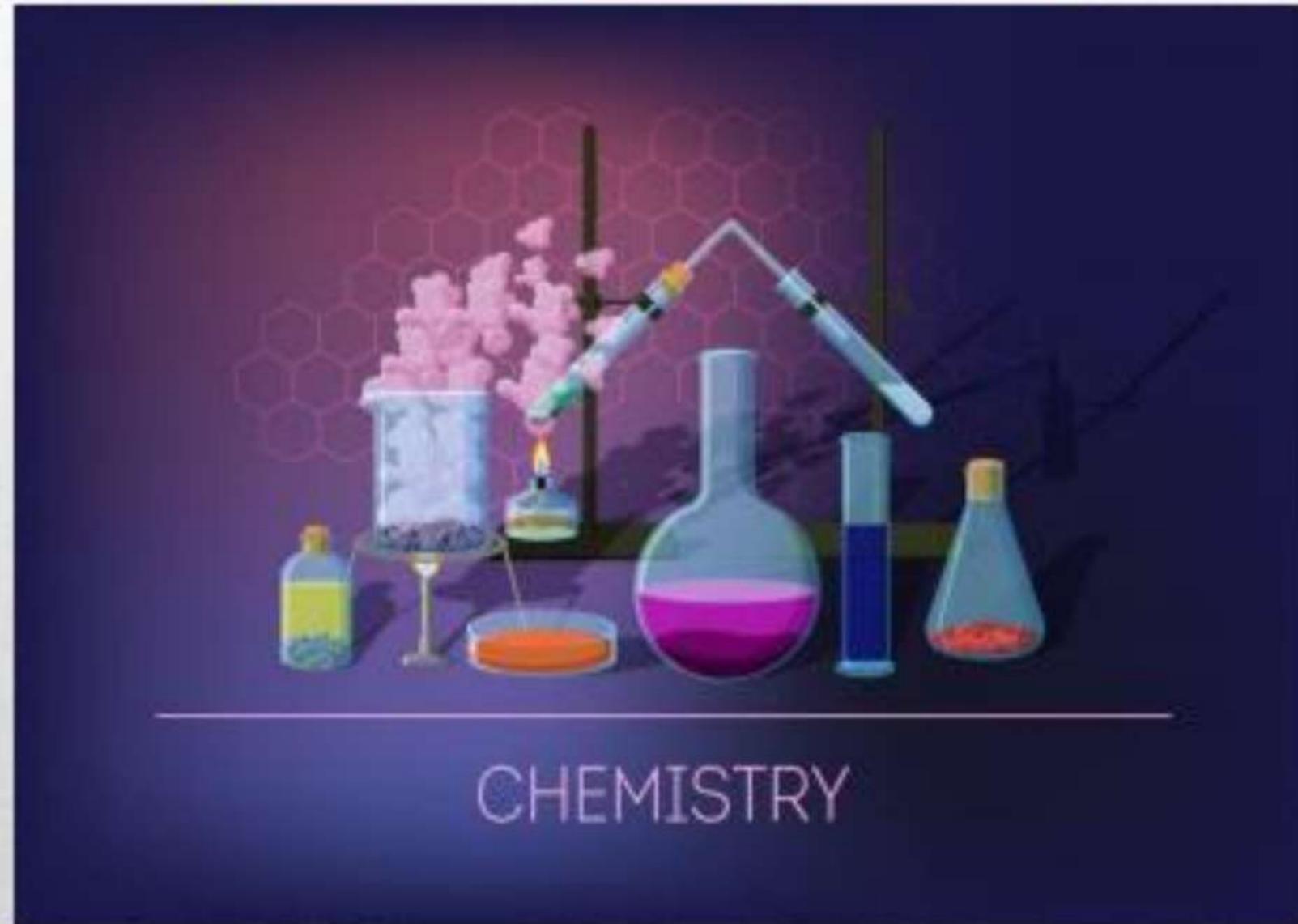


रसायन विज्ञान : NCERT



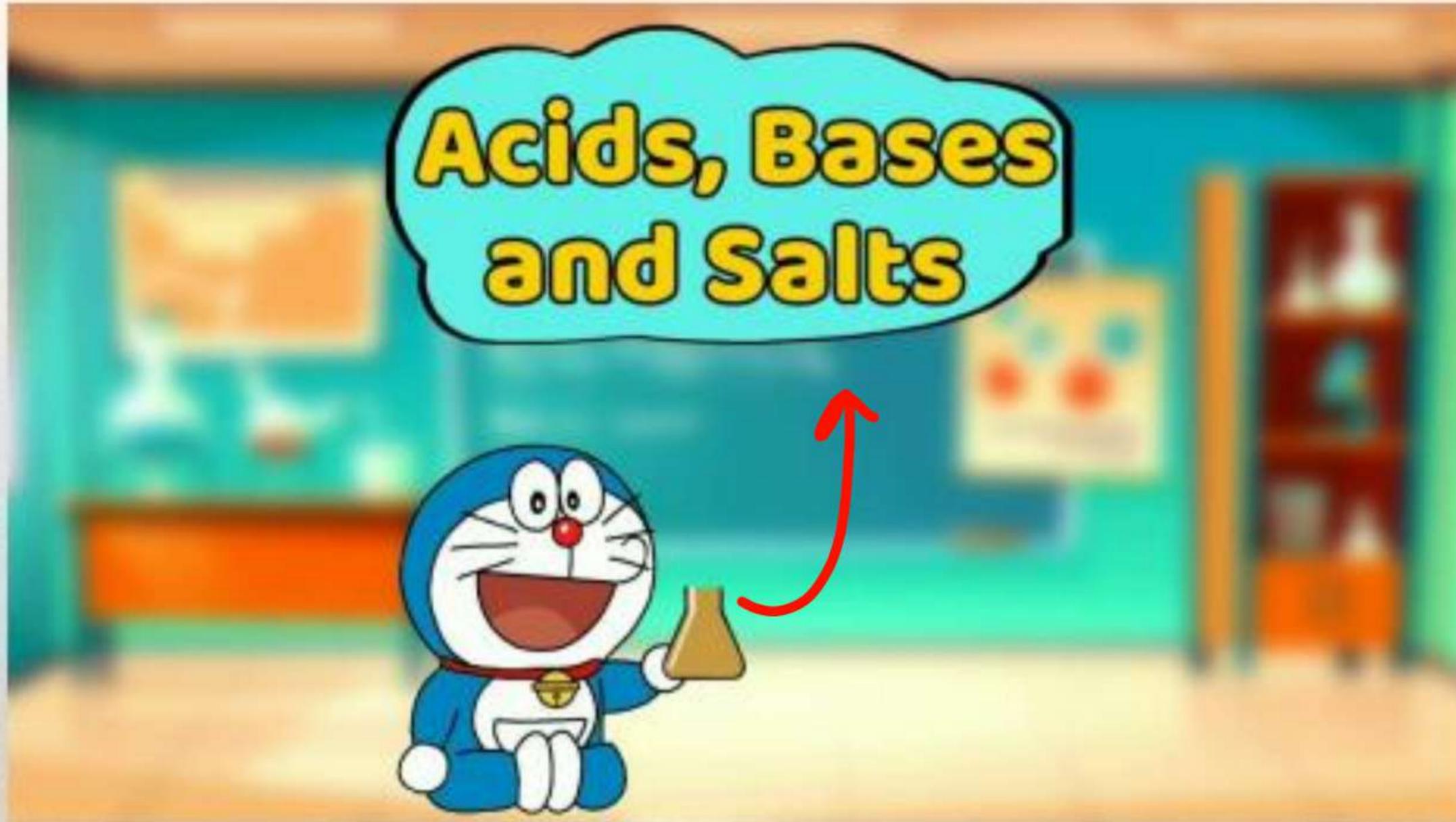
- **Physical chemistry**
- **Inorganic chemistry**
- **Organic chemistry**



- अम्ल , क्षार और लवण
- भौतिक और रासायनिक परिवर्तन
- परमाणु संरचना और रेडियो एक्टिवता
- तत्वों का आवर्ती वर्गीकरण
- रासायनिक अभिक्रिया और समीकरण
- धातु
- अधातु
- उपधातु और मिश्रधातु
- दैनिक जीवन में रसायन विज्ञान
- ऊर्जा
- पर्यावरणीय रसायन विज्ञान

- **Acid, Base and Salt**
- physical and chemical changes
- Atomic structure and radioactivity
- periodic classification of elements
- chemical reactions and equations
- Metal
- non metal
- metalloids and alloys
- chemistry in daily life
- Energy
- environmental chemistry

अम्ल , क्षार और लवण



NCERT CLASS - 7 : Acid , Base and Salt , Chapter - 4

NCERT CLASS - 10 , Acid , Base and Salt , Chapter - 2

Acid

Properties of Acids

- taste sour
- cool to use in movies
- corrode metals (produce H_2 gas)
- react with bases to form salt and water
- pH is less than 7
- turns blue litmus paper to red
- strong acids are strong electrolytes, weak acids are weak electrolytes



प्रमुख अम्ल और उनके प्राकृतिक स्रोत

Hydrochloric Acid

Nitric Acid

Oxalic Acid

Benzoic Acid

Formic Acid

Glutamic Acid

Orthophosphoric Acid

Tannic Acid

Acetic Acid

Citric Acid

Tartaric Acid

Maleic Acid

Lactic Acid

Butyric Acid

Ascorbic Acid

COMMON ACIDS



Strong Acids		Weak Acids	
HCl	Hydrochloric acid	HC ₂ H ₃ O ₂	Acetic acid
HBr	Hydrobromic acid	H ₂ CO ₃	Carbonic acid
HI	Hydroiodic acid	H ₃ PO ₄	Phosphoric acid
HNO ₃	Nitric acid	HF	Hydrofluoric acid
H ₂ SO ₄	Sulfuric acid	HCN	Hydrocyanic acid
		H ₂ S	Hydrosulfuric acid

क्षार और सामान्य परिचय

Some Properties of Bases

- Produce OH^- ions in water
- Taste bitter, chalky
- Are electrolytes
- Feel soapy, slippery
- React with acids to form salts and water
- pH greater than 7
- Turns red litmus paper to blue "Basic Blue"



Common Bases

Chemical Name	Formula	Common Name	Uses	Strength
sodium hydroxide	NaOH	lye, caustic soda	soap, plastic, petrol refining	Strong
potassium hydroxide	KOH	caustic potash	soap, cotton, electroplating	Strong
calcium hydroxide	Ca(OH) ₂	slaked lime	cement	Strong
sodium bicarbonate	NaHCO ₃	baking soda	cooking, antacid	Weak
magnesium hydroxide	Mg(OH) ₂	milk of magnesia	antacid	Weak
ammonium hydroxide	NH ₄ OH, {NH ₃ (aq)}	ammonia water	detergent, fertilizer, explosives, fibers	Weak

Chemical Properties of Acids and Bases

प्रयोगशाला में अम्ल और क्षार - Olfactory indicator

ध्रांण सूचक
(सूचना)
गंध ✓



क्षार → गंध

Note:

✓ Paste or juice of onion loses its smell when added to the base. it does not change its smell with acid.

Make

✓ The smell of vanilla vanishes with the base, but its smell does not vanish with an acid.

वैंगीला की गंध, क्षार के साथ समाप्त

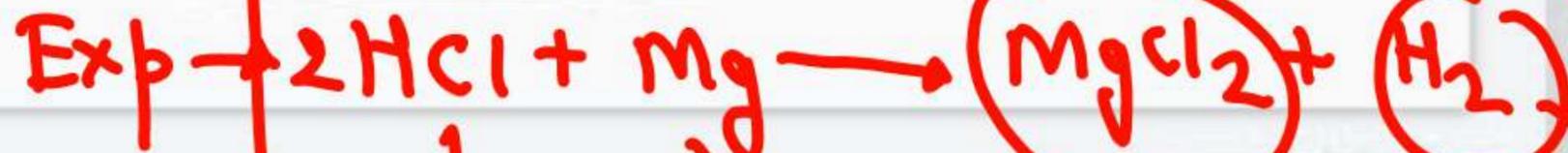
गंध पर कोई प्रभाव नहीं पड़ना

Reaction of Acid with Metals

अम्ल की धातु के साथ अभिक्रिया



Example



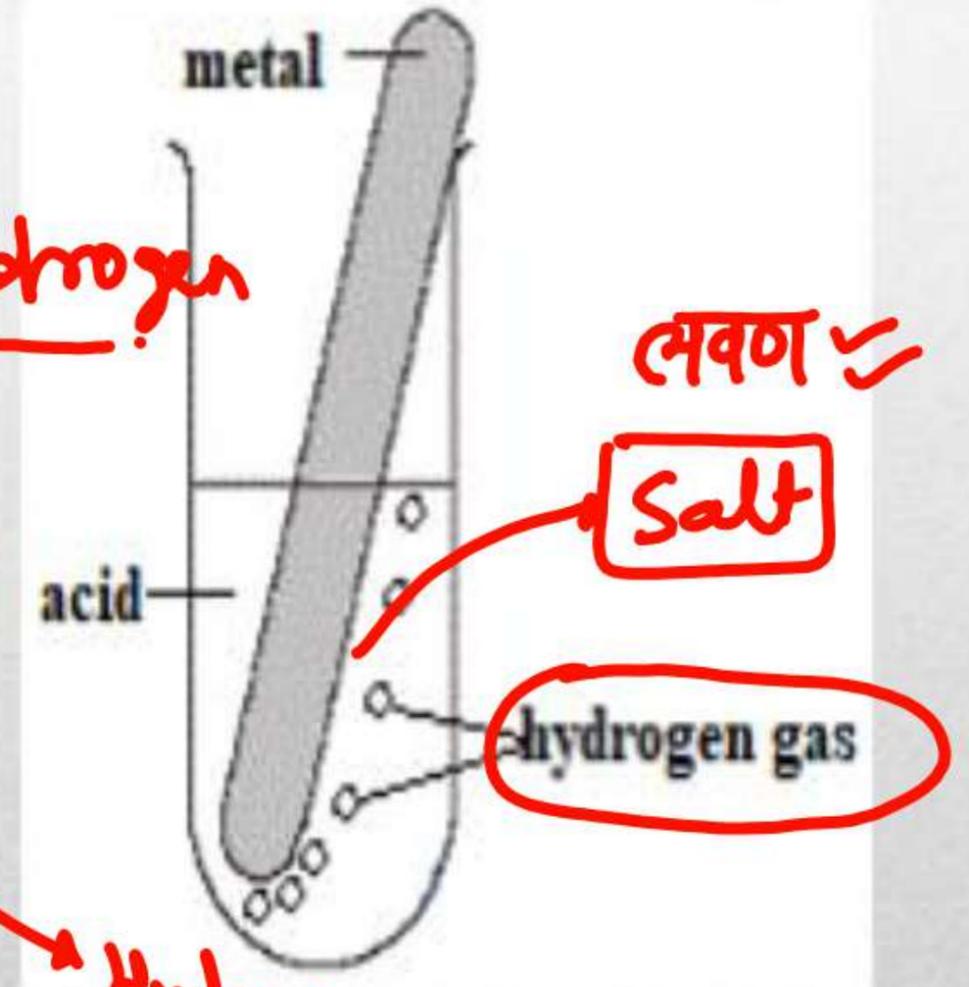
Acid-Metal Reactions

यदल अम्ल

Metal

magnesium chloride

(Salt)



लवण

Salt

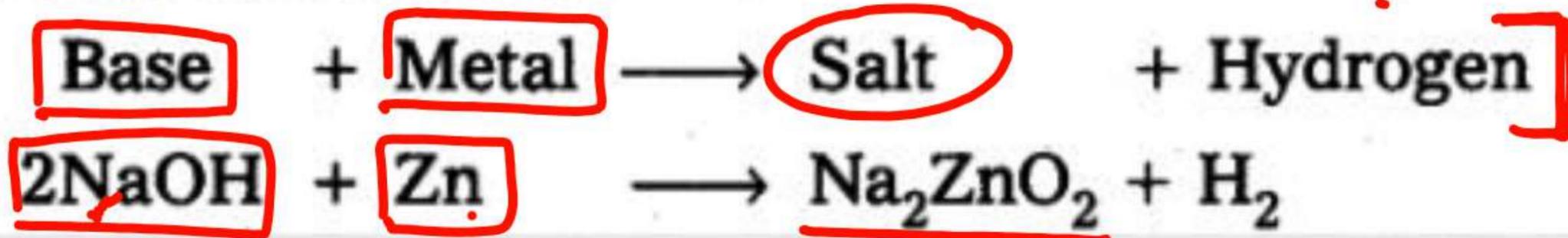
hydrogen gas

Hydrogen

Reaction of Bases with Metals

क्षार की धातु के साथ क्रिया

Chemical reaction :



लवण व हाइड्रोजन गैस

Note

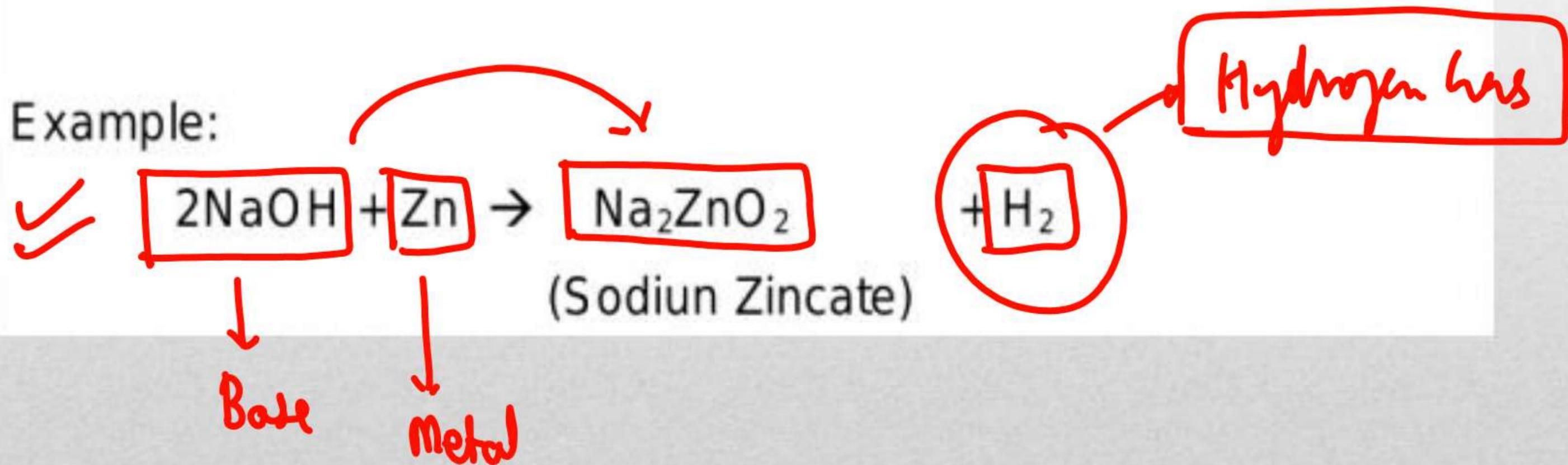
- All Metal do not react with base
- The metal must be more reactive than the metals present in the base for the reaction to take place .

Bases react with metals to give a metalate salt with Hydrogen gas.

Generally;

Base + Metal \rightarrow Metalate + Hydrogen gas

Example:



Reaction of Metal Carbonates and Metal Hydrogen Carbonates with Acid

Acid react with metal carbonates and metal hydrogen carbonate to form salt, carbon dioxide and water

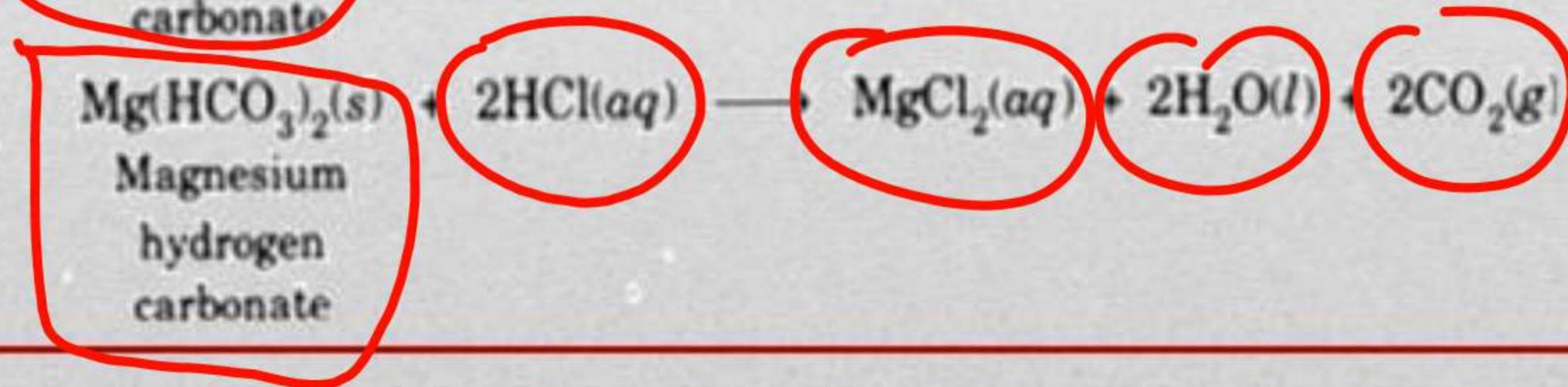
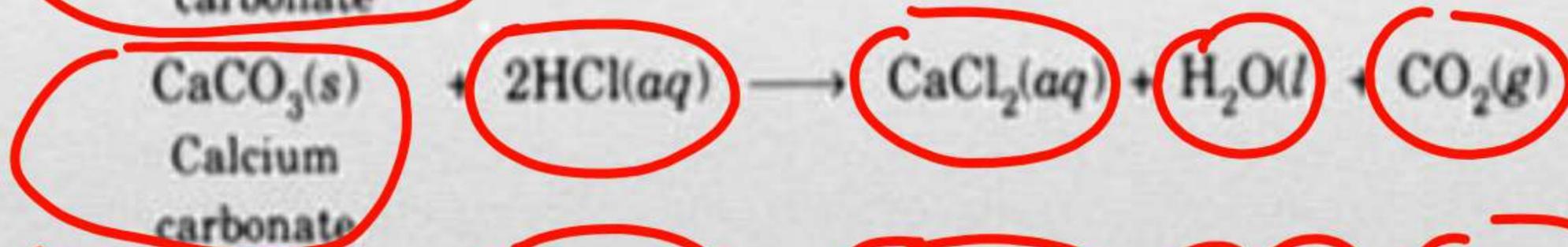
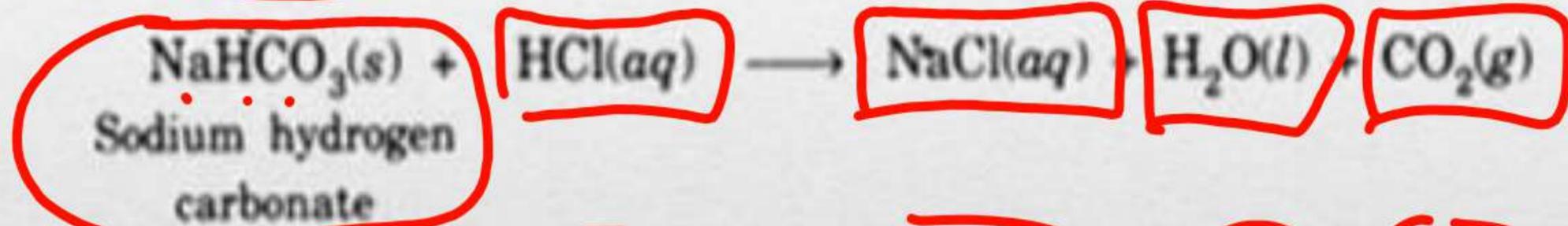
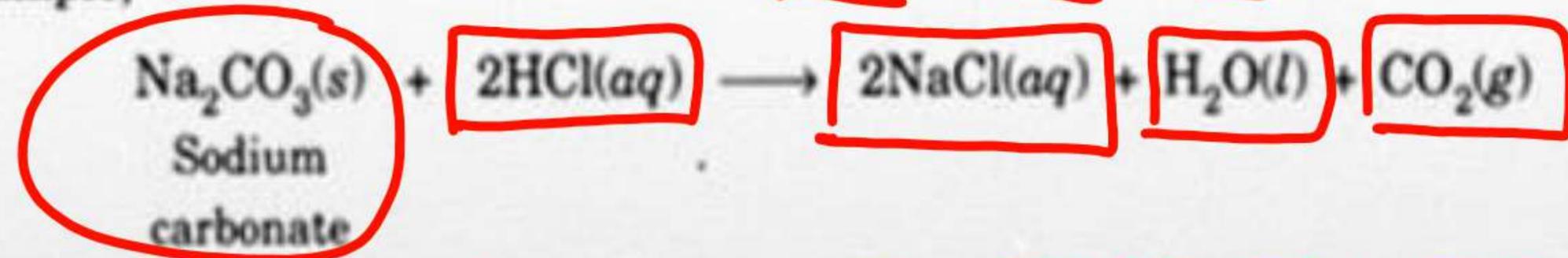
मेटल कार्बोनेट तथा मेटल हाइड्रोजन कार्बोनेट + Acid



Salt + कार्बन डाईऑक्साइड + H₂O

Metal carbonate/Metal hydrogen carbonate \longrightarrow Salt + Water + Carbon dioxide.

For example,



Acid \rightarrow Result with Metal
गैस (Result)

(A) CO_2

(B) H_2

(C) O_2

(D) N_2

(*)

अम्ल - किसी - Metal Carbonate से Reaction करेगा तो
Result के रूप में क्या नहीं प्राप्त होगा

(A) Salt

(B) H_2O

(C) CO_2

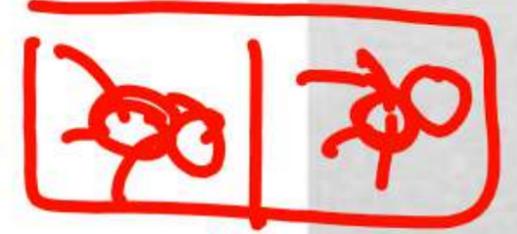
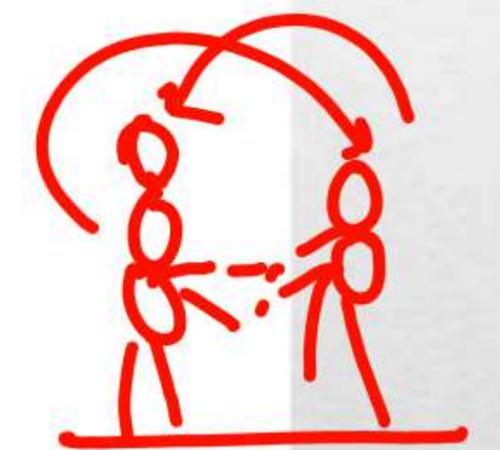
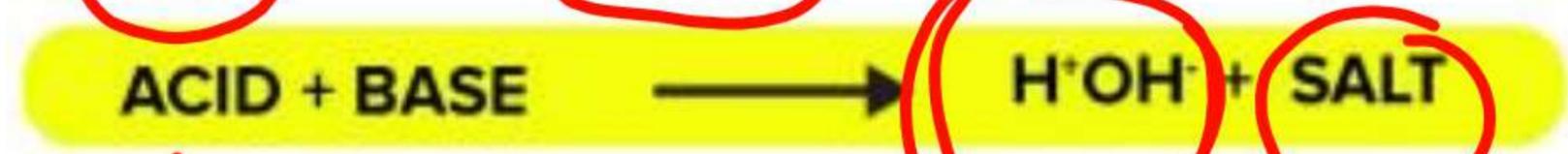
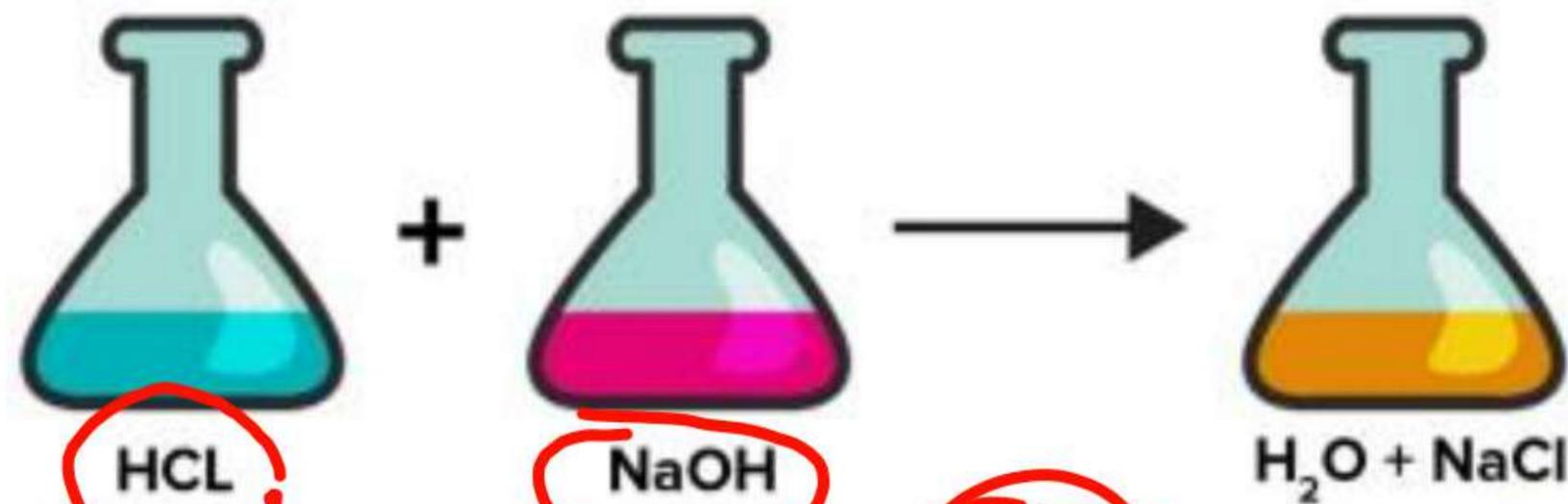
(D) H_2

Reaction of Acid and Base with each other

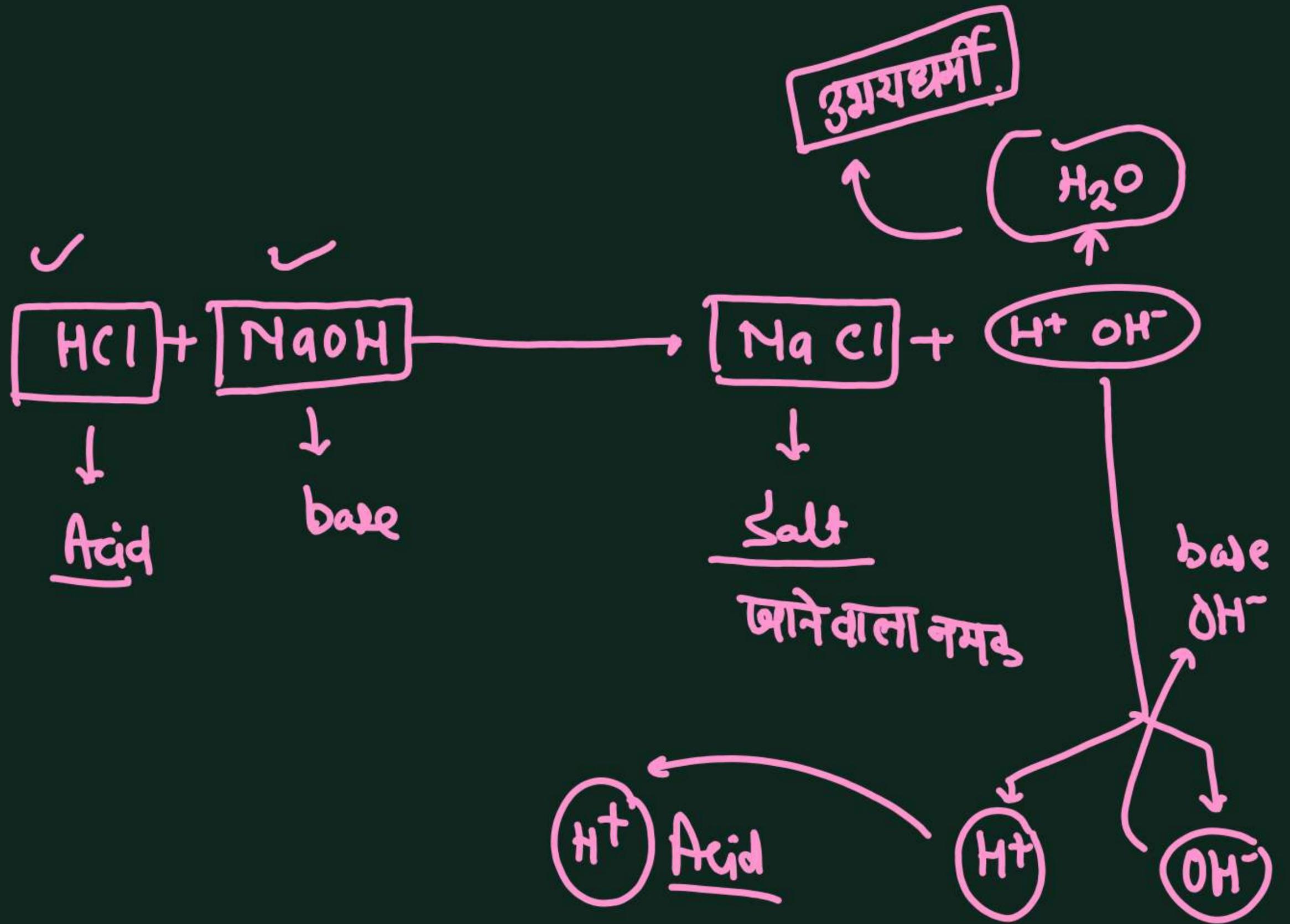
उदासीनीकरण अभिक्रिया :-

अम्ल व क्षारी परस्पर अभिक्रिया

NEUTRALIZATION REACTION EQUATION



निष्पत्ति → उदासीन



Reaction of Metallic Oxide with Acid

अभिक्रिया ✓

मैटालिक ऑक्साइड का अम्ल के साथ

क्षारीय प्रकृति ✓

- ❑ Metallic oxide are basic in nature, they react with dilute acid to form water and salt.] जल व लवण
- ❑ Non metallic oxide are acidic in nature, when nonmetallic oxide mix with water, it forms an acid that dissociate to give hydrogen ions

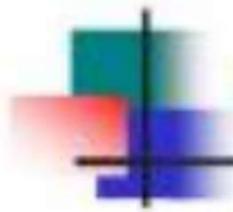
Acids and metal oxides



अम्लीय प्रकृति

पानी + Non-Metallic
oxide

अम्ल + H^+



Comparing Acids and Bases

Table 10.2 Some Characteristics of Acids and Bases

Characteristic	Acids	Bases
Arrhenius	H ⁺	OH ⁻
Behavior in water	H ⁺ donor	H ⁺ acceptor
Electrolytes	Yes	Yes
Taste	Sour	Bitter, chalky
Feel	May sting	Soapy, slippery
Litmus	Red	Blue
Phenolphthalein	Colorless	Red
Neutralization	Neutralizes bases	Neutralizes acids

Trochimski, General, Organic, and Biological Chemistry, Copyright © Pearson Education Inc., publishing as Benjamin Cummings

Acid or a Base in a Water Solution

अम्ल या क्षार. जलीय विलयन के साथ

Acid give hydronium ion (H_3O^+) or hydrogen ion (H^+) in water

base generate Hydroxide ion (OH^-) in water ✓

base which are soluble in water called alkalis. Notes → सफ़ाई

All bases do not dissolve in water. an alkali is a base that

dissolve in water. they are soppy to touch, bitter and corrosive.

never taste or touch them as they may cause harm.

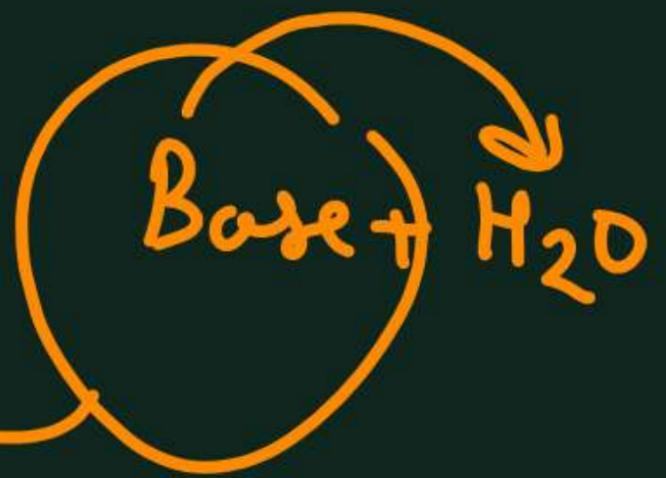
संयकारी

हाइड्रोनियम आयन (H_3O^+) तथा (H^+) आयन ✓

हाइड्रोक्साइड

सुलने 191.

All Base



सुचनी

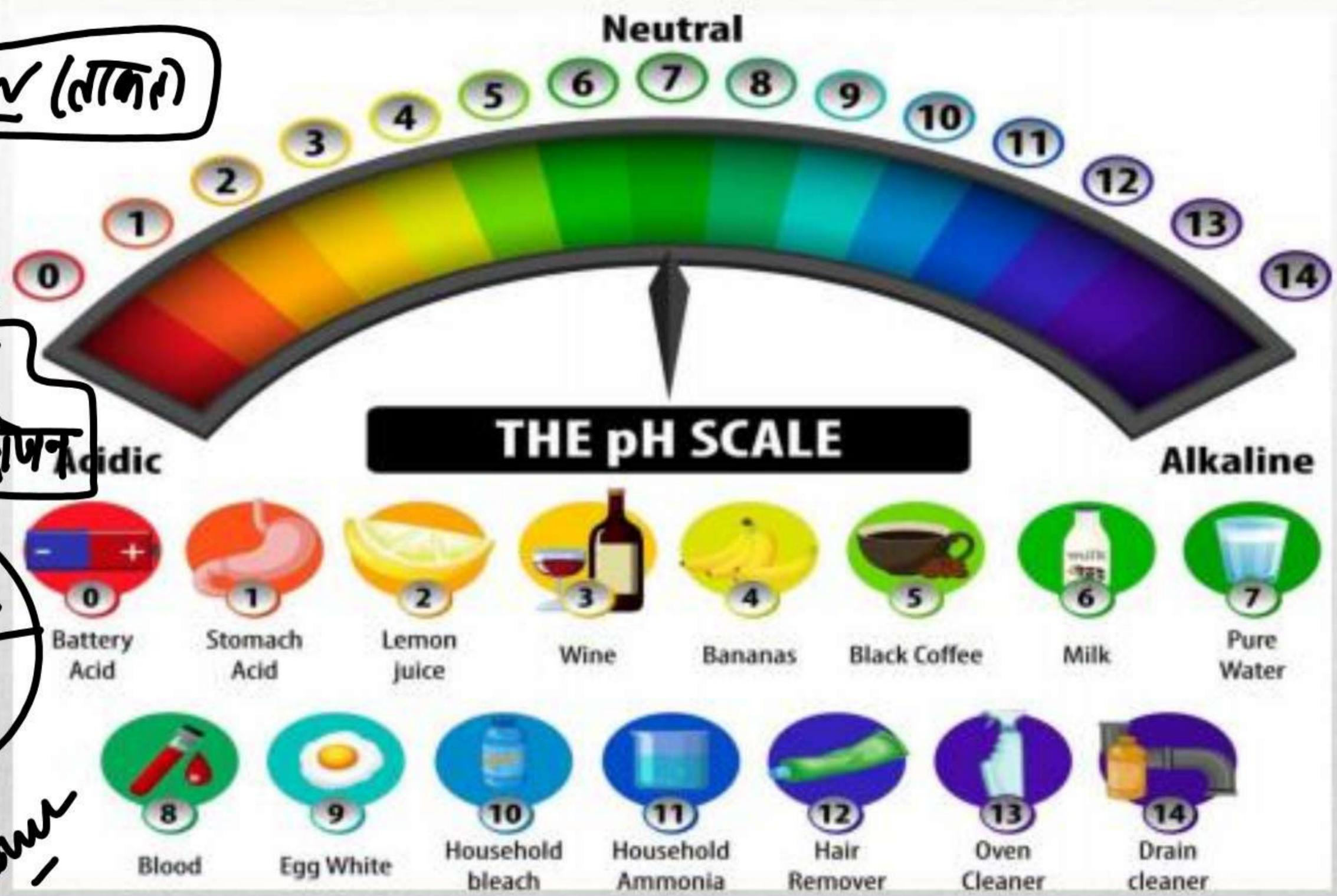
- साबुन
- कॉलो
- सुथानी

Power (ताकत)

pH मान

पॉटेंशियल
ऑफ हाइड्रोजन

Potenz
जर्मन
Power



pH मान

Acid

जर्मन

शक्ति

↓
7+

Higher the Hydronium Ion Concentration
Lower the pH Value

हाइड्रोनियम आयन ज्यादा होगा तो pH का मान कम हो जायेगा

pH मान (Power of Hydrogen)

Acid ← Indicate → **Base**

Numbers



↓
Strong Acid

↓
दुर्बल अम्ल

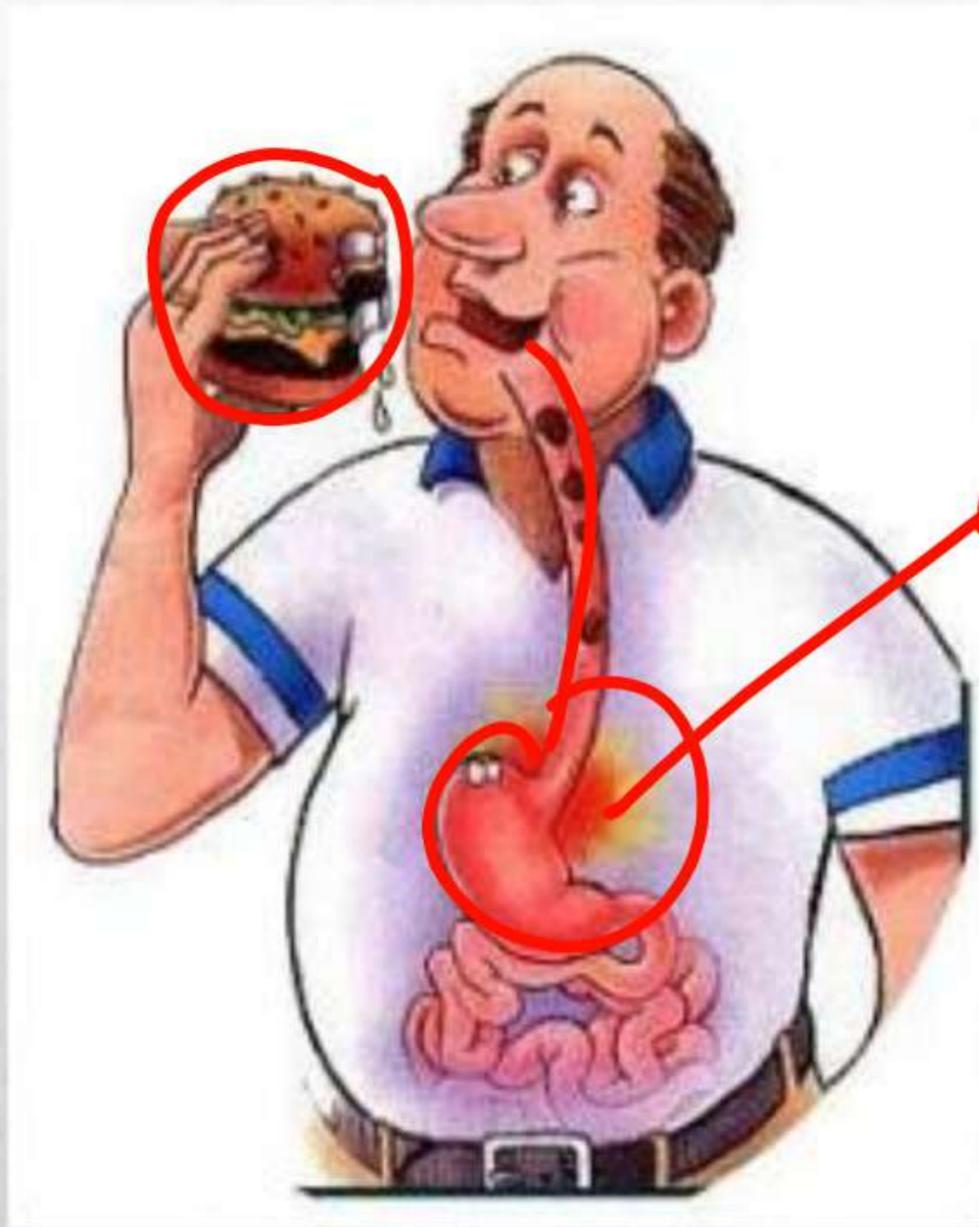
↓
Neutral
उदासीन

↓
दुर्बल क्षार

↓
Strong Base



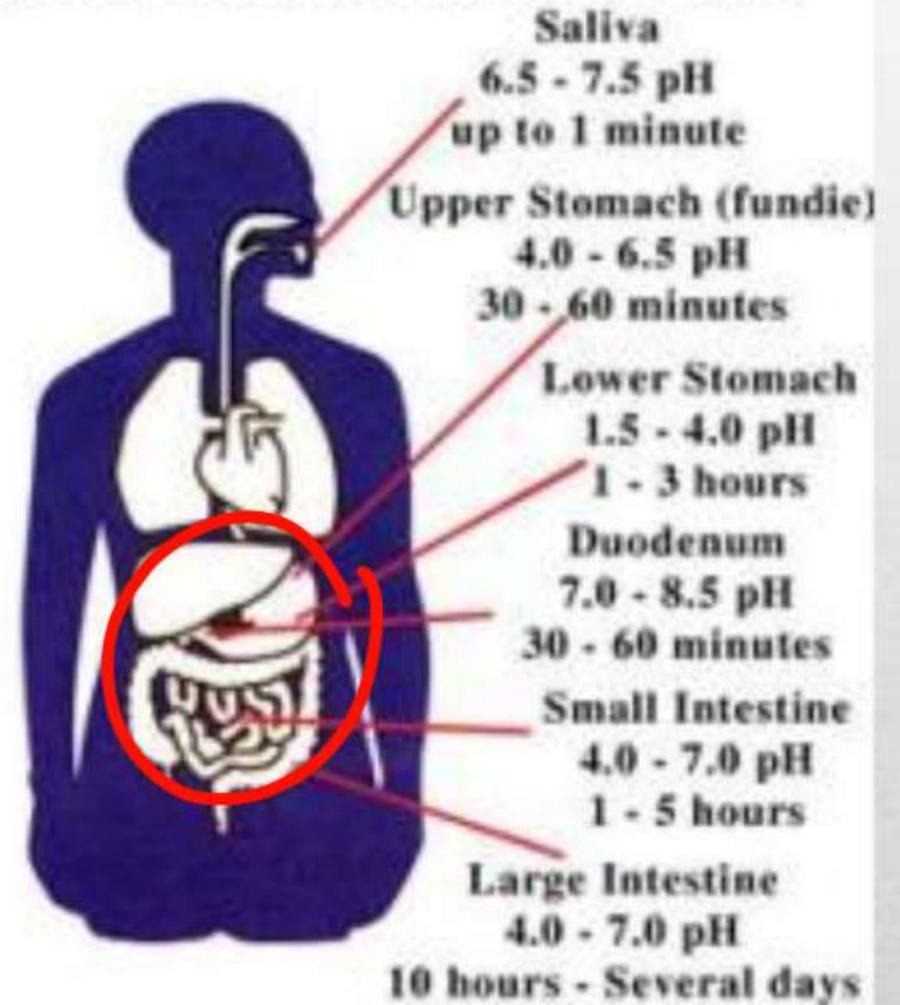
Ph Value in our Digestive System and Hydrochloric Acid



हमारा पाचन तंत्र व HCl
pH मान

Aridity
अम्ल

The Human Digestive Tract pH Range Chart



The diagram illustrates the average time food spends in each part of the digestive system along with the average pH.