Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER

Class - 10

Chapter - 2

# ACIDS, BASES AND SALTS

Part-2

## Chemical Properties of Acids



Disha Didi (DD)

Under CSR Support by ipca | Foundation

missiongyan® LET'S LEARN TOGETHER

# INDICATORS

- Indicate acidic or basic nature of the chemical compound by change in colour or odour.

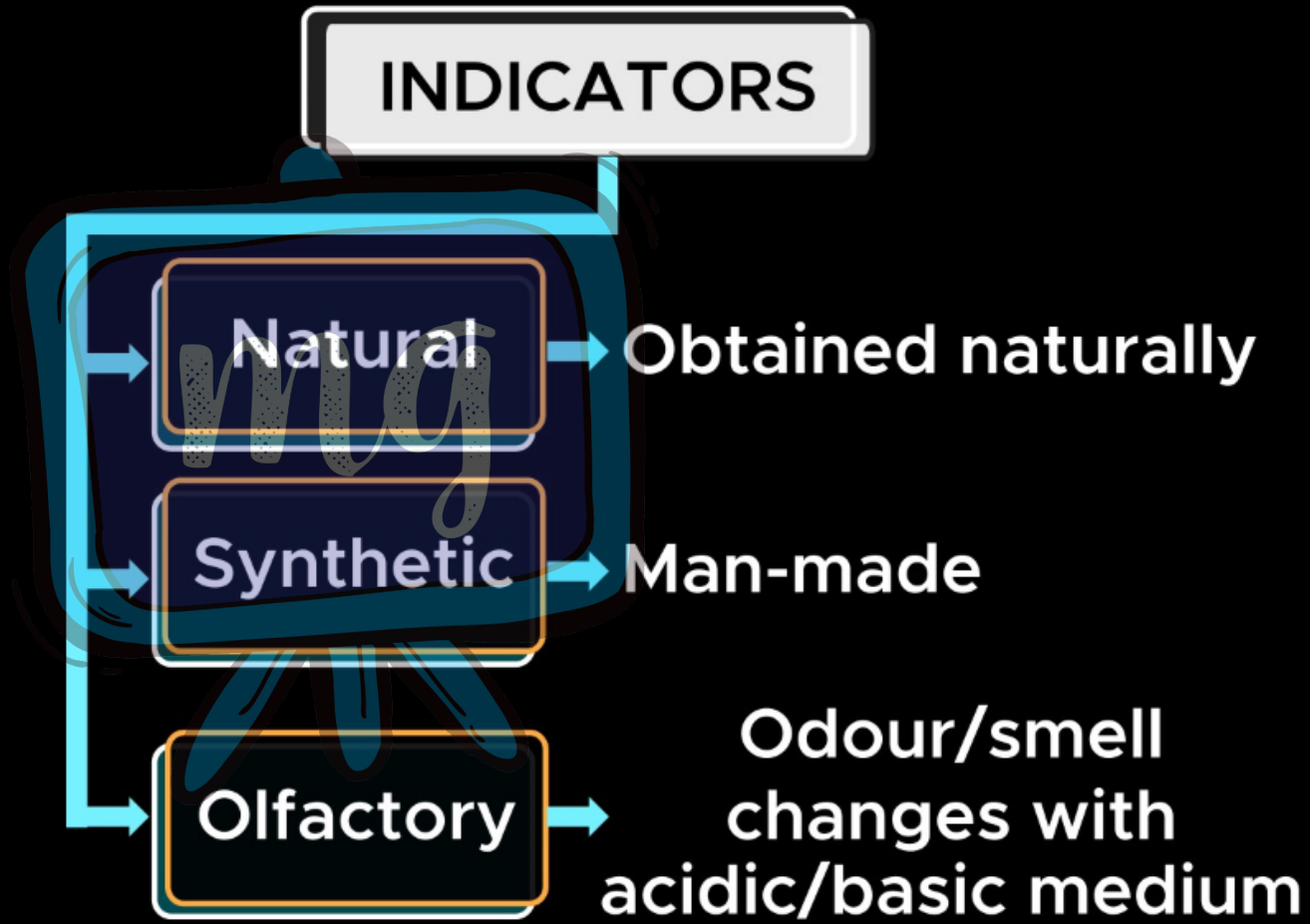
litmus

Lichen :

- Purple dye
- Extracted from Lichen division Thallophyta
- Purple when neither acidic nor basic (neutral)

Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER



Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER

# NATURAL INDICATIORS

| S. No. | Indicator | Acidic Medium | Basic Medium |
|---|---|---|---|
| 1. | Litmus | Red | Blue |
| 2. | Red Cabbage Leaf Extract | CAR Red | Rc B G Green |
| 3. | Hydrangea Flower | HAB Blue | HBP Pink |
| 4. | Turmeric | No Change | TBR Red |

Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER

# SYNTHETIC INDICATORS

| Indicator | Acid | Base |
|---|---|---|
| Phenolphthalein | Colour less (AC) | Pink BP |
| Methyl orange | Red MoAR | Yellow MBY |

Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER

# OLFACTORY INDICATORS

| Indicator | Acidic | Basic |
|---|---|---|
| Onion Extract | Characteristic smell | No smell |
| Vanilla Extract | Retains smell | No smell |
| Clove Oil | Retains smell | No smell |

Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER




## Note :

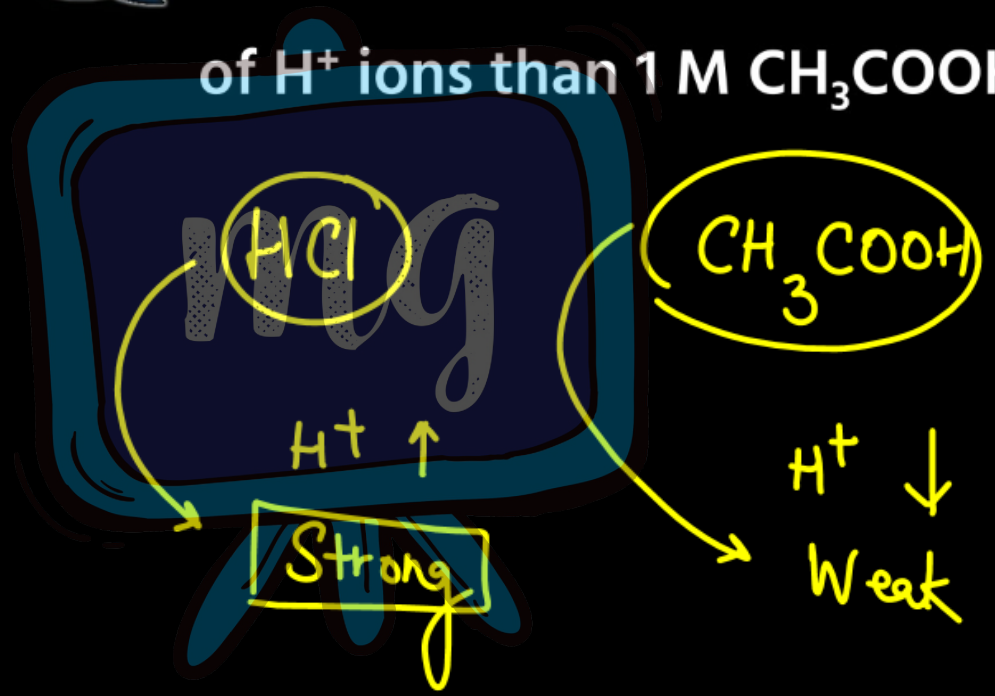
Olfactory indicator ensures the participation of visually impaired students in the laboratory to distinguish between acids and bases.

Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER



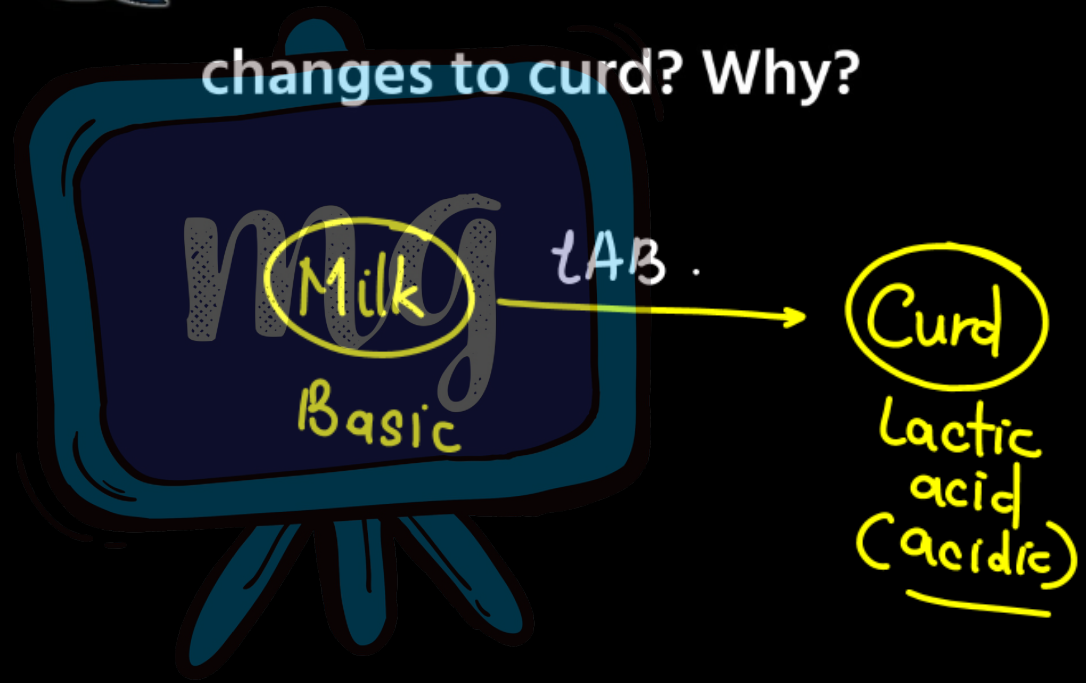
Why 1 M HCl has higher concentration of $H^+$ ions than 1 M $CH_3COOH$ ?



Under CSR Support by
ipca | Foundation

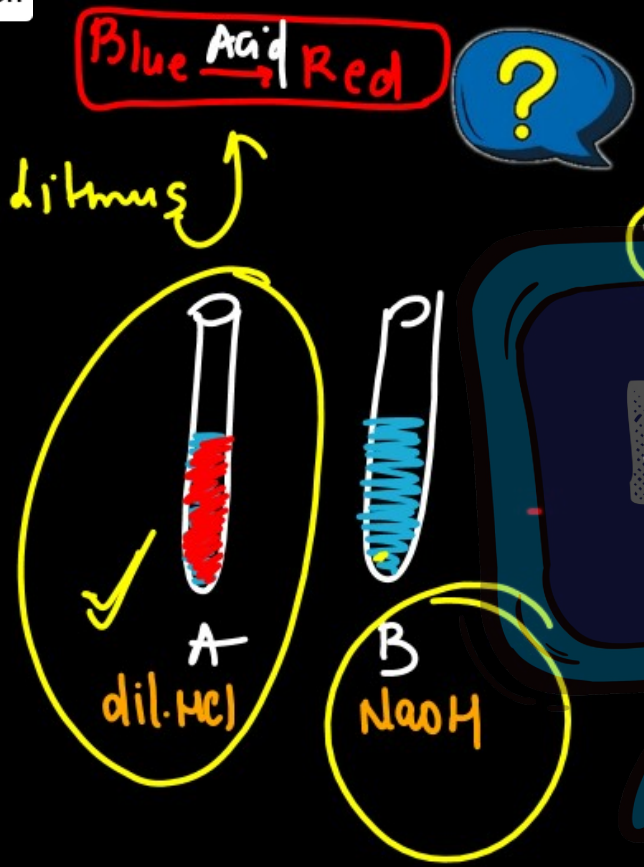
missiongyan®
LET'S LEARN TOGETHER

What happens to pH when milk changes to curd? Why?



Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER

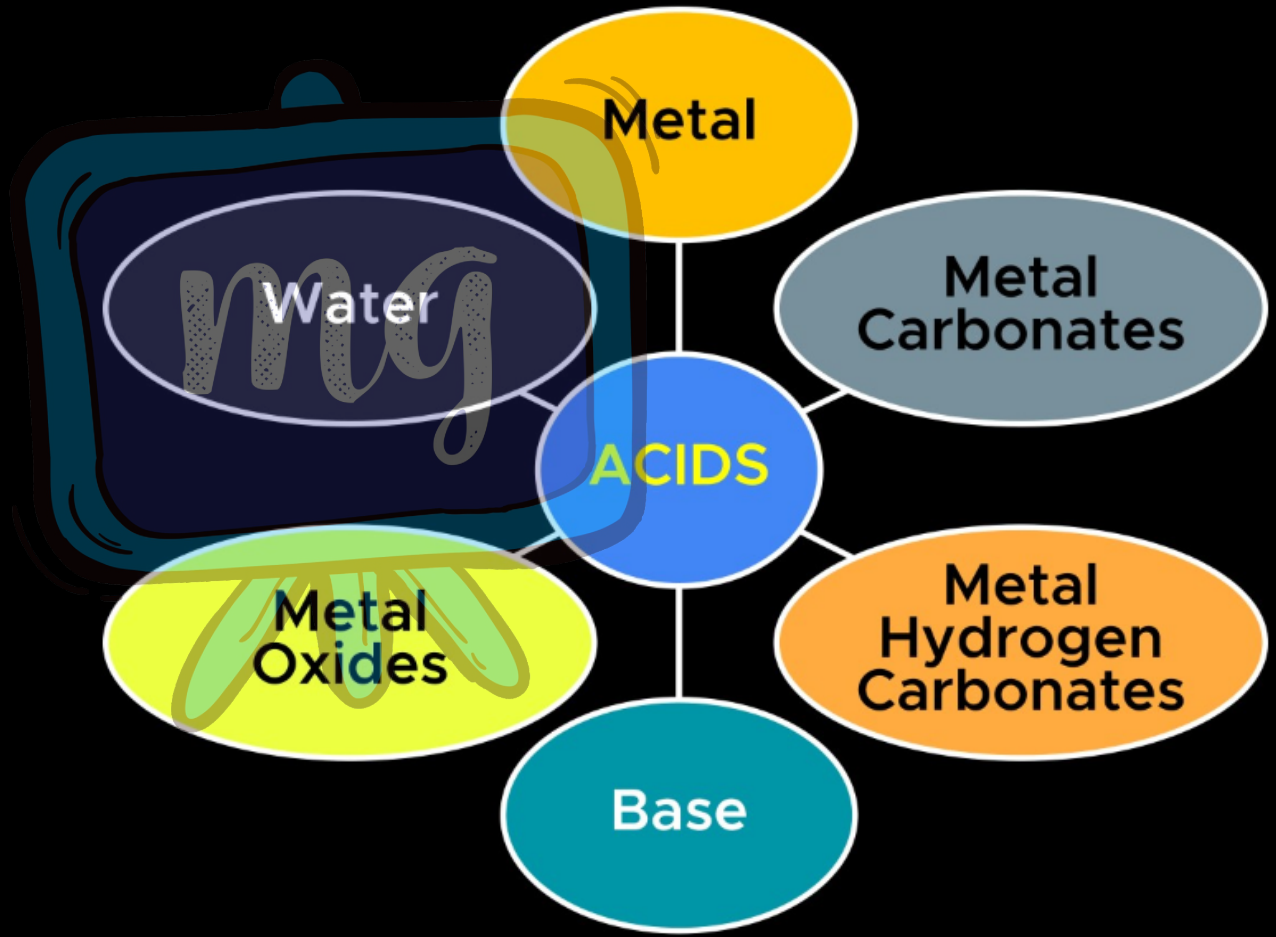



Blue litmus solution is added to two test tubes A and B containing dilute HCl and NaOH solution respectively. In which test tube, a colour change will be observed? State the colour change and give its reason.

Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER

# Chemical Properties of Acids



Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER

$HCl \longrightarrow H^+ + Cl^-$

## ① Reaction with Metal :

**Acid + Metal → Salt + Hydrogen(g)**

$H_2SO_4 + Zn \longrightarrow ZnSO_4 + H_2\uparrow + \Delta$

Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER

## 1. Reaction with Metal —

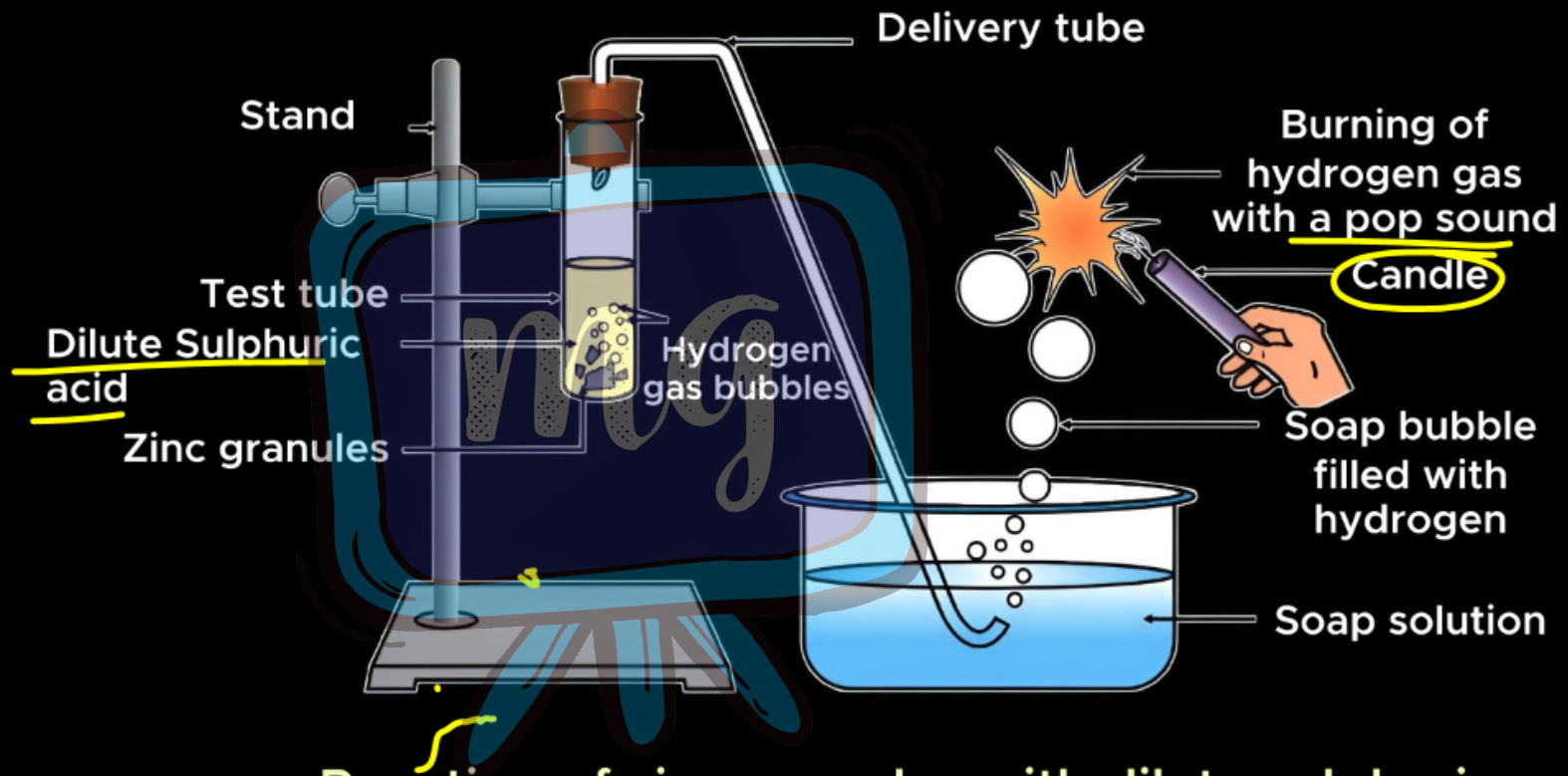
$$\text{Acid} + \text{Metal} \rightarrow ZnSO_4 + H_2\uparrow (g) + \Delta$$

$$H_2SO_4 + Zn \rightarrow ZnSO_4 + H_2\uparrow + \Delta$$

- Metal displaces hydrogen from acid.
- Hydrogen gas released.
- A new compound; salt is formed.

Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER




Reaction of zinc granules with dilute sulphuric acid and testing hydrogen gas by burning

Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER

(B) Acid + Metal Carbonates/ Hydrogen Carbonates ⟶ ?

$H_2SO_4 + Na_2CO_3 \longrightarrow Na_2SO_4 + H_2O + CO_2$

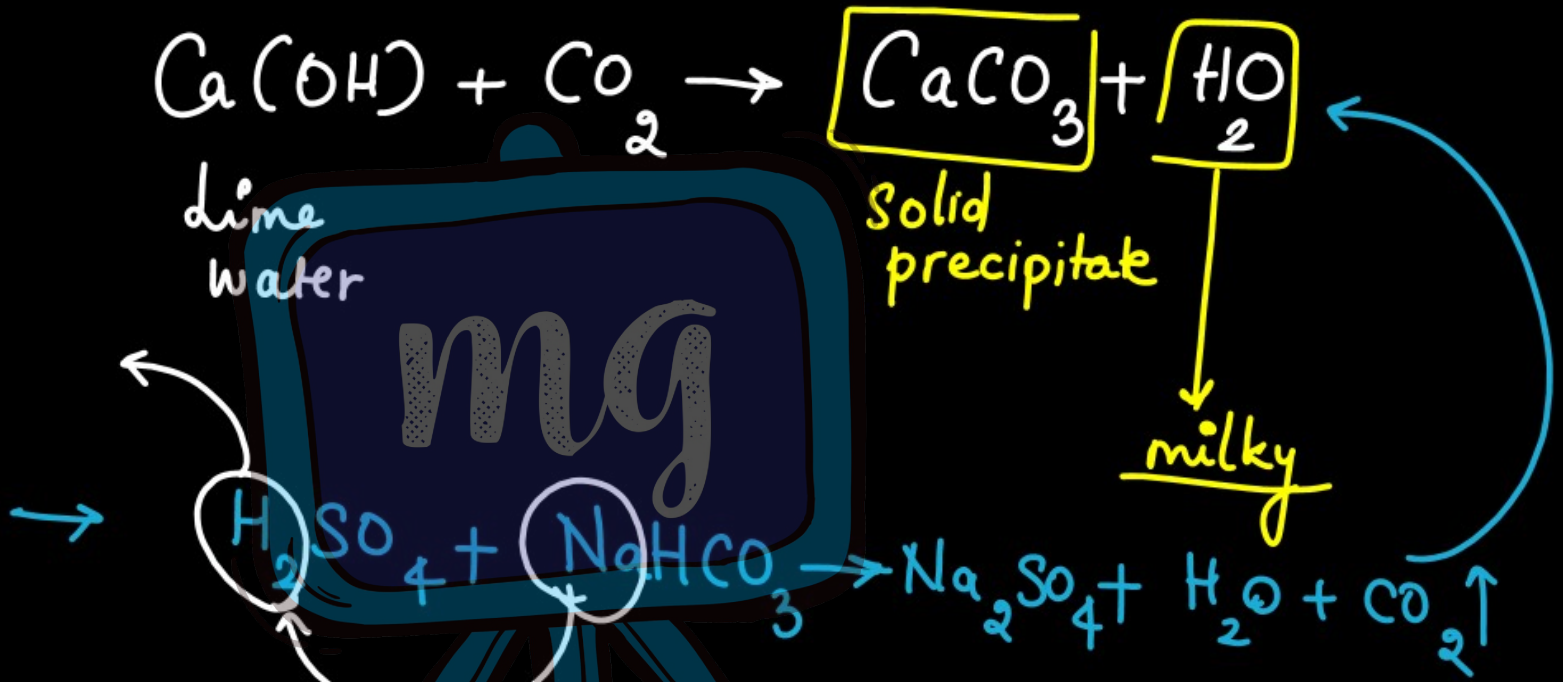
$H_2$

$H_2CO_3 \rightarrow H_2O + CO_2$

∴

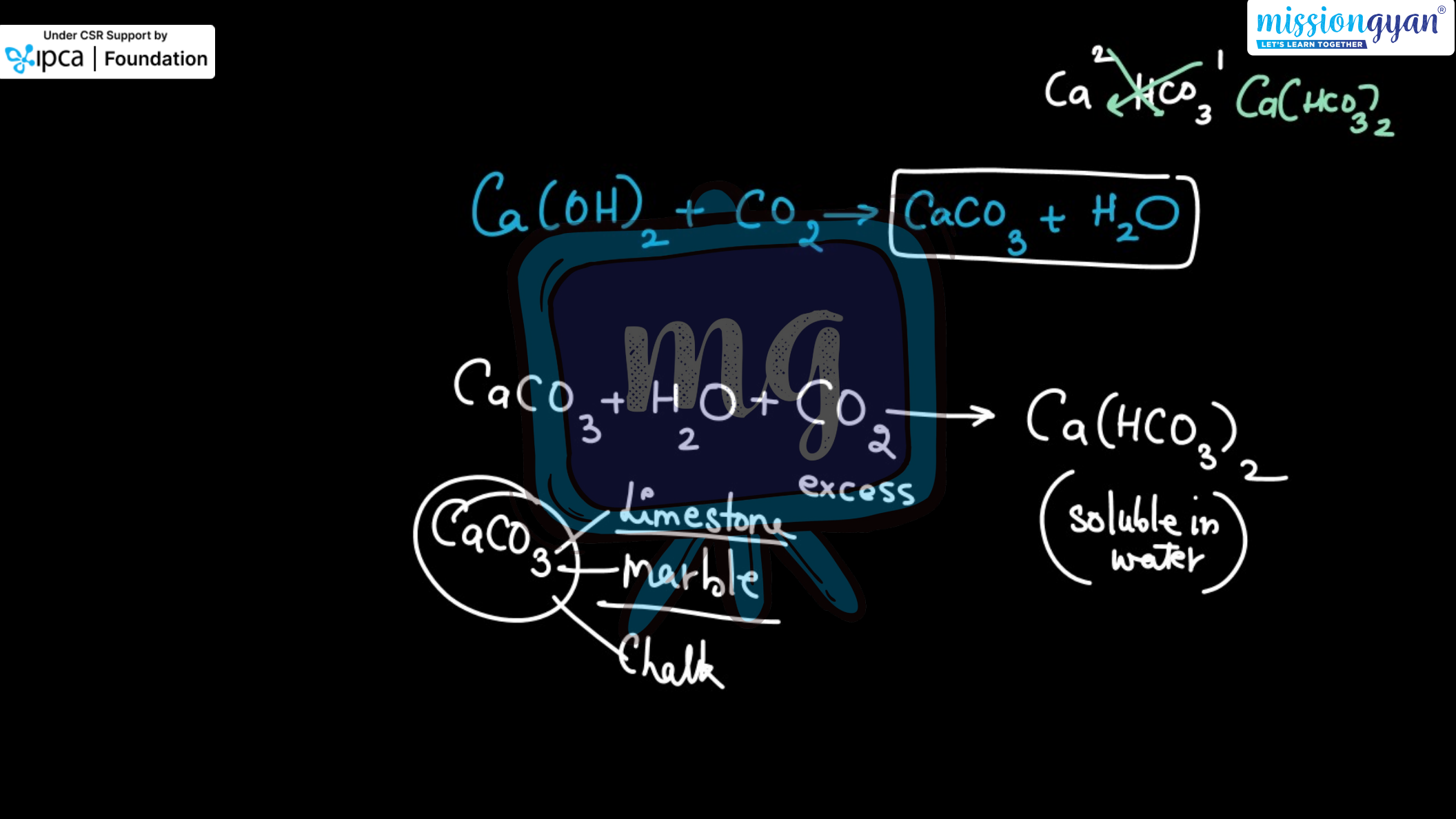
Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER



Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER



Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER

## 2. Reaction with metal carbonate and Metal Hydrogen Carbonate —

Acid + Metal Carbonate → Salt + Water + Carbon dioxide Gas

$$H_2SO_4 + Na_2CO_3 \longrightarrow Na_2SO_4 + H_2O + CO_2 \uparrow$$

Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER

Acid + Metal → Salt + Water + Carbon dioxide + Hydrogen Carbonate Gas

$$H_2SO_4 + NaHCO_3 \longrightarrow Na_2SO_4 + H_2O + CO_2$$

Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER

# Test For $CO_2$ Gas :

$$Ca(OH)_2 + CO_2(g) \longrightarrow CaCO_3(s) + H_2O(l)$$

Lime water

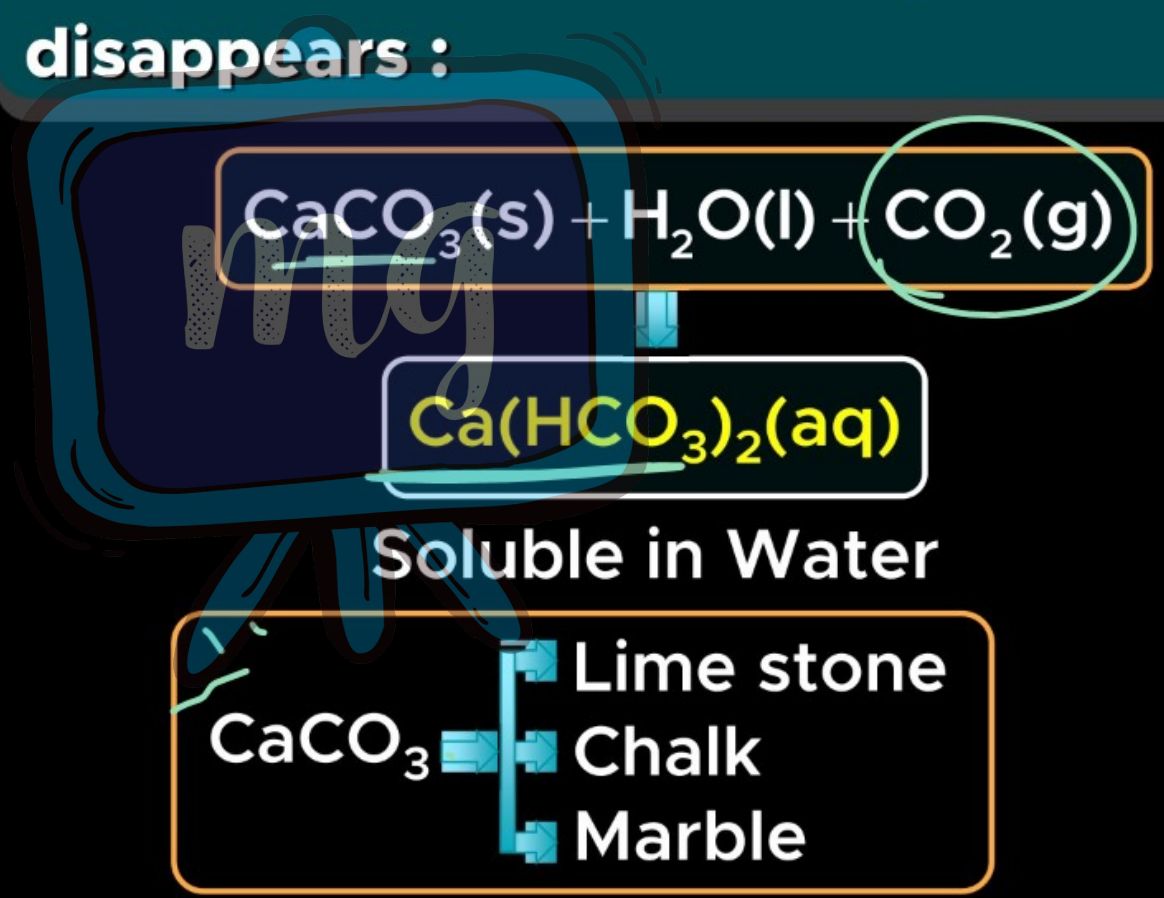
Solid white Precipitate

∴ Lime water turns milky.

Under CSR Support by
ipca | Foundation

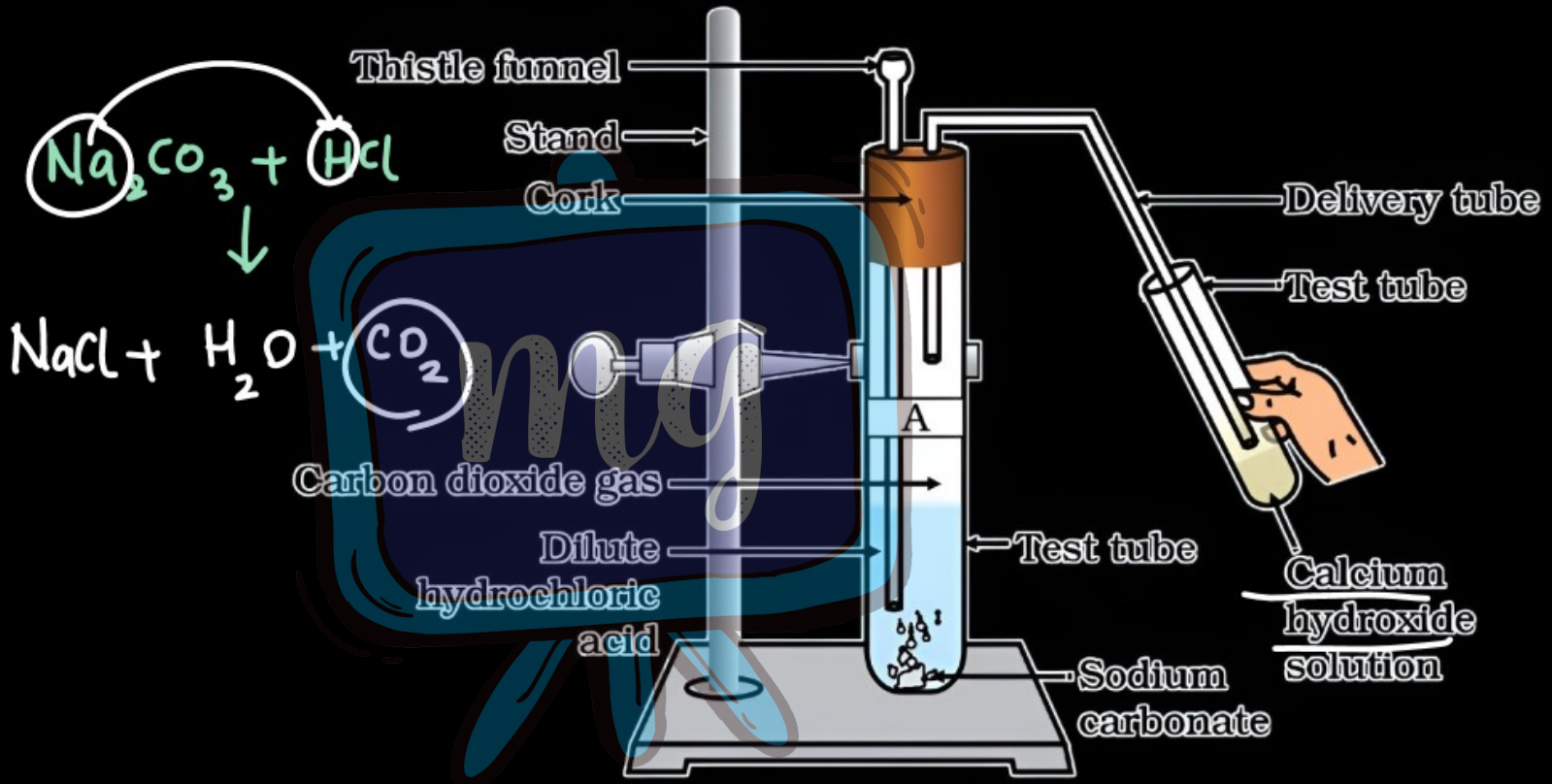
missiongyan®
LET'S LEARN TOGETHER

**On passing excess of $CO_2$; milkiness disappears :**



Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER




Passing carbon dioxide gas through calcium hydroxide solution

Under CSR Support by
ipca | Foundation

missiongyan®
LET'S LEARN TOGETHER

