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Class - 10

Chapter - 2

# ACIDS, BASES AND SALTS

Part-3

## Chemical Properties of Acids & Bases

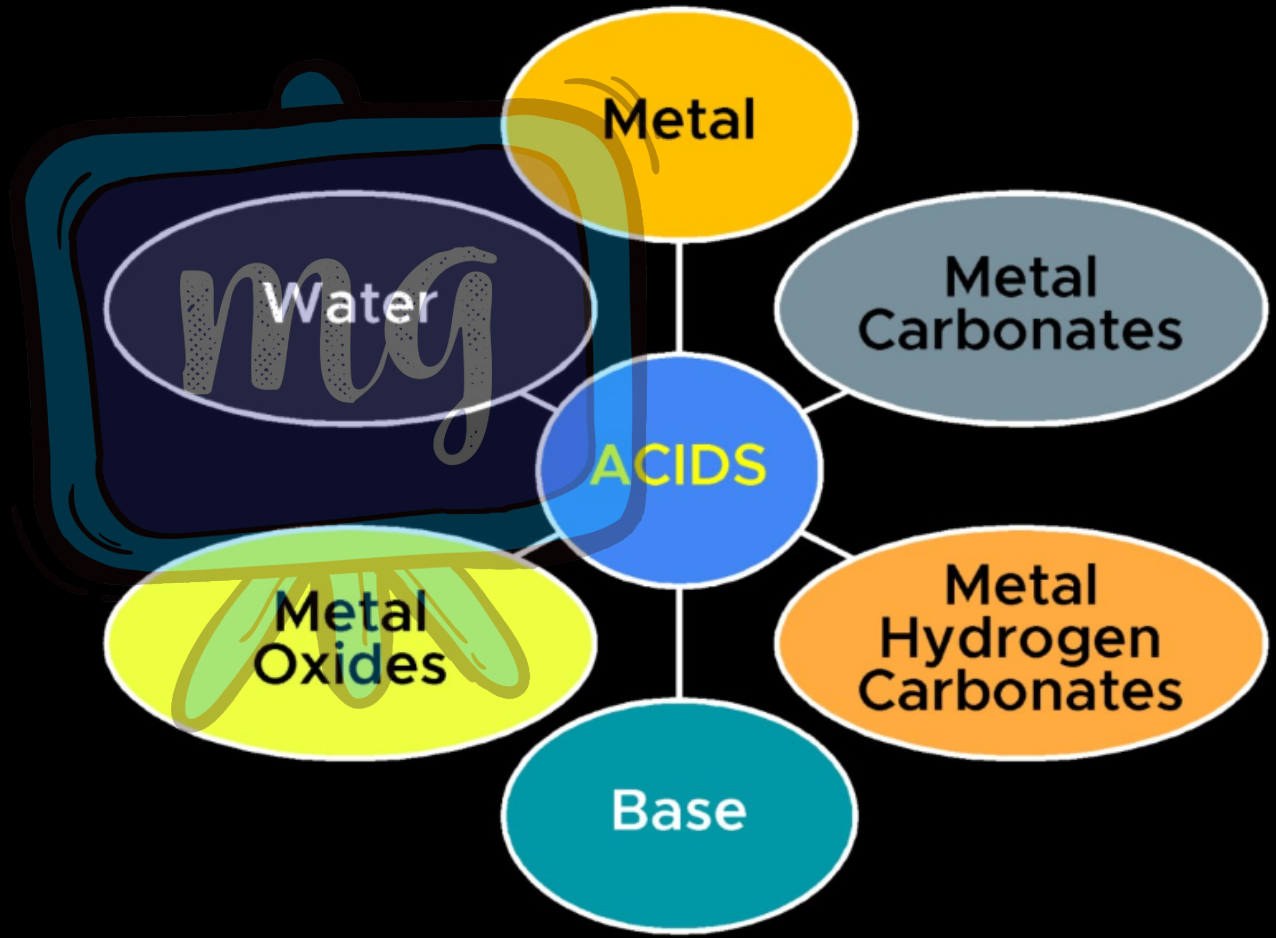


Disha Didi (DD)

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# Chemical Properties of Acids

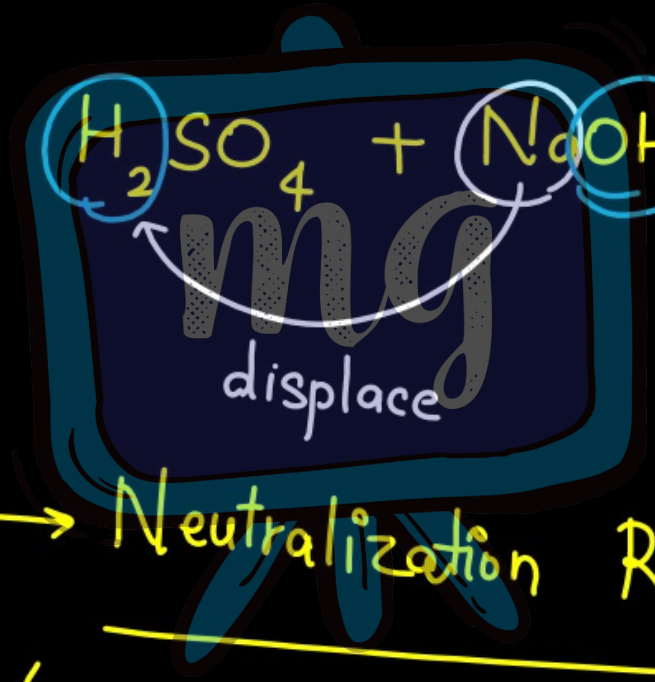


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③ Acid + Base → Salt + Water

$H_2SO_4 + NaOH \rightarrow Na_2SO_4 + H_2O$

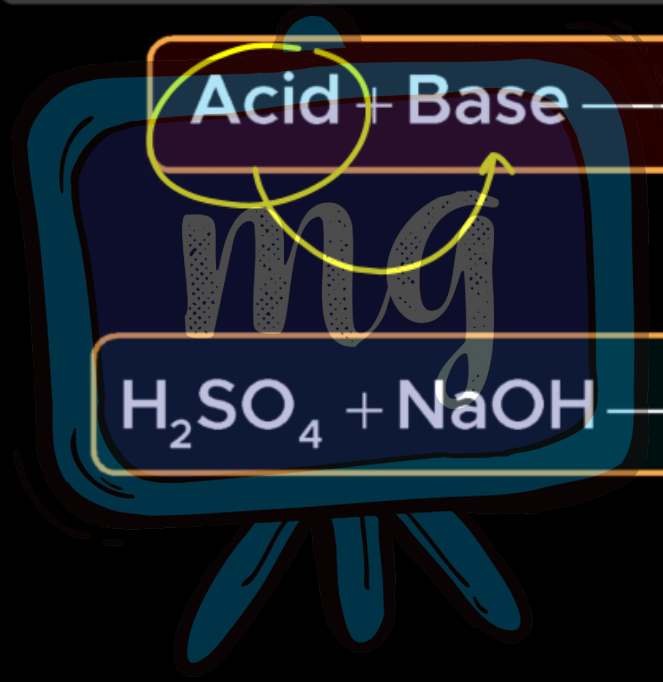



→ Neutralization Reaction

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# 3. Reactions with Base



$$\text{Acid} + \text{Base} \longrightarrow \text{Salt} + \text{Water}$$

$$H_2SO_4 + NaOH \longrightarrow Na_2SO_4 + H_2O$$

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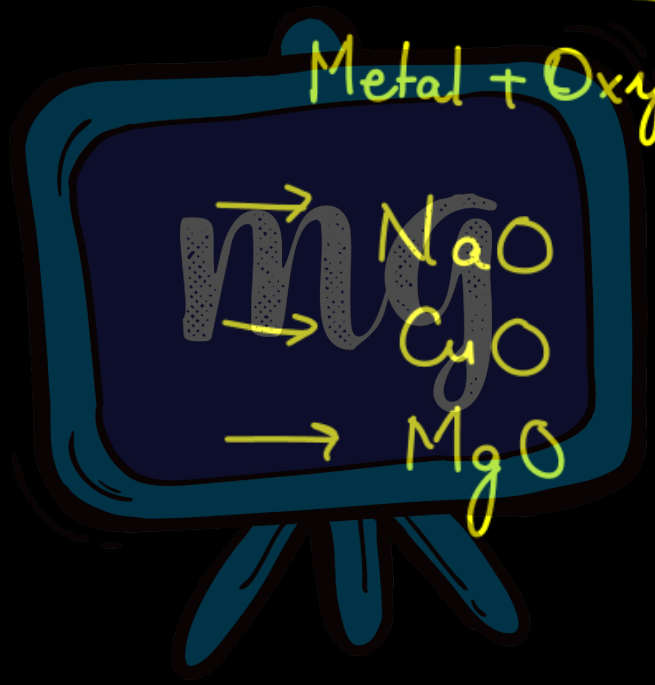
- Effect of base nullified by acid or vice versa.
- Reaction between acid and base gives salt and water called Neutralization Reaction.

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# Metallic Oxide

Metal + Oxygen



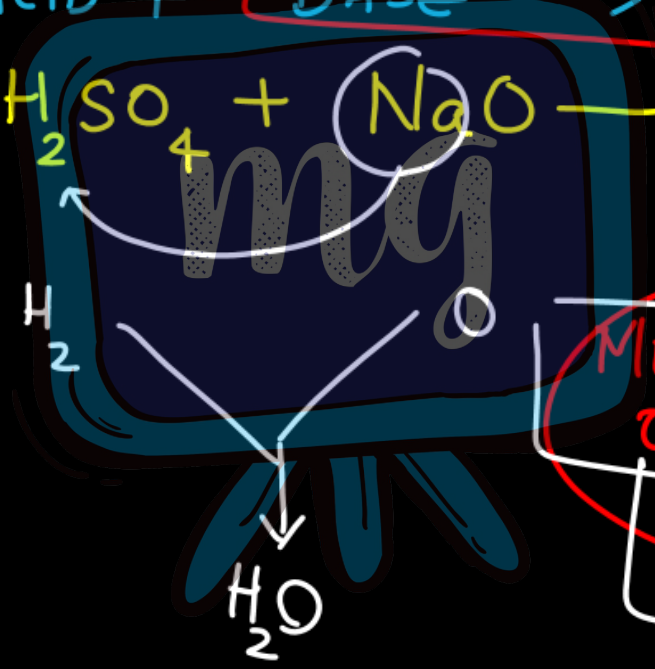
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ACID + METALLIC OXIDE → SALT + WATER

ACID + BASE → SALT + WATER

$H_2SO_4 + NaO \rightarrow Na_2SO_4 + H_2O$

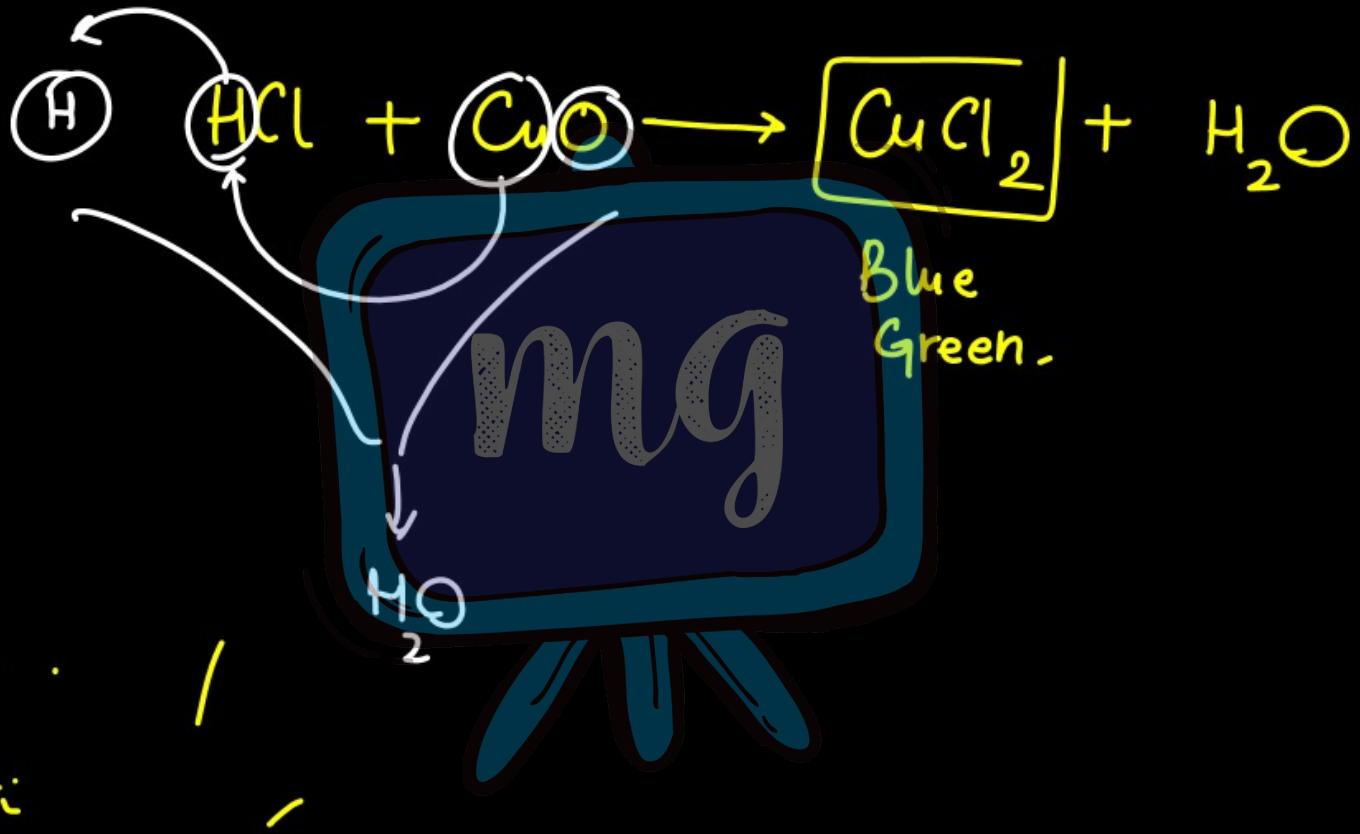



METALLIC OXIDE = Basic oxide

→ Basic

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# 4. Reactions with Metal oxides :

$$\text{Acid} + \text{Metal Oxide} \longrightarrow \text{Salt} + \text{Water}$$

$$H_2SO_4 + NaO \longrightarrow Na_2SO_4(s) + H_2O(l)$$

$$HCl + CuO \longrightarrow CuCl_2 + H_2O(l)$$

(Blue Green)

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$$\text{Acid} + \text{Base} \longrightarrow \text{Salt} + H_2O$$

$$\text{Acid} + \text{Metallic Oxides} \longrightarrow \text{Salt} + H_2O$$

**Metallic Oxides = Basic Oxides**

Q. Proove metallic oxides are basic in nature?

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ACID + WATER → ?

$HCl + H_2O \rightarrow H^+ + Cl^-$

$H^+$ / $H_3O^+$

$H^+$ → Hydrogen ion

$H_3O^+$ → Hydronium Ion

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## 5. Reactions with Water :

$$HCl + H_2O \longrightarrow H_3O^+ + Cl^-$$

- $H^+$ ions produced only in presence of $H_2O$.
- Dissociation of H+ ions from HCl/any acid molecule cannot occur in absence of water.

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## alkali

- Hydrogen can not exist alone, but exist after combining with water molecule.

$H_3O^+$

- Hydrogen ion must always be represented as $H^+(aq)$ or $H_3O^+$

$H^+(aq)$

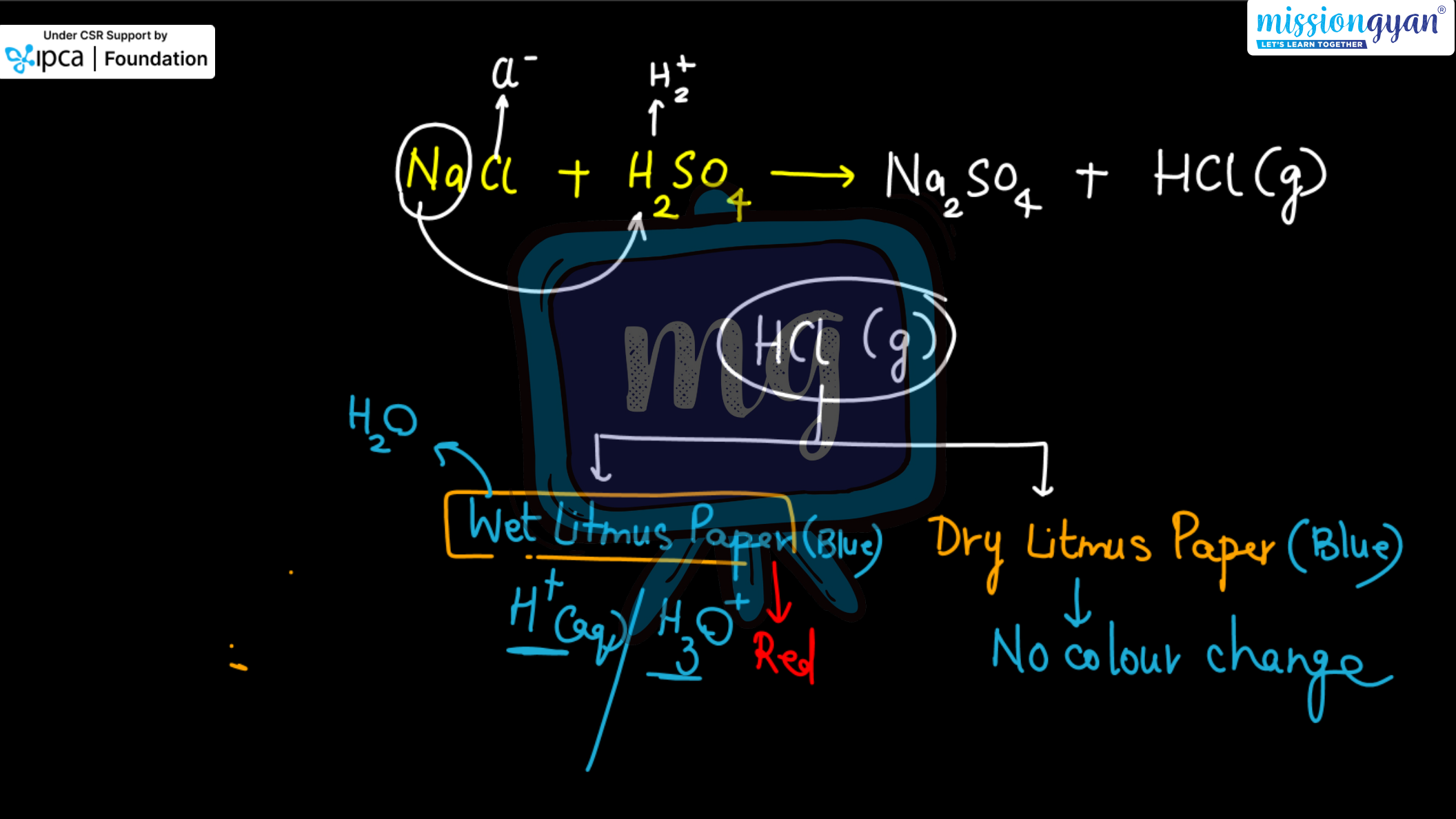
or

$H_3O^+$

$$H^+ + H_2O \longrightarrow H_3O^+$$

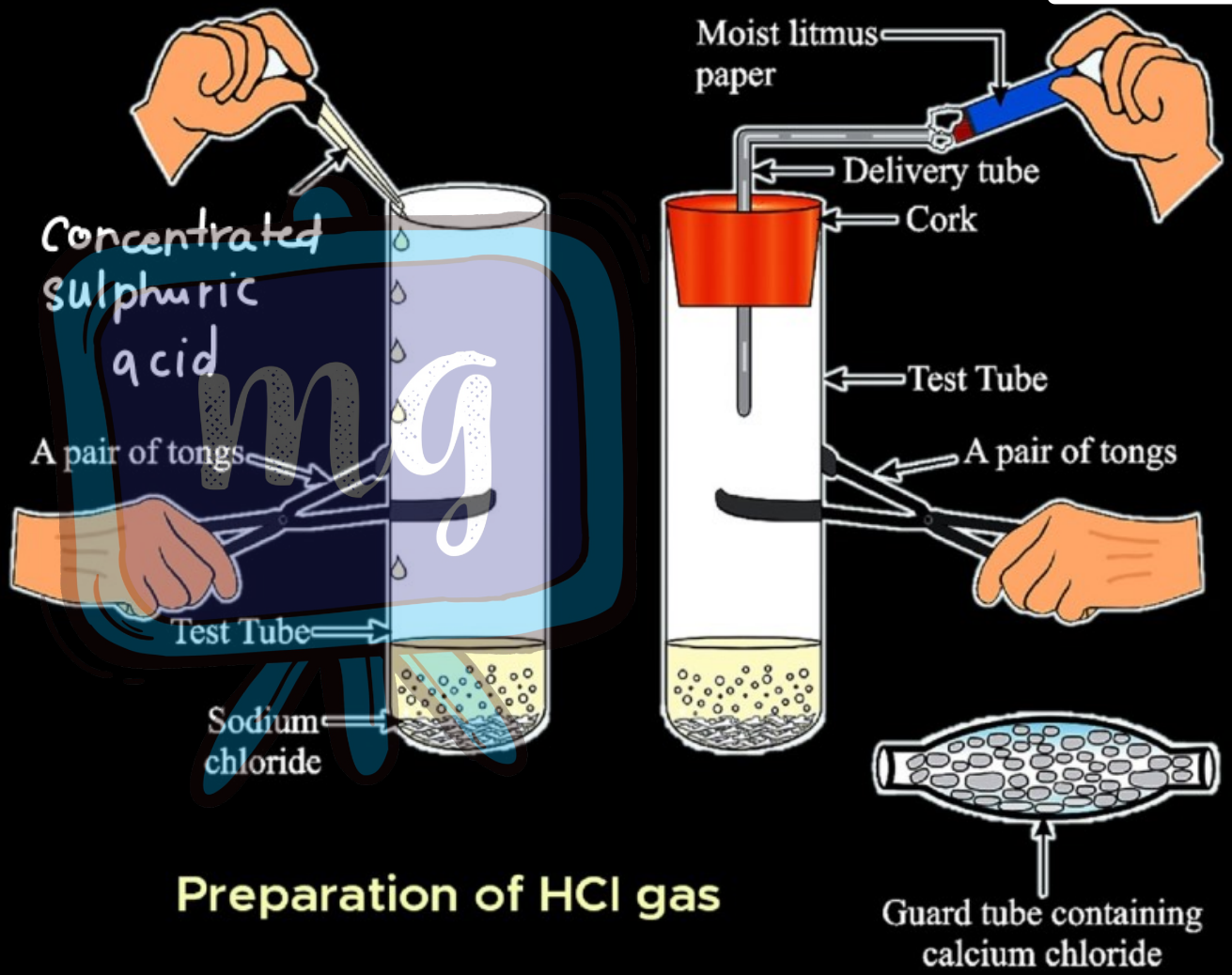
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Preparation of HCl gas

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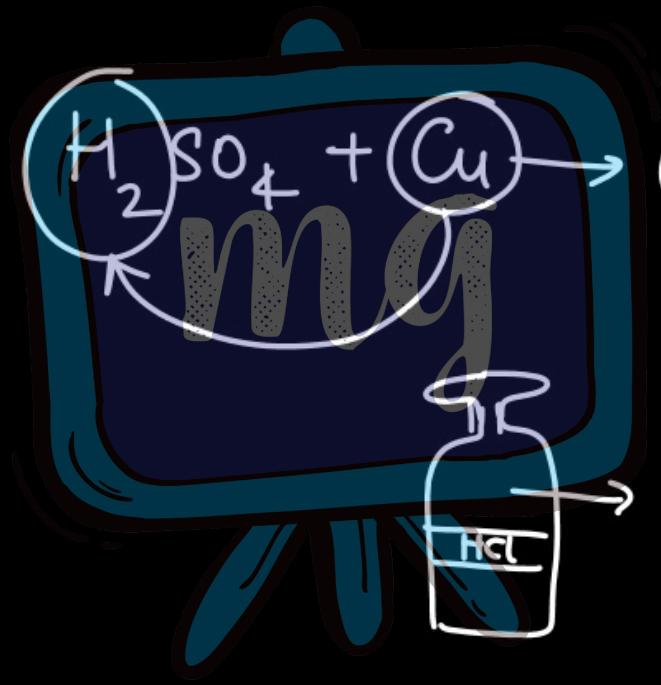
Why should curd and sour substances not be kept in brass and copper vessels?

Lactic Acid
Acid

→ Unfit for Consumption

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A solution reacts with crushed egg-shells to give a gas that turns lime-water milky. The solution contains:

B

(A) NaCl

(B) HCl

(C) LiCl

(D) KCl

$CaCO_3 + HCl \longrightarrow CaCl_2 + CO_2 + H_2O$

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Gastric Acid / Juice

→ HCl

Abhishek was explaining to Harsh that we sometimes feel burning sensation in the stomach when we over eat or eat too much of spicy food. Support Abhishek's view with a suitable justification for the same.

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NaOH : 10ml
HCl : 8ml
NaOH : 20ml

10 mL of a solution of NaOH is found to be completely neutralised by 8 mL of a given solution of HCl. If we take 20 mL of the same solution of NaOH, the amount of HCl solution (the same solution as before) required to neutralise it will be

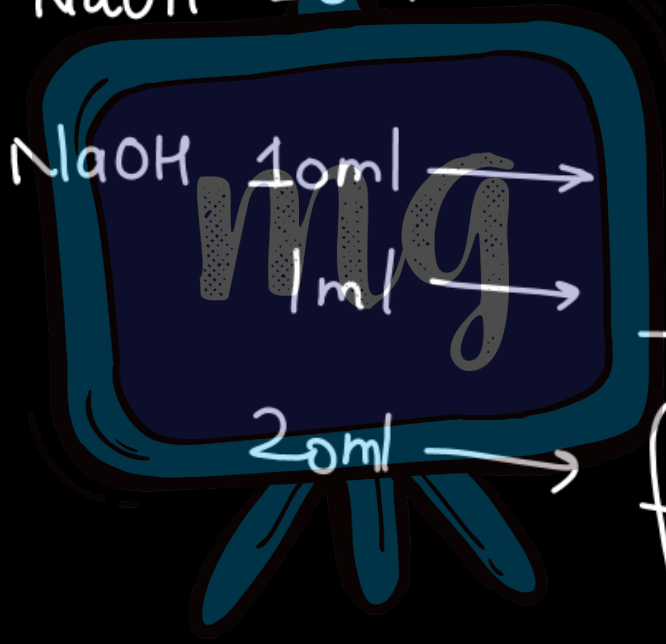
(A) 4 mL
(B) 8 mL
(C) 12 mL
(D) 16 mL

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NaOH : 10 ml  HCl : 8 mL

NaOH : 20 ml  HCl : ?



NaOH 10ml → 8ml HC

1ml → $\frac{8}{10}$ → 0·8 mL

20ml → $\frac{8}{10} \times 20 = 16$ ml