

UPDAAN



2025

Bharat Mata Ki
Jai ♡

ACIDS, BASES AND SALTS

Doubts, Bit More on Acids, Physical
and Chemical Properties of Bases

CHEMISTRY

Lecture - 04

BY: SUNIL BHAIIYA



Topics

to be covered

- 1 Doubts Solution (✓)
- 2 Classification of Acids Based on Concentration (✓)
- 3 Physical and Chemical Properties of Bases (✓)

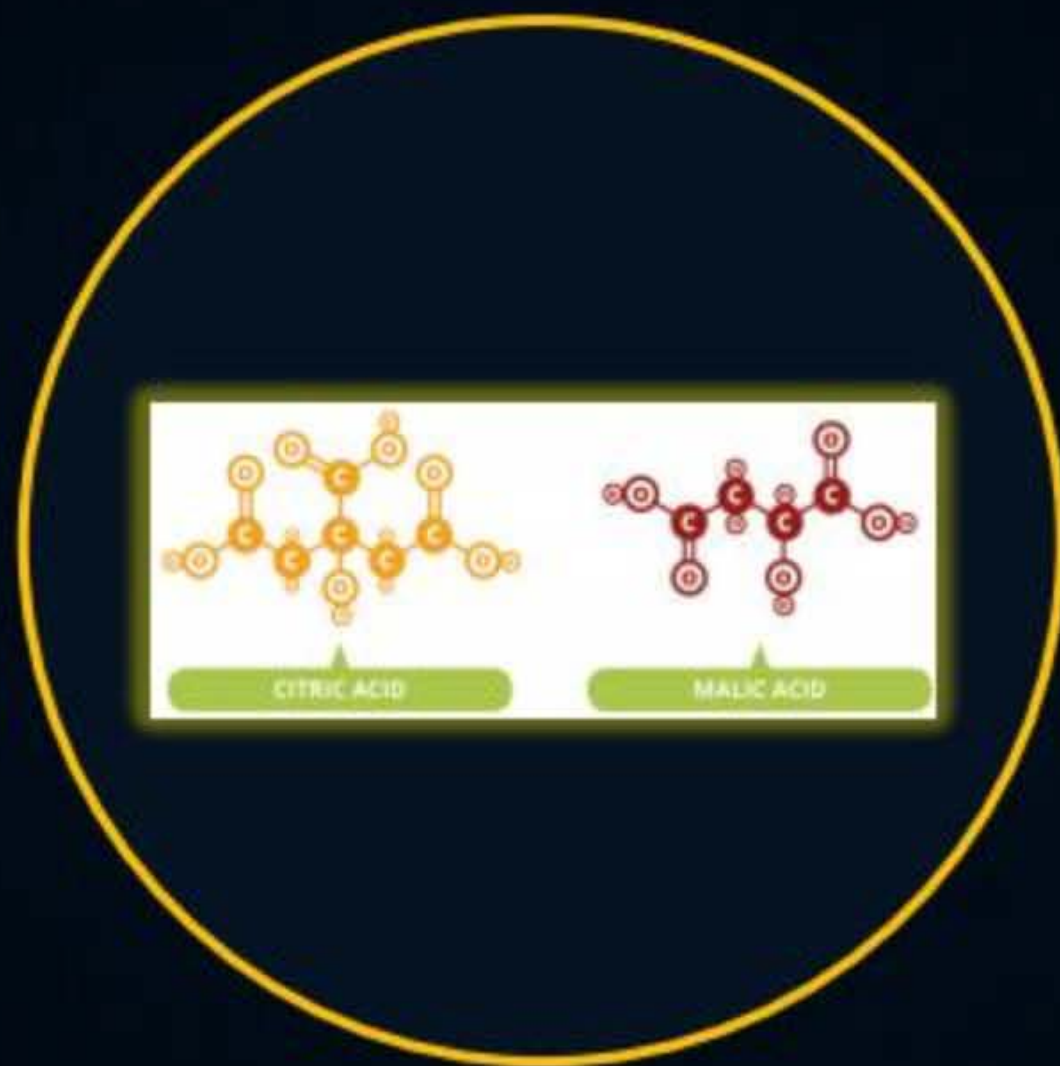


Knowledge Ride On



Doubts Solution

Knowledge Ride On



Classification of Acids Based on
Concentration

Knowledge Ride On



Physical and Chemical Properties
of Bases

Knowledge Ride On



Insaniyat Ka Gyaan

*k



Hasmukhlal: My best friend's name is made from chemical symbols of argon, sodium and vanadium.

Simaila: Mereko nahi aata hai baccho se puchlo...

'ArNaV'



Hasmukhlal: My best friend's name is made from chemical symbols of argon, sodium and vanadium.

Simaila: Mereko nahi aata hai baccho se puchlo...

Pyaare Bacche Be Like



Doubts Solution



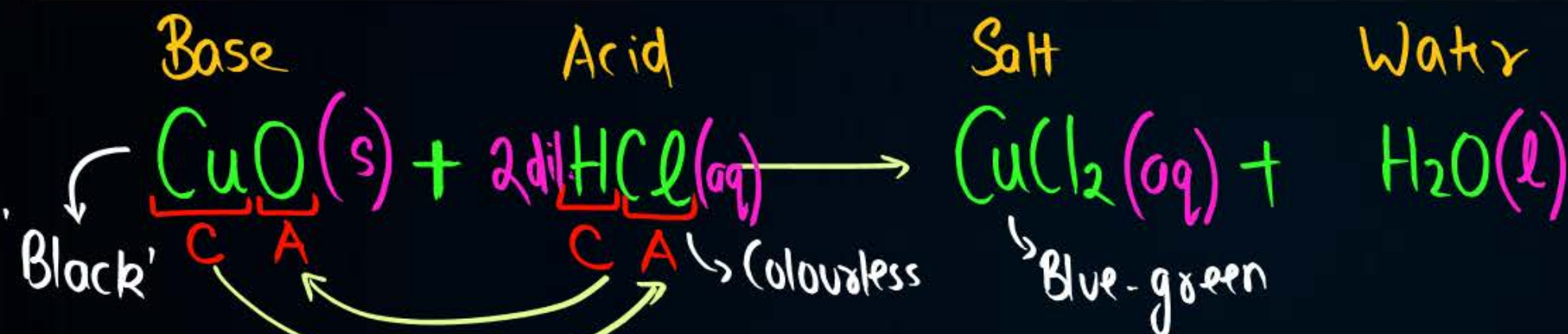
Vaibhav Gawali 2 day ago



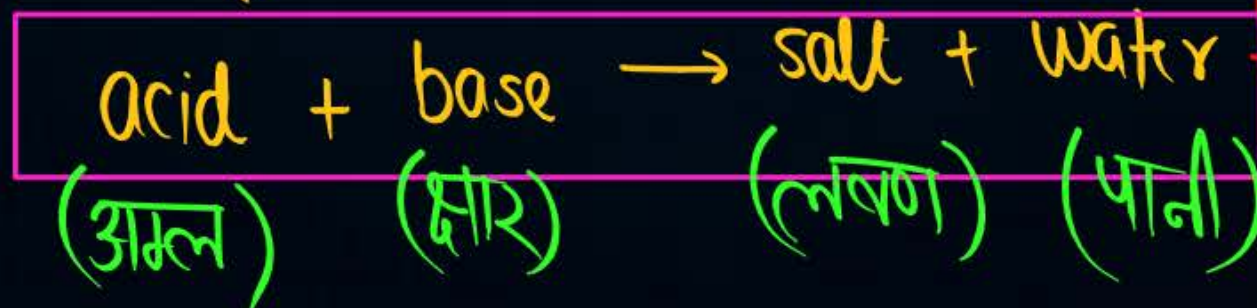
sir how hydrogen will displace with copper and copper is having High reactivity than hydrogen in this double displacement cannot take place

6 Same Doubts • 0 Reported

Mark Unpopular



→ Double displacement rxn [Neutralisation Rxn]



(i) Reactivity of hydrogen > copper

(ii) Double displacement

rxn
 ↓
 exchange of cations & anions
 ↓
 no reactivity series required



(C-I)

Base (क्षार)

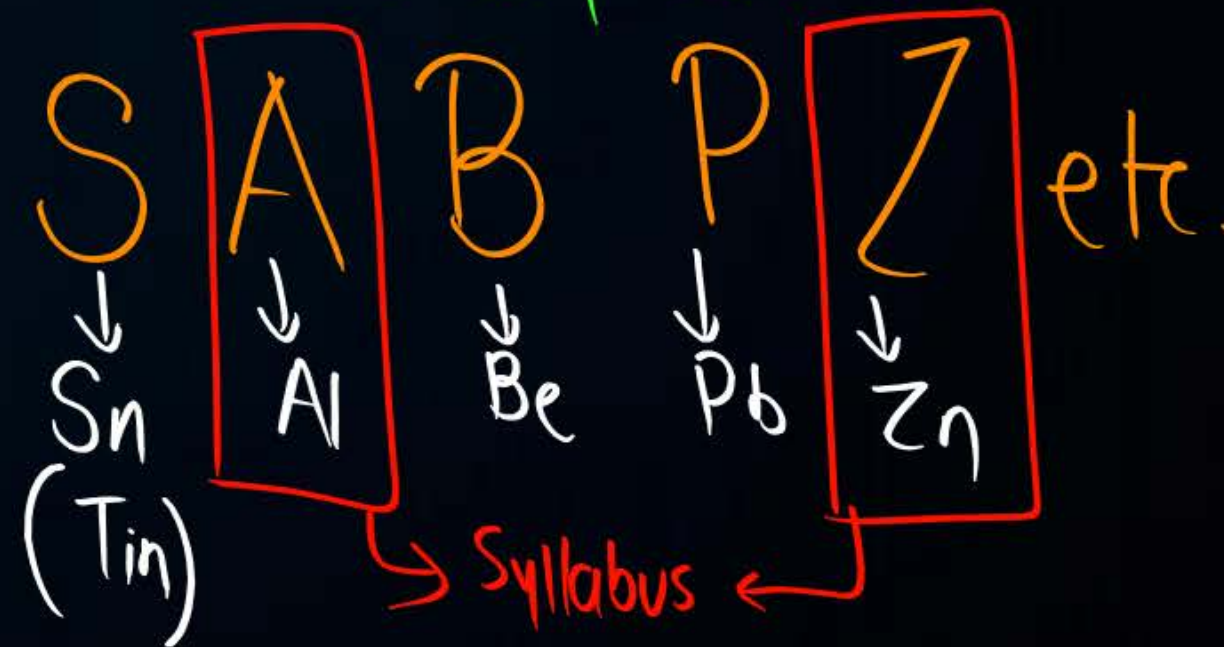
- Some metal oxides & hydroxides are only bases.
 - NH_4OH [non-metallic hydroxide]
- ex: NaOH , KOH ,
 $\text{Ca}(\text{OH})_2$, $\text{Mg}(\text{OH})_2$,
 CuO etc.

(C-II)

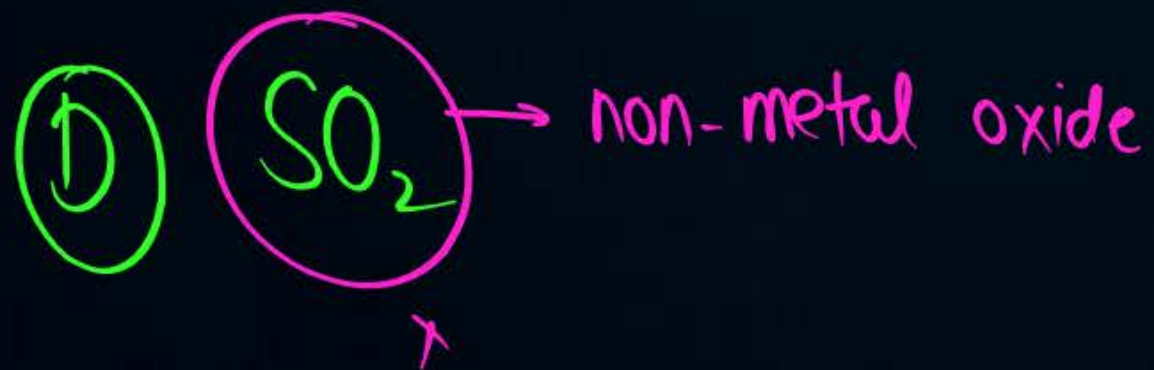
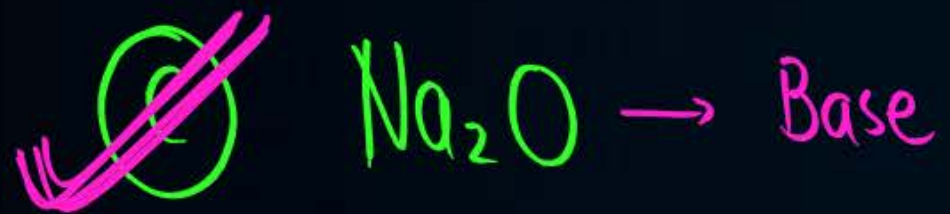
Some metal oxides & hydroxides that are not only base are actually amphoteric → (दीर्घात्मक)

amph: BOTH

acid as well as base



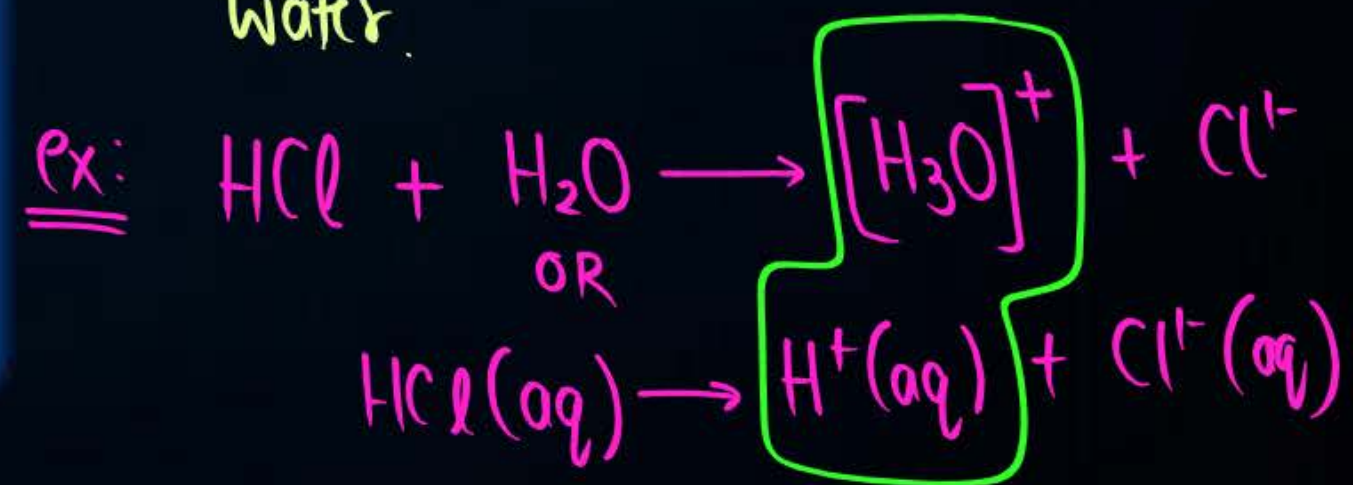
Which among the following oxide will behave only as base?



Bit More on Acids

① acids shows their acidic character due to $H^+(aq)$ or $[H_3O]^+$ ions
hydronium ion

② Acids produce $H^+(aq)$ or $[H_3O]^+$ in water.



Important Condition

During the humid climate, hydrogen chloride gas is first passed through a (guard tube) containing anhydrous calcium chloride which absorbs the moisture and makes the gas dry.

'drying tube'

Guard Tube

dry HCl gas

anhydrous CaCl_2

moist HCl gas

Drying Agent

/ Dessiccant



Classification of Acids Based on Concentration

aye bhaiya ♡



Classification of Acids / ^{Base} Based on ^{Concentration} ~~Source~~



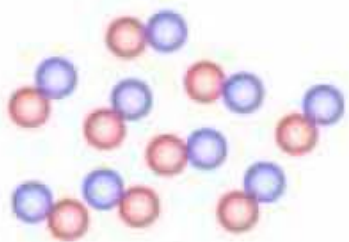
Let's consider case of acids!

(i) Both are relative terms
↳ with respect to another substance

(ii) A: Concentrated acid with respect to B
more acid particles & less water particles
as compare to B.

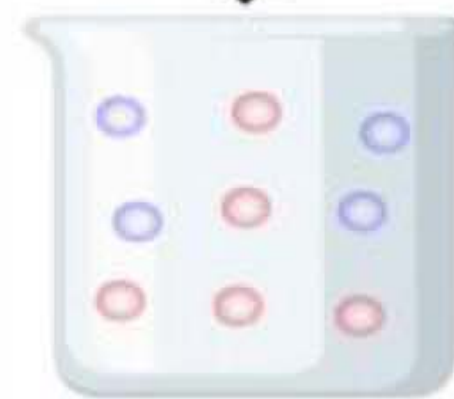
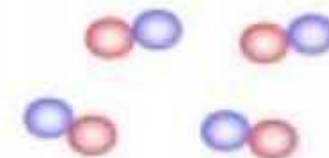
(iii) B: Dilute acid with respect to A
less acid particles & more water particles
as compare to A

More ^(A)
Acid Added



Concentrated Acid

Less ^(B)
Acid Added



Dilute Acid

Which one is correct way of diluting an acid?

Acid to Water



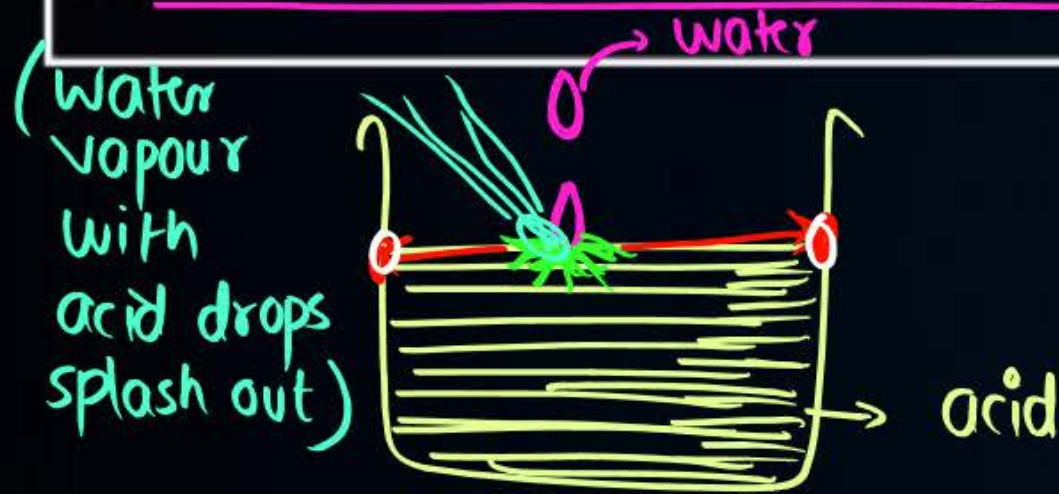
Water to Acid



What happens when ⁶water⁹ is added to ⁶acid⁹?



- Generally, (ঘটবে) → (water will try to stay on acid)
- (i) Density of water < acid.
 - (ii) The interaction of acid with water is exothermic due to dissociation of acid in water and a large amount of heat is generated.



(Water) added to acid converts to (water-vapour) on the interface and a (mixture of acid and water-vapour splash-out and cause burns.)

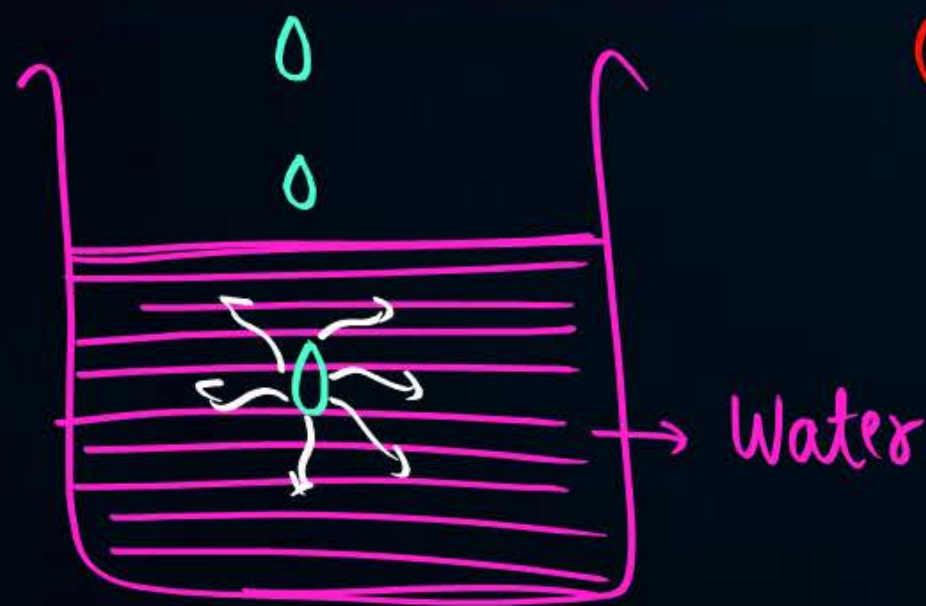
acids have low heating holding capacity & transfers heat to a specific region of beaker.

The beaker in which the dilution is carried out may also break due to excessive local heating.

Why and how acid should be added to water?



To slow down the exothermic reaction, dilution of concentrated acid is always done by slowly adding concentrated acid into a sufficient amount of water with gentle stirring.



① Density of acid > water

(ii) Dissociation of acid into ions in water

(पटना में acid की breakup)

(iii)

Exothermic

(iv)

gentle stirring is done for

(v)

no excessive local

heating is done due

to good heat holding capacity of water

uniform distribution of heat



Beat Your Brains Out



You are given aqueous solutions of four hydrogen-containing compounds, i.e. ^Aglucose, ^Balcohol, ^Csulphuric acid and ^Dhydrochloric acid. Which of the given solutions will glow a bulb when connected to an electric circuit and why?

Electricity Conduction

- (A) → Glucose, $C_6H_{12}O_6(aq)$
(B) → Alcohol, ex: $C_2H_5OH(aq)$
(C) → Sulphuric acid, $H_2SO_4(aq)$
(D) → Hydrochloric acid, $HCl(aq)$

X

X

✓

✓

Because these acids dissociate into ions in water



ions are free to move & conducts electricity



Beat Your Brains Out



You are given aqueous solutions of four hydrogen-containing compounds, i.e. glucose, alcohol, sulphuric acid and hydrochloric acid. Which of the given solutions will glow a bulb when connected to an electric circuit and why?

CONCLUSION

Thus, we conclude that all hydrogen-containing compounds are not acids as they don't ionise to produce $H^+(aq)$ and aqueous solutions of all acids conduct electricity.

KYA BOLTI PUBLIC



(Physical and Chemical
Properties of Bases)

(भौतिक) (रासायनिक)

(गुण) (क्षार)



Physical Properties of Bases



✓ (i) Taste and texture: They taste bitter and they have a soapy texture.
(कड़वा)

slippery when we
touch them



✓ (ii) Corrosive nature: Some bases, like sodium hydroxide (NaOH) and potassium hydroxide (KOH) etc. produce a burning sensation on the skin. So, it is advisable to not touch or taste any basic substance.



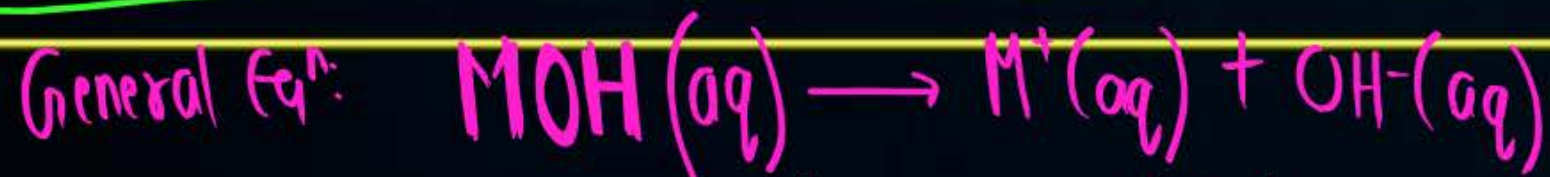
Physical Properties of Bases



(iii) Electricity conduction: Like acids, bases also conduct electricity in their aqueous solutions (bases dissolved in water).

जो base पानी में dissolve करते हैं → 'alkali' → dissociates into ions & conducts electricity

The bases which are soluble in water and furnish hydroxyl ions (OH^-) in aqueous solutions are known as alkalis.





True or False



(All alkalis are bases) but (all bases are not alkalis.)

A. TRUE

B. FALSE

(i) NaOH

Base

✓

Alkali

✓

(ii) KOH

✓

✓

(iii) $\text{Fe}(\text{OH})_2$

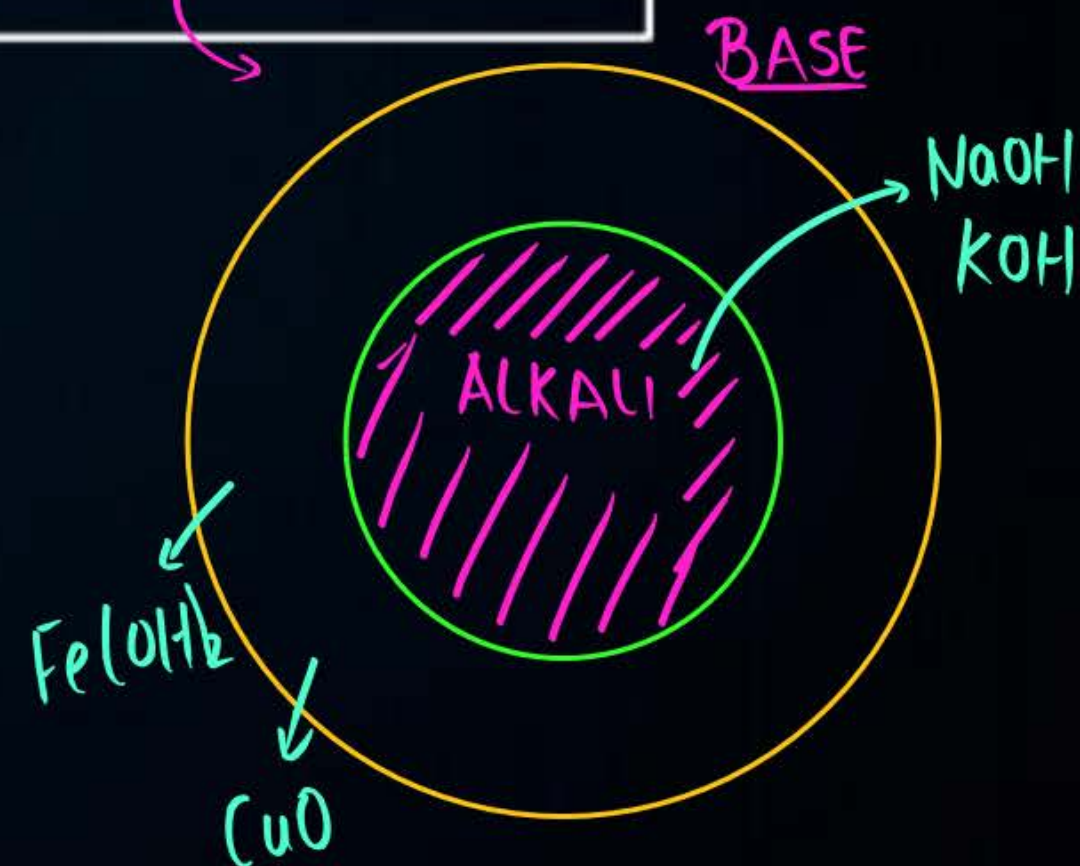
✓

X

(iv) CuO

✓

X





Let's Practice



PW Ka **ChemStar!**

Q. Question



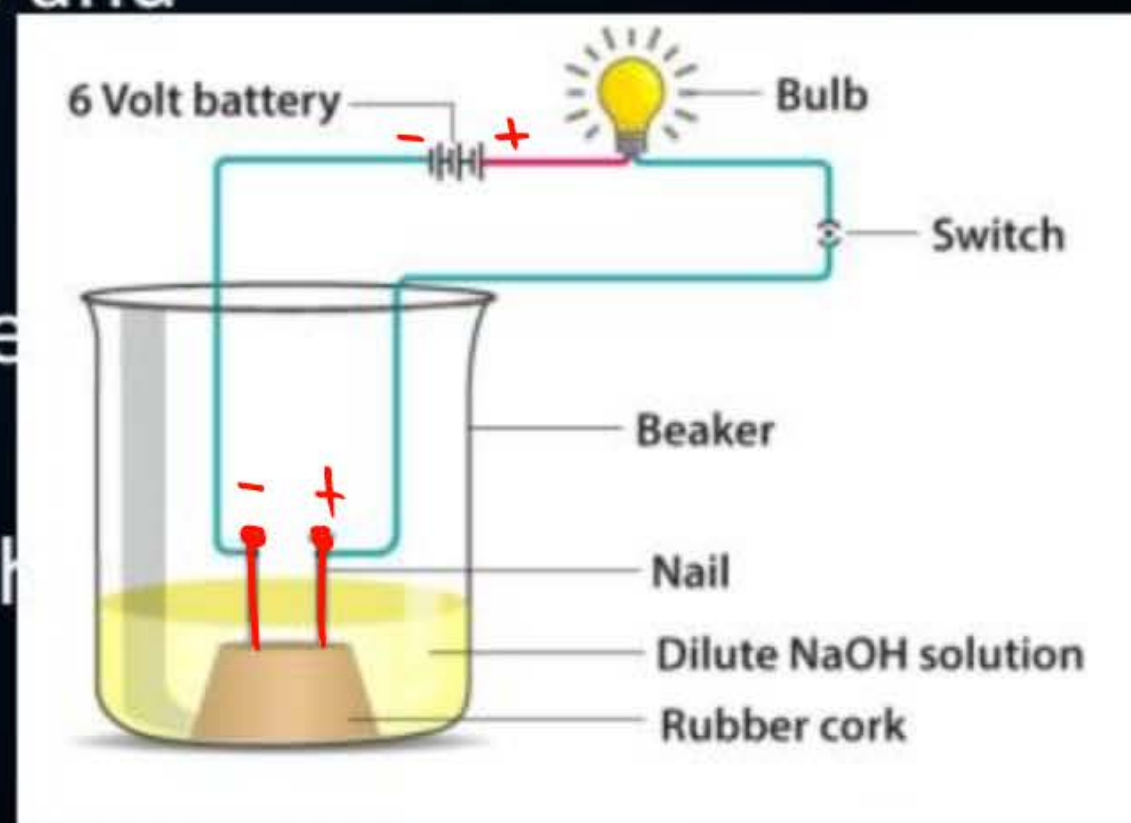
In an attempt to demonstrate electrical conductivity through an electrolyte, the following apparatus was set up. Which among the following statement is correct?

A Bulb will not glow because electrolyte is not acidic

B Bulb will glow because NaOH is a strong base and furnishes ions for conduction.

C Bulb will not glow because circuit is incomplete

D Bulb will not glow because it depends upon the type of electrolytic solution



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Yes or No



Does all metals react with bases to form salt and hydrogen gas?

(Studied in class VIII)

A. YES

☒ B. NO

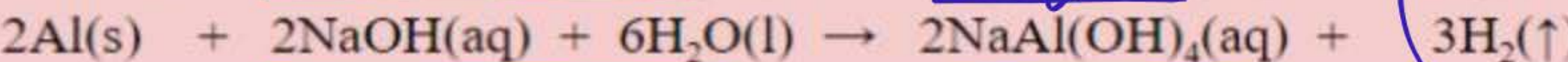
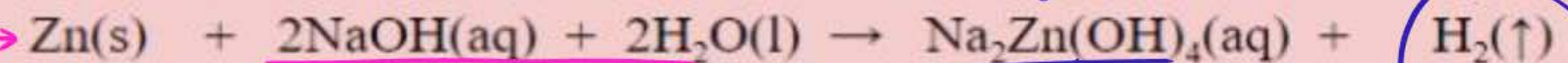
(Only amphoteric metals ($\overset{\text{S}}{\downarrow} \text{Sn}, \overset{\text{A}}{\downarrow} \text{Al}, \overset{\text{B}}{\downarrow} \text{Be}, \overset{\text{P}}{\downarrow} \text{Pb}, \overset{\text{Z}}{\downarrow} \text{Zn}$ etc.) will react with base (alkali) to form salt & hydrogen gas)

Chemical Properties of Bases



amphoteric

Metal + Alkali + Water → Salt + Hydrogen



evolves with effervescence

Burns with a pop-sound

$\text{Na}_2\text{Zn(OH)}_4\text{(aq)}$: Sodium zincate

$\text{NaAl(OH)}_4\text{(aq)}$: Sodium aluminate

(The chemical reactions in the above cases will form a mixture of different zincate and aluminate anions and not all metals react with bases to show such reactions.)

NCERT





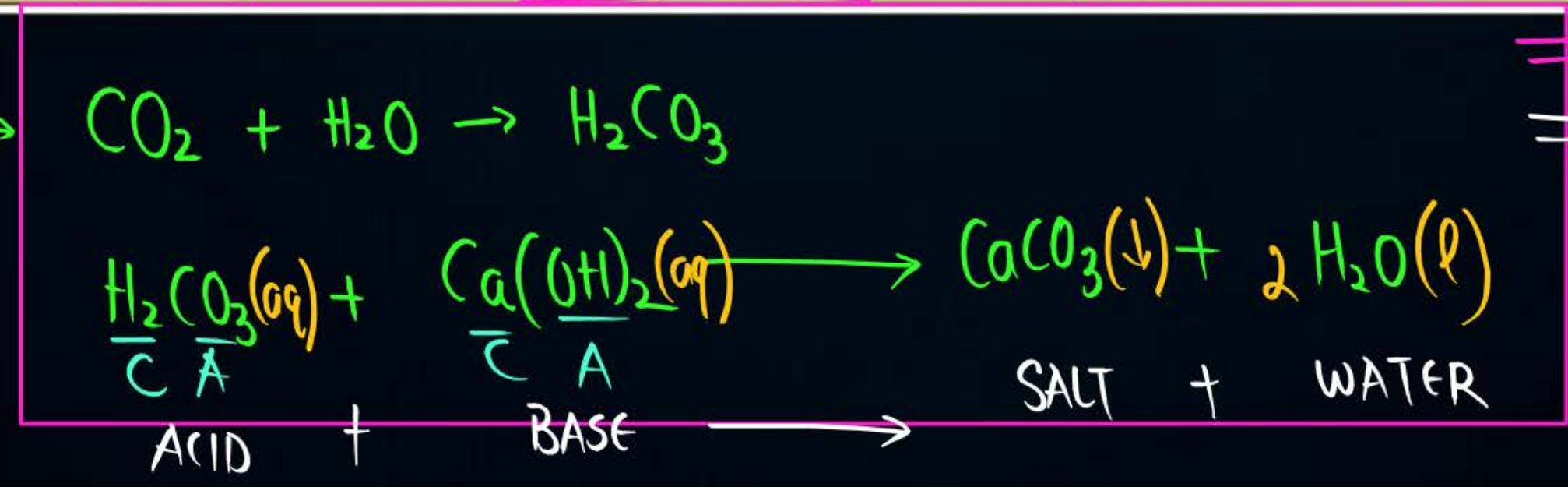
Chemical Properties of Bases

Non-metal oxide	+	Base	→	Salt	+	Water
$\text{CO}_2(\text{g})$	+	$\text{Ca}(\text{OH})_2(\text{aq})$	→	$\text{CaCO}_3(\text{s})$	+	$\text{H}_2\text{O}(\text{l})$
$\text{SO}_3(\text{g})$	+	$2\text{NaOH}(\text{aq})$	→	$\text{Na}_2\text{SO}_4(\text{aq})$	+	$\text{H}_2\text{O}(\text{l})$

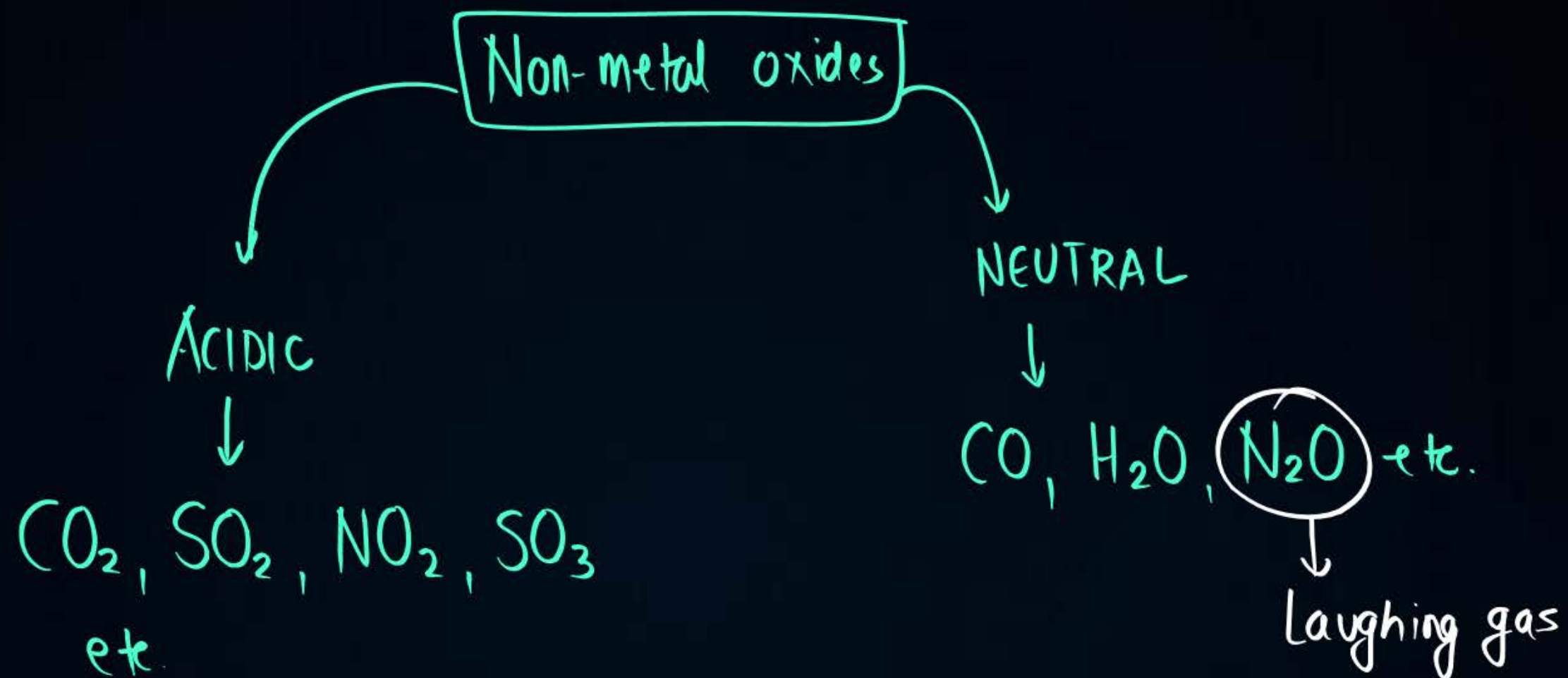
(acid)

white insoluble solid

actual mechanism



⇒ Precipitation Rxn
⇒ Neutralisation Rxn
(Double displacement rxn)



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Jo Banae Behtar Insan***





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#sbsathhai (✓)
#pwsathhai (✓)



**THANK
YOU**

