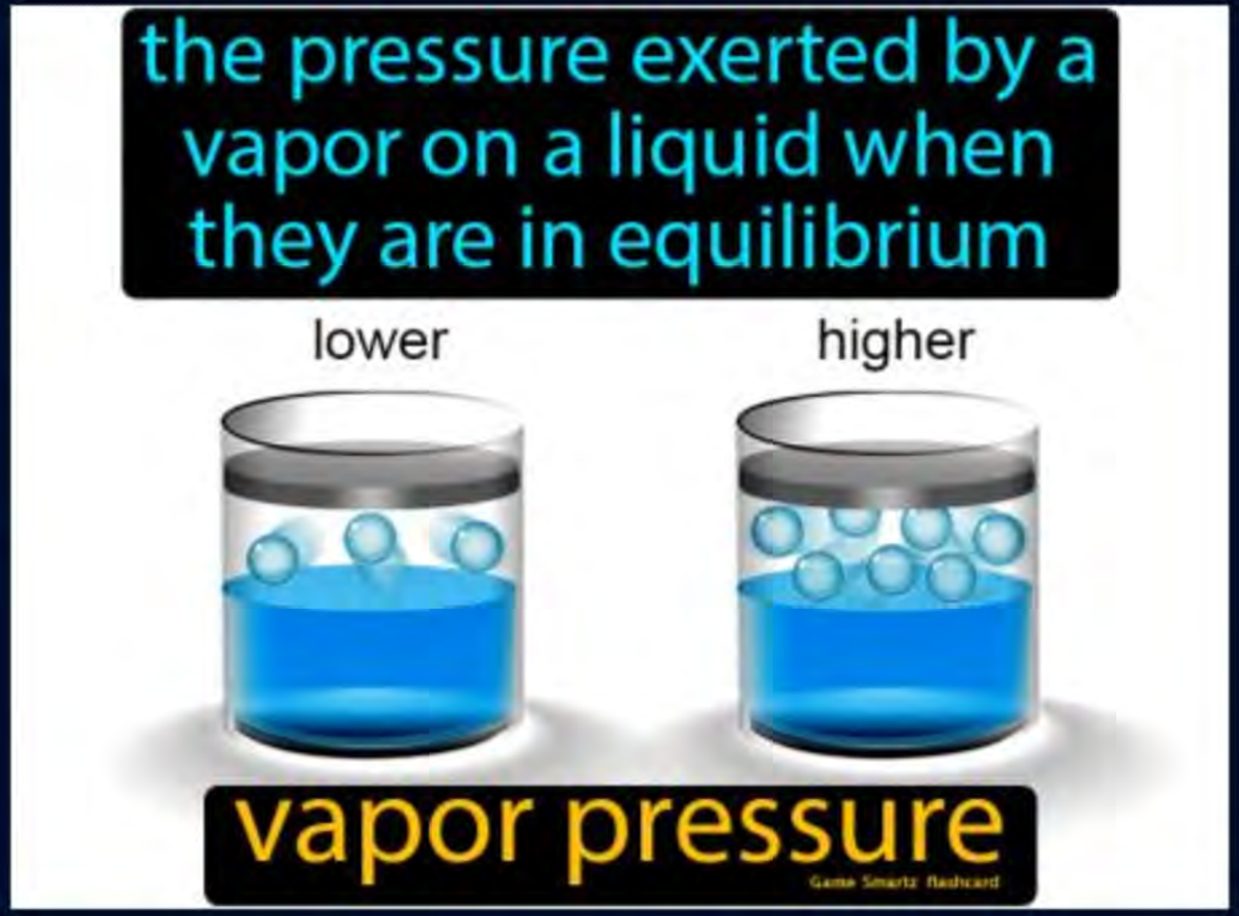
Volatile liquid → jiske Vapor bante hai

for ex:- $H_2O(l)$, Petrol, Diesel, Kerosene oil

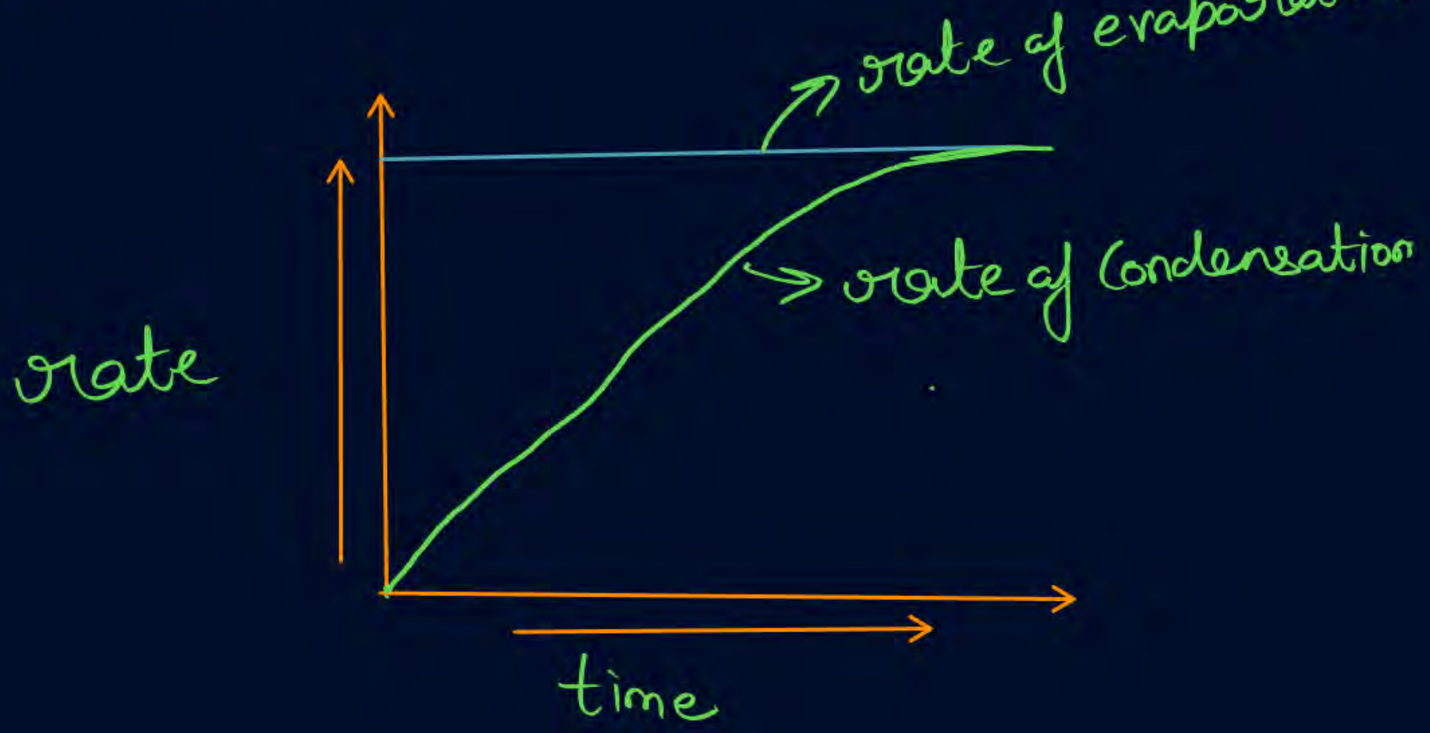
Rate of evaporation = Rate of Condensation

↓

Equilibrium.



At eq. pressure exerted by vapours on liquid surface.



Factors affecting Vapor Pressure

$y = e^{x}$

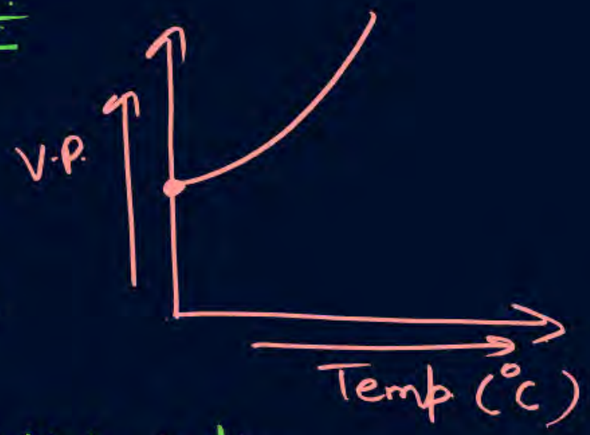
#IIT

① **Temperature :-**

T ↑ V.P. ↑

T ↓ V.P. ↓

$P = K e^{\frac{-\Delta H}{RT}}$



ΔH = enthalpy of Vaporisation

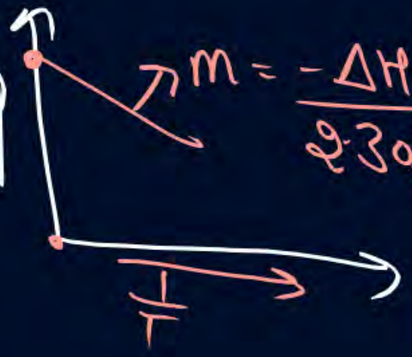
↓

Amount of Heat req. to Convert 1 mole liquid to Vapor

→ Taking log both sides.

$\log P = \log K - \frac{\Delta H}{2.303RT}$

$y = C + mx$



Boiling pt :-

Temp. at which liquid V.P. = outside atm. Pressure

(A) V.P. = 0.3 atm

↓

high B.Pt.

B V.P. = 0.6 atm

↓

less B.Pt.

$V.P. \propto \frac{1}{B.Pt.}$

Q. two liquid X & Y have B.Pt. 140°C & 240°C. which has higher V.P. at 80°C?

Ans X has higher V.P. at 80°C.

(2) Intermolecular Forces :- (I.M.F.)

$$I.M.F. \propto \frac{1}{\text{Vapor pressure}}$$

Alkanes, Alkenes, Alkynes → Vander wall forces. → Polar substances ($\mu \neq 0$) Dipole-Dipole interaction. → H-Bonded liquid → H-Bond (HF, H$_2$O)

I.M.F. ↑ strong

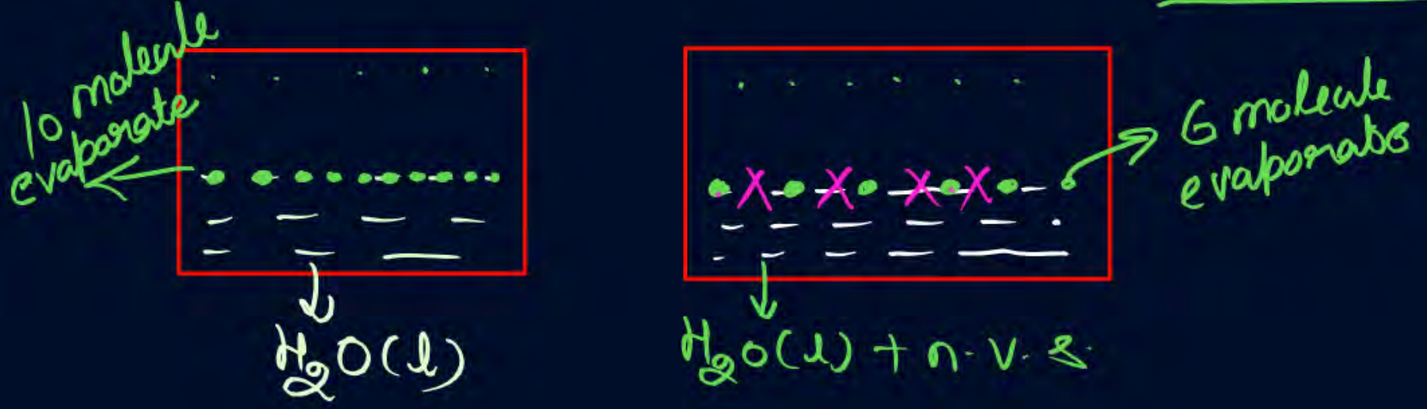
V.P. ↓

(3) addition of non-Volatile solute (n.v.s) → for ex:- Urea, Glucose, Fructose, Sucrose.

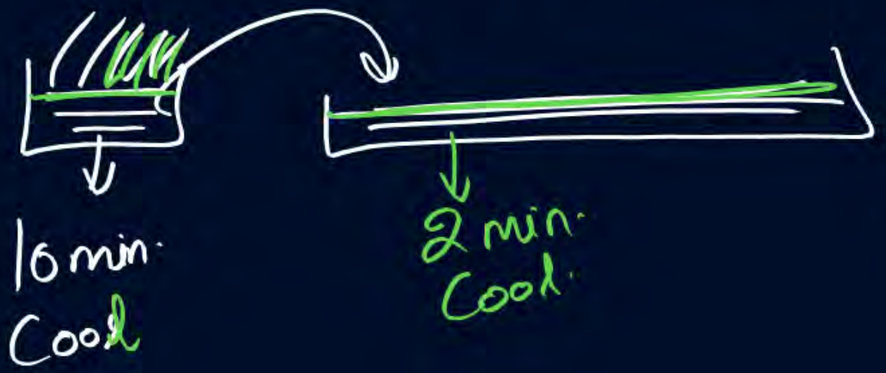
↓

Some surface occupy by n.v.s ∴ V.P. ↓

More surface occupied by n.v.s, less is V.P.



V.P. does not depend upon surface area.



Rate of evaporation ∝ Surface area

QUESTION

Tea is sipped from saucer when it is hot?

as saucer has large surface area ∴ rate of evaporation ↑
∴ it cools faster

QUESTION

Why Champagne is cooled before opening?

Or

Why is bottle of liquid NH_3 is cooled before opening?

NH_3 is highly volatile liquid

On cooling $T \downarrow \therefore V.P. \downarrow$

QUESTION

Among 1 M sucrose and 1 M K_3PO_4 aqueous solution which has higher vapour pressure and why?

Sucrose → non volatile & non-electrolyte

$1C_{12}H_{22}O_{11} + H_2O \longrightarrow 1C_{12}H_{22}O_{11}(aq)$

$1K_3PO_4 + H_2O \longrightarrow 3K^+ + 1PO_4^{3-}$

↓

non-volatile & electrolyte.

↓

more surface occupied by n.v.s ∴ less is V.P.

QUESTION

The vapor pressure of water depends upon

A. Surface area of container

B. Volume of container

C. Temperature

D. All

QUESTION

Addition of a non-volatile solute in a volatile ideal solvent

A. Increases the vapor pressure of the solvent

B. Decreases the vapor pressure of the solvent

C. Decreases the boiling point of the solvent

D. Increases the freezing point of the solvent

QUESTION – (AIIMS 2018, 26 May)

Assertion (A): When one solvent mixed with other solvent, vapour pressure of one increase and other decreases.

Reason (R): When any solute is added into solvent, vapour pressure of solvent decreases.

(A) If both assertion and reason are correct and reason is correct explanation of assertion.

(B) If both assertion and reason are correct but reason is not correct explanation of assertion.

(C) If Assertion is correct but reason is incorrect.

(D) If both the assertion and reason are incorrect.

QUESTION

Why pressure cooker reduces cooking time?

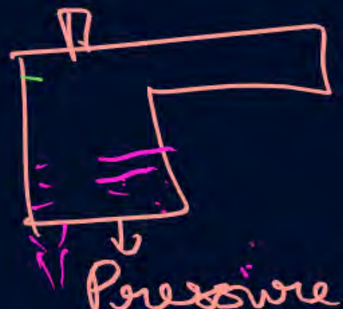
1atm → B Pt. low

Kadai

↓

Sabgi + water

1atm + 2atm = 3atm



Pressure Cooker → B.Pt. ↑

Sabgi + water

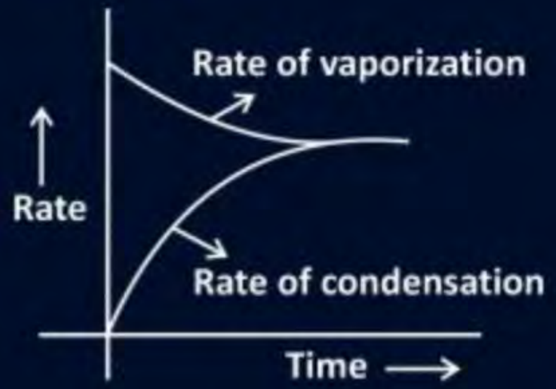
Ans In pressure cooker, due to lid atm P ↑ ∴ B.Pt. ↑

∴ Heat evenly distribute b/w vegetable & water ∴ Cooking faster.

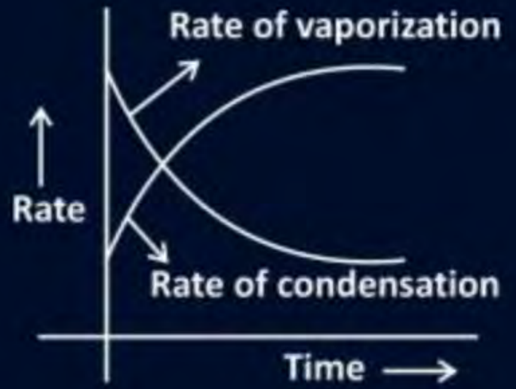
QUESTION

Which of the following plots correctly representing the variation in rate of evaporation and rate of condensation with time? (for a liquid in a closed container)

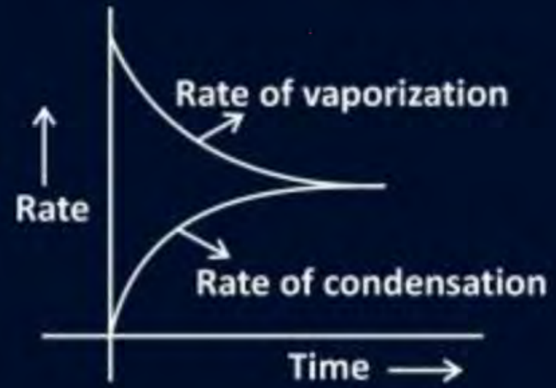
A



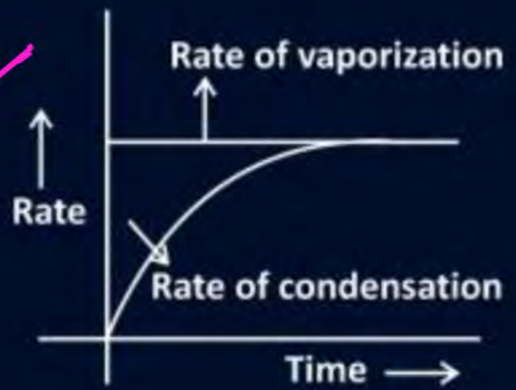
B



C



D



QUESTION

An aqueous solution is 1 molal in KI which of the following will increase the vapor pressure?

A. Addition of NaCl

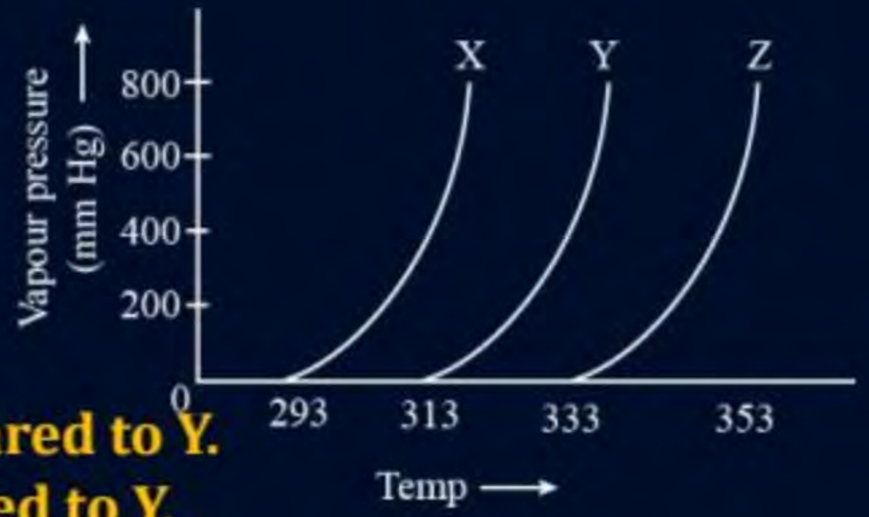
B. Addition of Na_2SO_4

C. Addition of 1 molal KI

D. Addition of water

QUESTION (Jee Mains 8th Jan, 1st shift-2020)

A graph of vapour pressure and temperature for three different liquids
X, Y and Z is shown below:



The following inferences are made
(A) X has highest intermolecular interactions compared to Y.
(B) X has lower intermolecular interactions compared to Y.
(C) Z has lower intermolecular interactions compared to Y.
The correct inference(s) is/are:

A (C)

B (A)

C (B)

D (A) and (C)

QUESTION

Addition of HgI_2 to KI shows increase in vapor pressure, why?

Home work from modules

Solve all questions on vapour pressure

THANK YOU