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Class - 10

Chapter - 2

ACIDS, BASES AND SALTS

Part-4

Chemical Properties of Bases

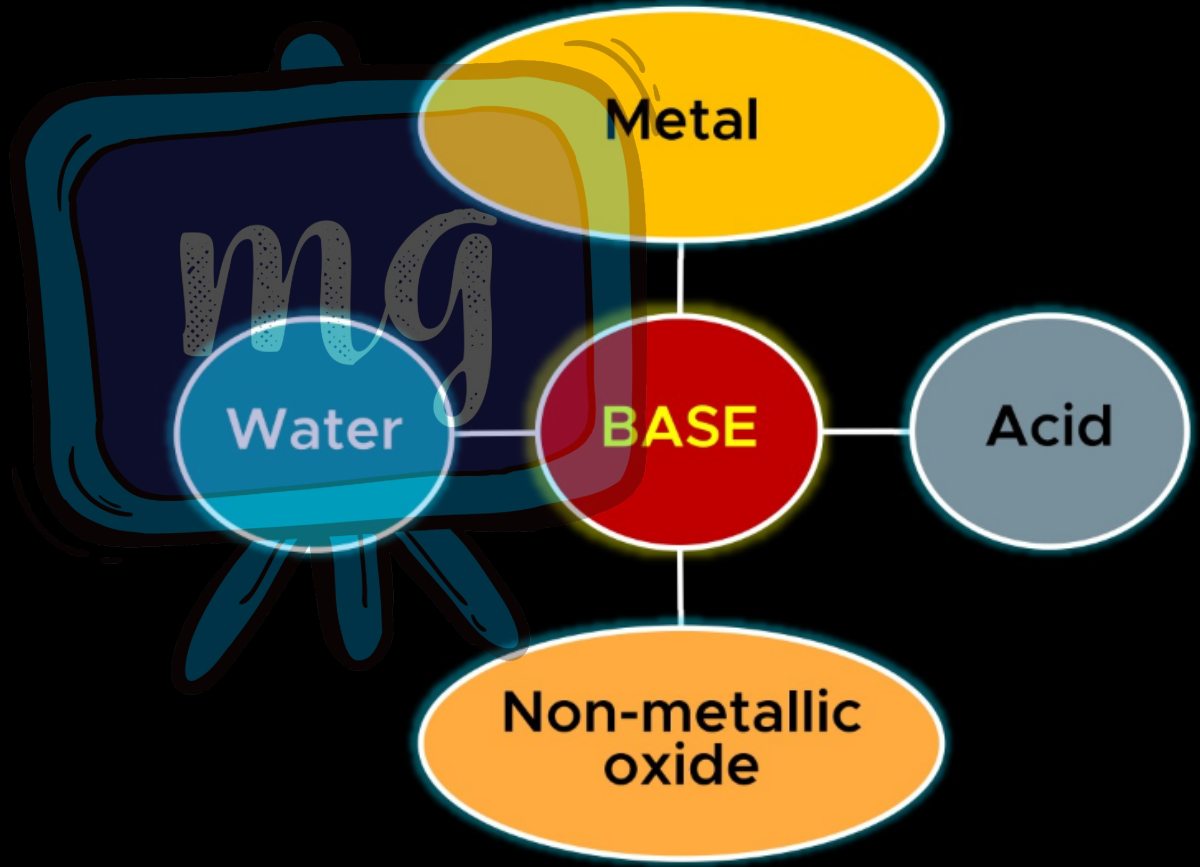


Disha Didi (DD)

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Chemical Properties of Bases



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① Base + Metal ⟶ ?

NaOH + Zn ⟶ Na_2ZnO_2 + H_2↑

→ Strong base
→ alkali

Na_2ZnO_2 (Salt)

H_2 (Hydrogen Gas)

⊛ Reactive Metals : Zn ; Al ; Sn (Tin)

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1. Reactions with Base :

- Certain reaction metals

Zn; Al; Sn

React with alkali (NaOH, KOH)

Base + Metal ⟶ Salt + Hydrogen gas

$$2NaOH + Zn \longrightarrow \underset{\text{Sodium Zincate}}{Na_2ZnO_2} + H_2$$

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NOTE :

Such reactions not possible with all metals.

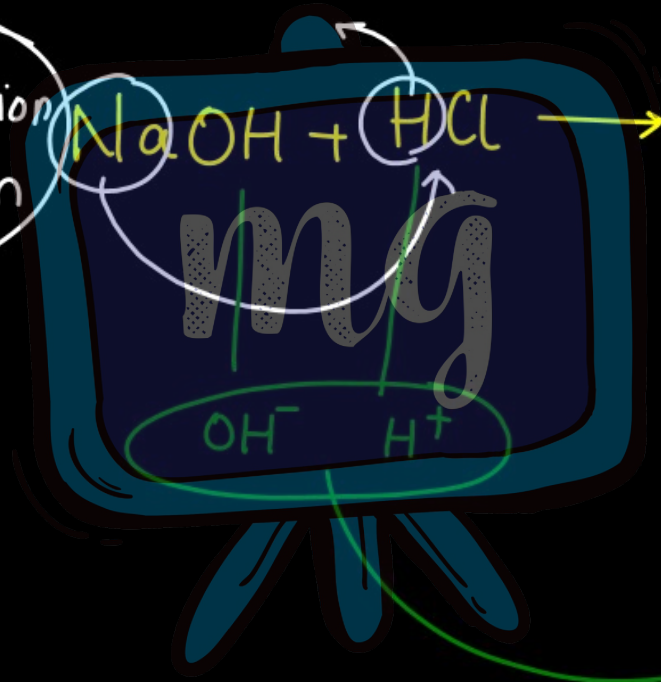


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② Base + Acid → Salt + Water

Neutralization Reaction



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2. Reactions with Acid :

Neutralization Reaction

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

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

OH^- H_2^+

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③ Base + Non-metallic Oxide → ?

$Ca(OH)_2 + CO_2 \rightarrow \underbrace{CaCO_3}_{\text{Salt}} + \underbrace{H_2O}_{\text{water}}$

Base + Acid → Salt + Water

Non-metallic Oxides = Acidic

Q: Prove

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$C + O_2 \rightarrow CO_2$

3. Reactions with Non-metallic Oxides :

$$\text{Base} + \text{Non} - \text{Metallic Oxide} \longrightarrow \text{Salt} + \text{Water}$$

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

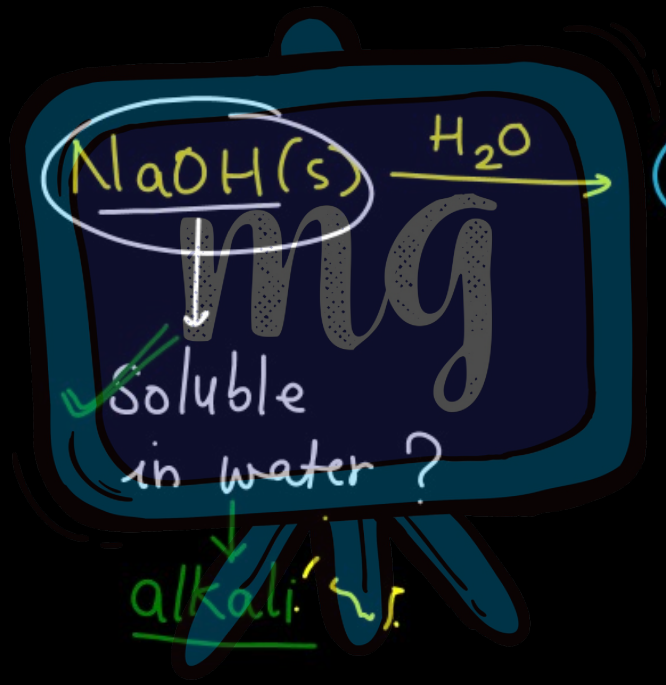
$$\text{Base} + \text{Acid} \longrightarrow \text{Salt} + H_2O$$

Non-metallic Oxides = Acidic

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4 Base $\xrightarrow{H_2O}$?



$NaOH(s) \xrightarrow{H_2O} Na^+(aq) + OH^-(aq)$

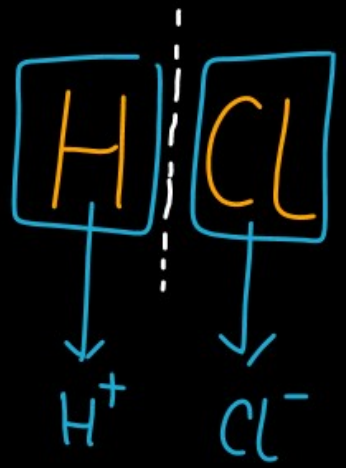
Sodium ion

Hydroxide ion

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$$KOH \xrightarrow{H_2O} K^+(aq) + OH^-(aq)$$

$$Mg(OH)_2 \xrightarrow{H_2O} Mg^{+2}(aq) + 2OH^-(aq)$$



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4. Reactions with Water :

$$\text{Base(s)} \xrightarrow{H_2O} \text{Hydeoxide Ion(aq)} + \text{Metal Ion(aq)}$$

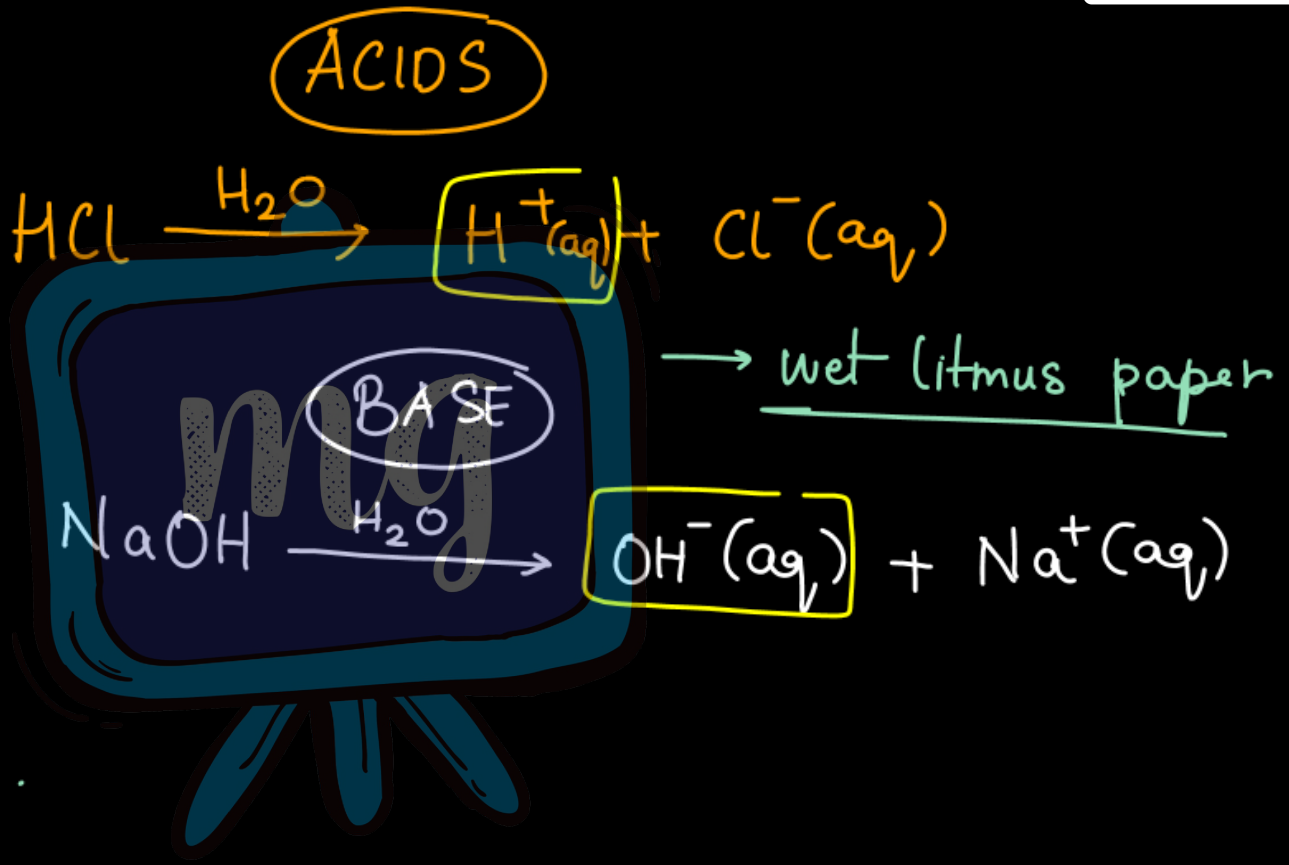
$$NaOH(s) \xrightarrow{H_2O} Na^{+}(aq) + OH^{-}(aq)$$

$$KOH(s) \xrightarrow{H_2O} K^{+}(aq) + OH^{-}(aq)$$

$$Mg(OH)_2(s) \xrightarrow{H_2O} Mg^{+}(aq) + 2OH^{-}(aq)$$

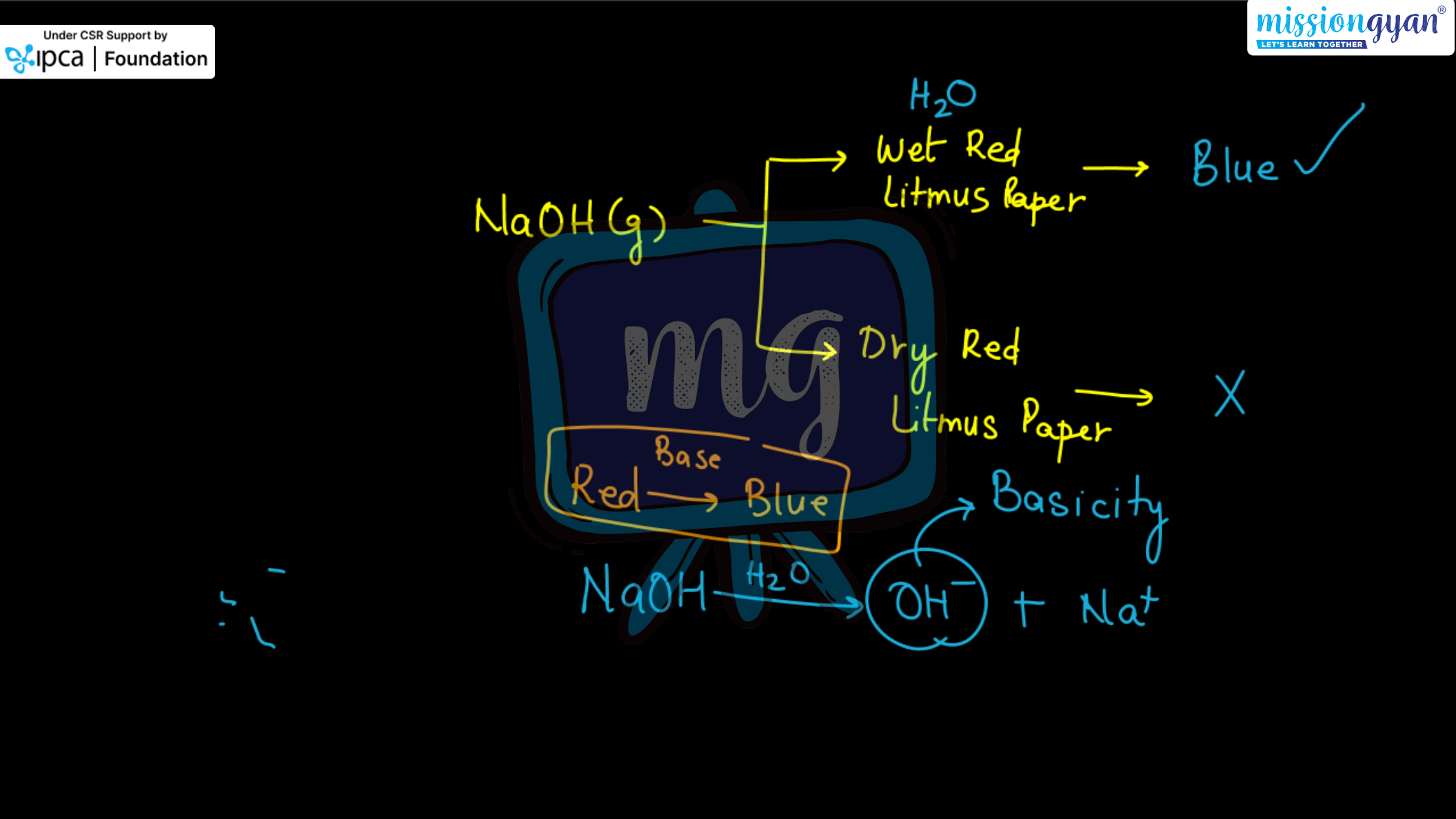
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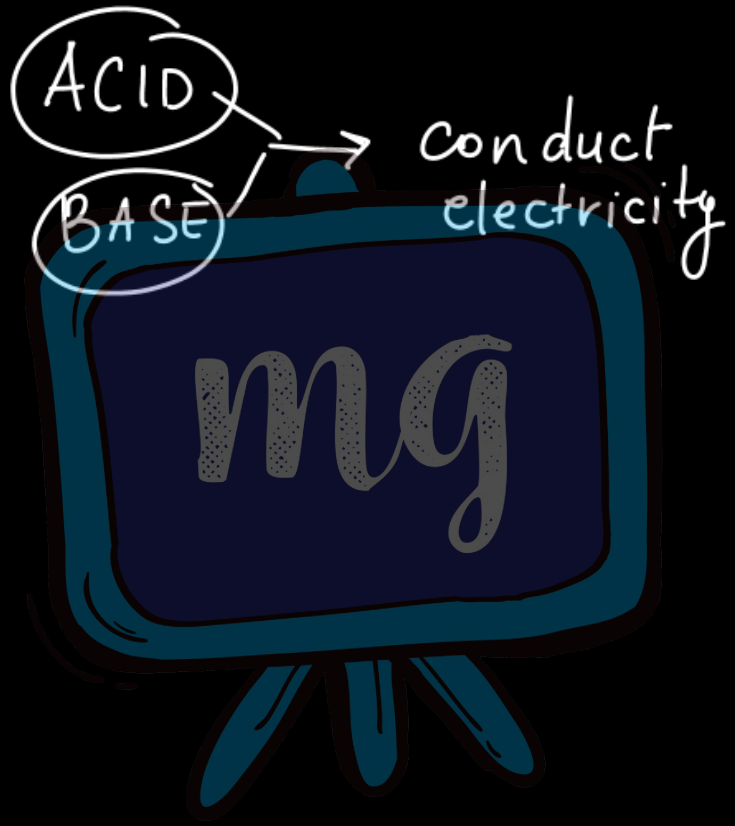
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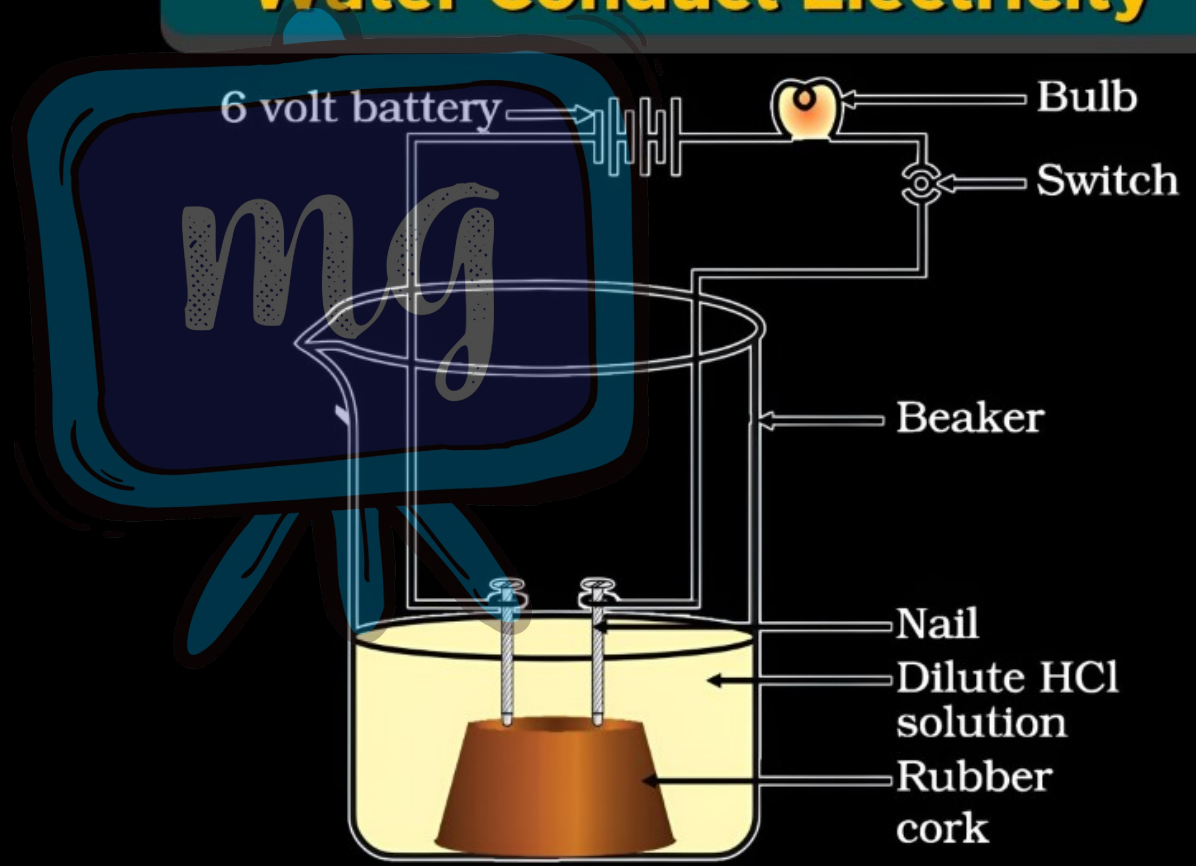
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Acid Solution in Water Conduct Electricity



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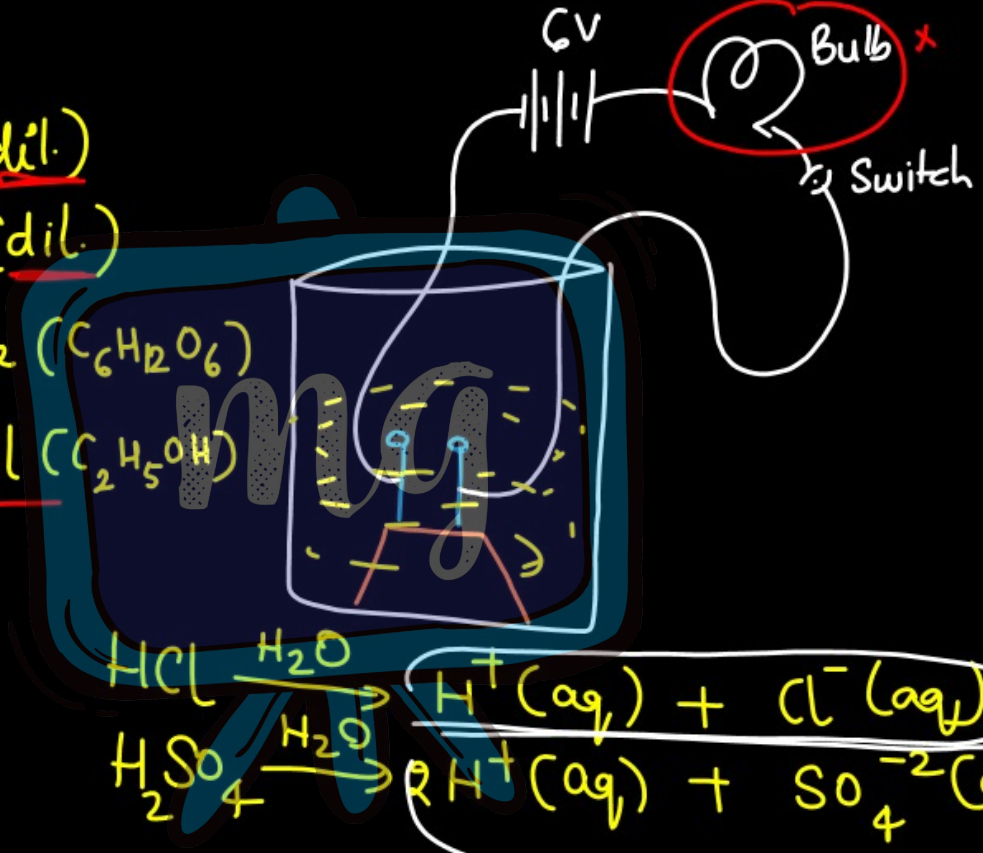
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✓ Glow ← 1) HCl (dil.)

✓ Glow 2) H_2SO_4 (dil.)

No Glow 3) Glucose ($C_6H_{12}O_6$)

No Glow 4) Alcohol (C_2H_5OH)



$HCl \xrightarrow{H_2O} H^+(aq) + Cl^-(aq)$

$H_2SO_4 \xrightarrow{H_2O} 2H^+(aq) + SO_4^{-2}(aq)$

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Observation :

The bulb will start glowing in the case of acids, not in case of glucose and alcohol solution.

Conclusion :

Glucose and alcohol solutions do not conduct electricity.

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