YAKEEN NEET 2.0

2026

Solutions

Physical Chemistry | Lecture -01

By- Amit Mahajan Sir

Topics to be covered

1. Revision of Last Class
2. Solubility of solids in Liquids & Factors affecting it
3. Solubility of gas in liquids, MEDICS Test no 7
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 !!!

MEDICS

Mastery
Checks your grasp over NEET-level concepts

Evaluation
Judging both knowledge and test-smartness

Decision Making
Testing your speed + accuracy under pressure

Intuition
Some answers need gut + logic – can you spot the trick?

Concepts
It's all about strong basics – no shortcuts here

Strategy
The MEDICS test – built for those who heal, hustle, and hope.

Q1 Find oxidation no. of N in $(NH_4)_3PO_4$.

(a) -1

(b) -2

(c) -3

(d) None of these

$(\underset{\downarrow}{N}H_4)_3(PO_4)$

$3x + 12 - 3 = 0$

$3x = -9$

$x = \frac{-9}{3} = -3$

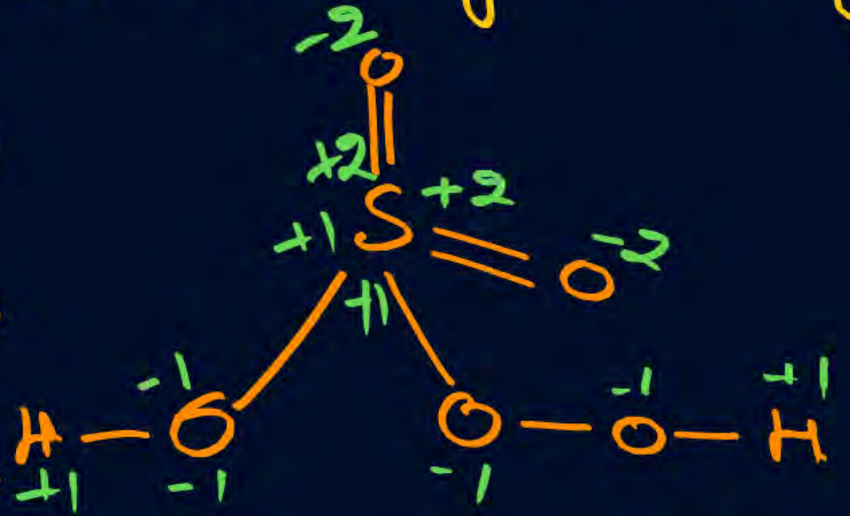
Q2 Find oxidation no. of all oxygen in H_2SO_5

(a) -2 & -1

(b) -2 & 0

(c) -1 & 0

(d) all have Zero O.N.



Q3 Which is O.A. & R.A. in following reaction?

$$\overset{0}{H_2}(g) + \overset{0}{Cl_2}(g) \rightarrow \overset{+1\ -1}{2HCl}(l)$$

R.A. O.A.

(a) H_2 & Cl_2.

(b) Cl_2 & H_2.

(c) H_2 & HCl.

(d) Cl_2 & HCl.

Q4 Find n-factor of $Fe(NO_2)_2$ in following rxn

(a) 1

(b) 2

(c) 3

(d) None of these.

n_f Total $= 1|2-3| + 2|3-5|$

$= 1 + 4 = 5.$

Q5 find n-factor of underlined species in following rxn?

$\underline{Br_2 + 5Br_2^{0}} + NaOH \longrightarrow 5NaBr^{-1} + 2NaBrO_3^{+5} + H_2O$

$5Br_2 + Br_2 + 12OH^- \longrightarrow 10Br^{-1} + 2BrO_3^- + 6H_2O$

$+6H_2O$

$3Br_2 + 6NaOH \longrightarrow 5NaBr + NaBrO_3 + 3H_2O$

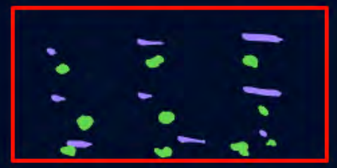
$3 \times \frac{5}{3} = 6 \times n_f$

$n_f = \frac{5}{6}$

Revision of Last class

$K_2Cr_2O_7$

Solutions



2 or more substances.

homogeneous mixture.

Binary solution → 2 Components.

Ternary solution → 3 Components.

Binary soln.

Solvent.

↓

A

w_A , M_A

$n_A = \frac{w_A}{M_A}$

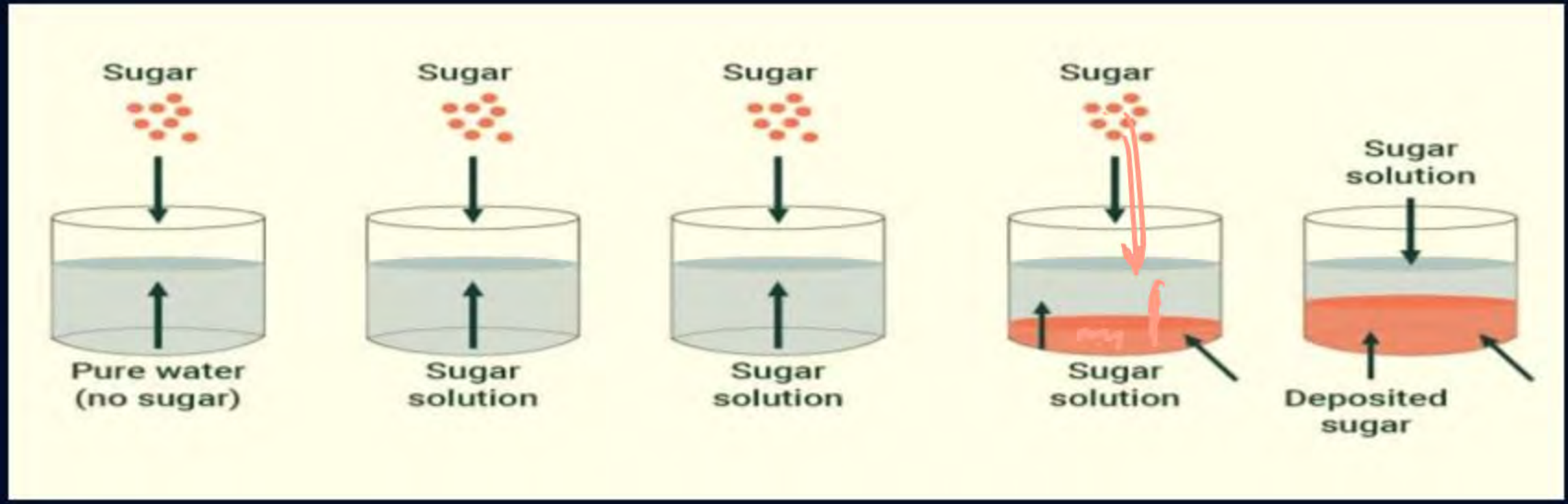
Solute.

↓

B

w_B , M_B

$n_B = \frac{w_B}{M_B}$


Sugar
Pure water
(no sugar)
Sugar
Sugar
solution
Sugar
Sugar
solution
Sugar
Sugar
solution
Sugar
solution
Deposited
sugar

Unsaturated soln :

solution is not saturated

∴ solute kept dissolving

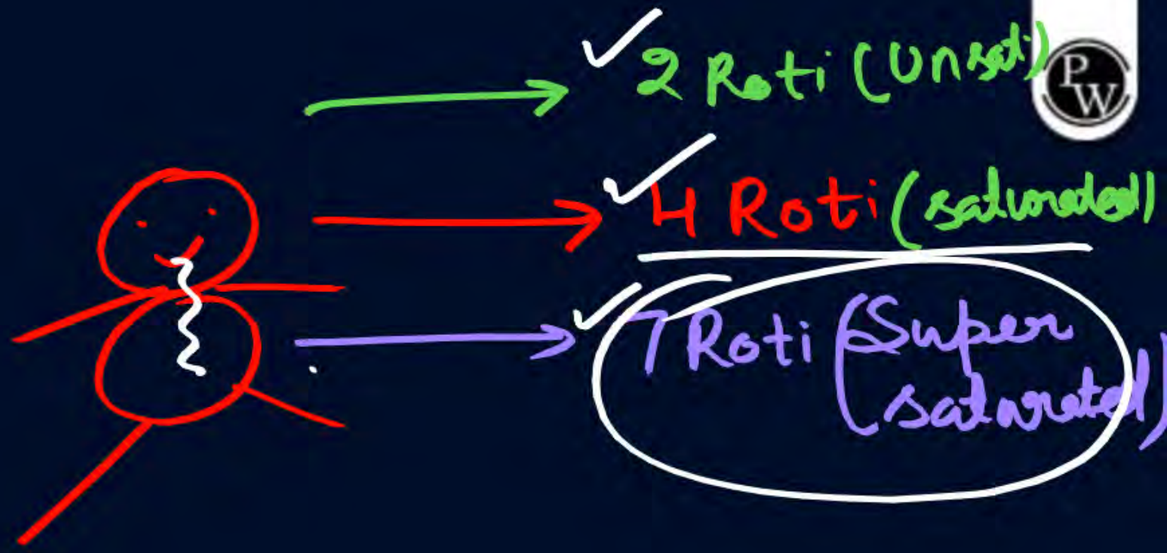
Saturated soln :

solution is saturated

no more solute is dissolving

Supersaturated sol^n : ⟶ Crystallisation occur by shaking or seeding.

Saturated sol^n when heated it become unsaturated, now solute keep on dissolving until no more solute is dissolved



Types of Solutions

Type of Solution	Solute	Solvent	Common Examples
Gaseous Solutions	Gas	Gas	Mixture of oxygen and nitrogen gases
	Liquid	Gas	Chloroform mixed with nitrogen gas
	Solid	Gas	Camphor in nitrogen gas
Liquid Solutions	Gas	Liquid	Oxygen dissolved in water
	Liquid	Liquid	Ethanol dissolved in water
	Solid	Liquid	Glucose dissolved in water
Solid Solutions	Gas	Solid	Solution of hydrogen in palladium
	Liquid	Solid	Amalgam of mercury with sodium
	Solid	Solid	Copper dissolved in gold

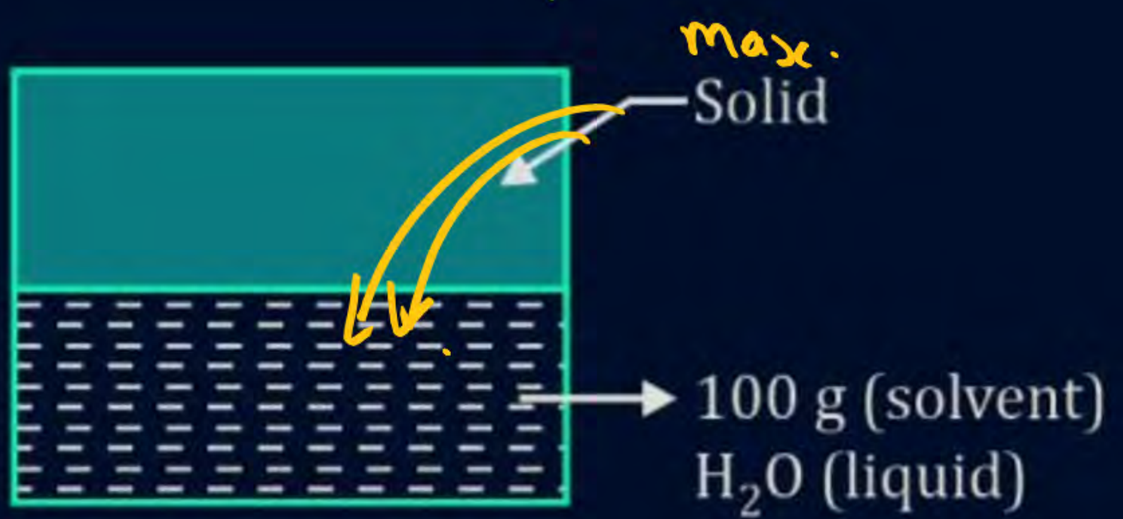
QUESTION

Statement 1 : Amalgam of mercury with sodium is an example of solid solutions.

Statement 2: Mercury is solvent and sodium is solute in the solution.

Solubility of Solids in Liquids

max. amount of solid dissolved in 100g of liquid.



Factors Affecting Solubility of Solid in Liquid

Polar → $\overset{(\mu)}{D.M.} \neq 0$

Non-polar → $\mu = 0$

① Nature of solute & solvent :-

Like dissolves Like

dissolves

Non-polar solute in Non-polar solvent

Polar solute —— Polar Solvent

for ex :- Sugar (Polar) dissolves in H_2O (polar)

I_2 (Non-polar) —— CCl_4 (Non-polar)

Solid (solute) + Solvent (liquid) $\rightleftharpoons$ Solution

Dissolution: T ↑, Heat release

Crystallisation: T ↓, Heat absorb

ΔH = (−)ve

exothermic (Heat release)

Solute + solvent $\rightleftharpoons$ Solution

Dissolution: T ↓, Heat absorb

T ↑, Heat release

ΔH = (+)ve

endothermic

Effect of Temperature

#MIT

① dissolution endothermic

generally dissolution endothermic

$T \uparrow \Rightarrow$ solubility $\uparrow$

for ex: NaNO$_3$, NaOH etc.

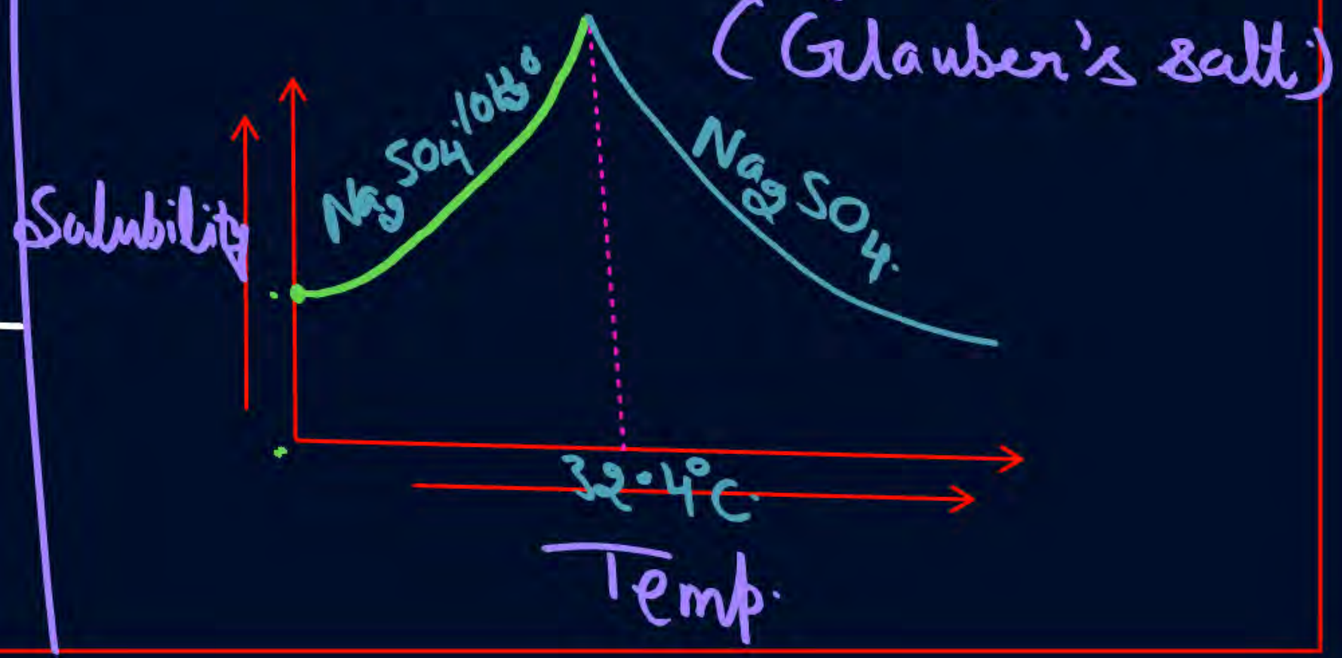
② Dissolution exothermic.

$T \uparrow \Rightarrow$ solubility $\downarrow$.

for ex: Li_2SO_4, $Ce_2(SO_4)_3$

③ Dissolution no regular pattern:

for ex: $Na_2SO_4 \cdot 10H_2O$ (Glauber's salt)



QUESTION

If dissolution process is endothermic,

A Cooling takes place

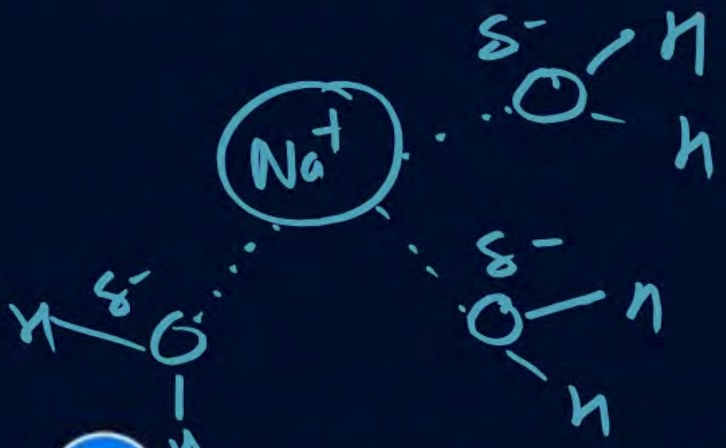
B Solubility increases on increasing temperature

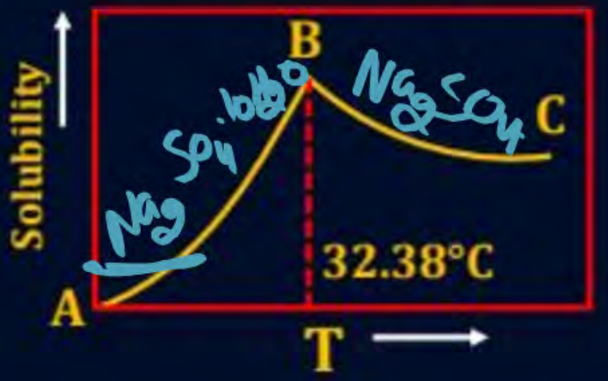
C Both of the above are correct

D None of the above are correct

QUESTION

Variation of solubility of $Na_2SO_4.10H_2O$ is shown. Thus,





(A) Upto point B(at 32.38°C), the process is endothermic as solid present in equilibrium with saturated solution of Na_2SO_4 has the formula $Na_2SO_4.10H_2O$

(B) 32.38°C is the transition temperature of $Na_2SO_4.10H_2O$

(C) After transition point is attained, dissolution process is exothermic as Na^+ and SO_4^{2-} are hydrated.

(D) All of the above are correct

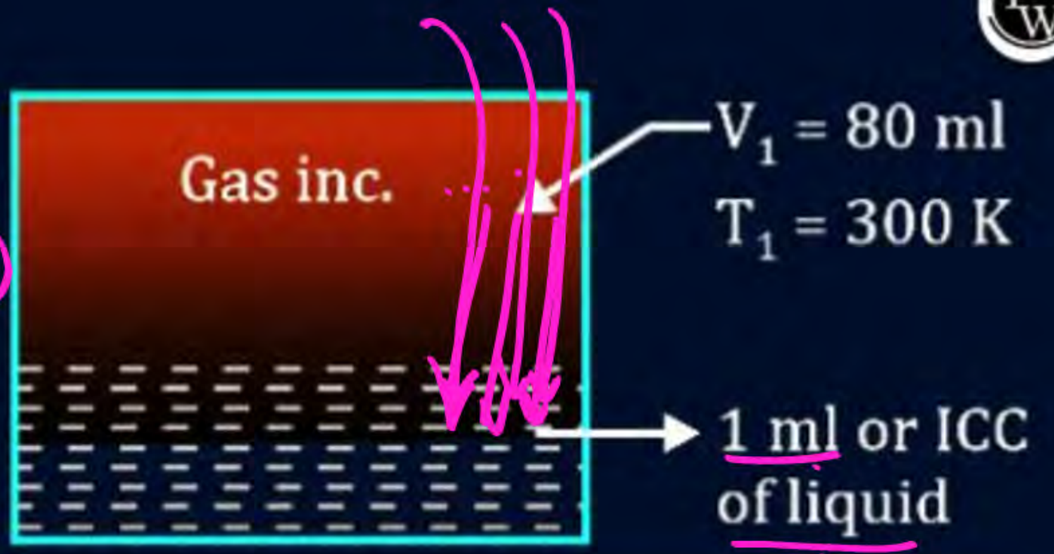
Effect of Pressure

No effect of Pressure

Solubility of Gas in a Liquid

max. Volume of gas (Converted to STP) dissolved in 1ml of liquid.

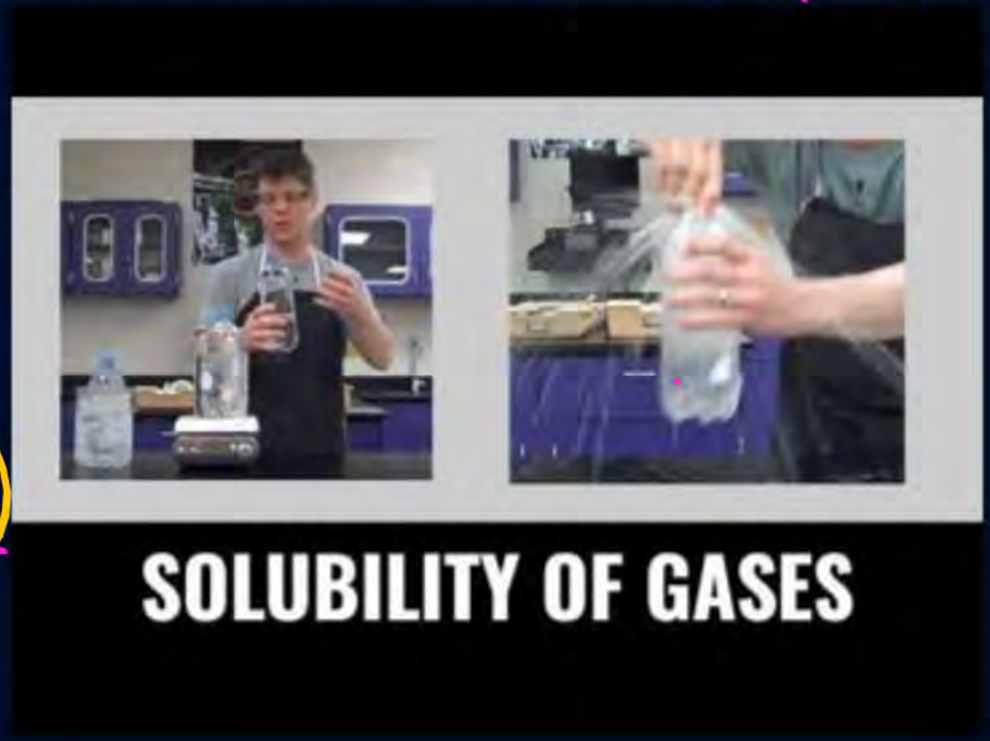
Gas (solute) + Liquid (Solvent) $\rightleftharpoons$ Solution



$V_1 = 20$ml
$T_1 = 300$K
$P_1 = 5$atm

$V_2 = ?$ STP/NTP
$T_2 = 273$K
$P_2 = 1$atm

$$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$$



Factors affecting solubility of a Gas in Liquid

① Nature of Gas & Solvent :-

If Gas react or dissociate in solvent ⇒ solubility high.

for ex :- $HCl(g)$ in H_2O

S high $HCl(g) + H_2O \longrightarrow H^+(aq.) + Cl^-(aq.)$

S high $SO_2(g) + H_2O \longrightarrow H_2SO_3$

S high $SO_3(g) + H_2O \longrightarrow H_2SO_4$

$CH_4 + H_2O \rightarrow$ No rxn

$He + H_2O \rightarrow$ No rxn

$H_2 + H_2O \rightarrow$ No rxn

Effect of Temperature

① generally dissolution exothermic ⇒ T ↑ solubility ↓

due to same reason aquatic animals more Comfortable in Cold H_2O

NEET Result

THANK YOU