

रसायन विज्ञान : NCERT

NCERT

Science (विज्ञान)

(A) Biology

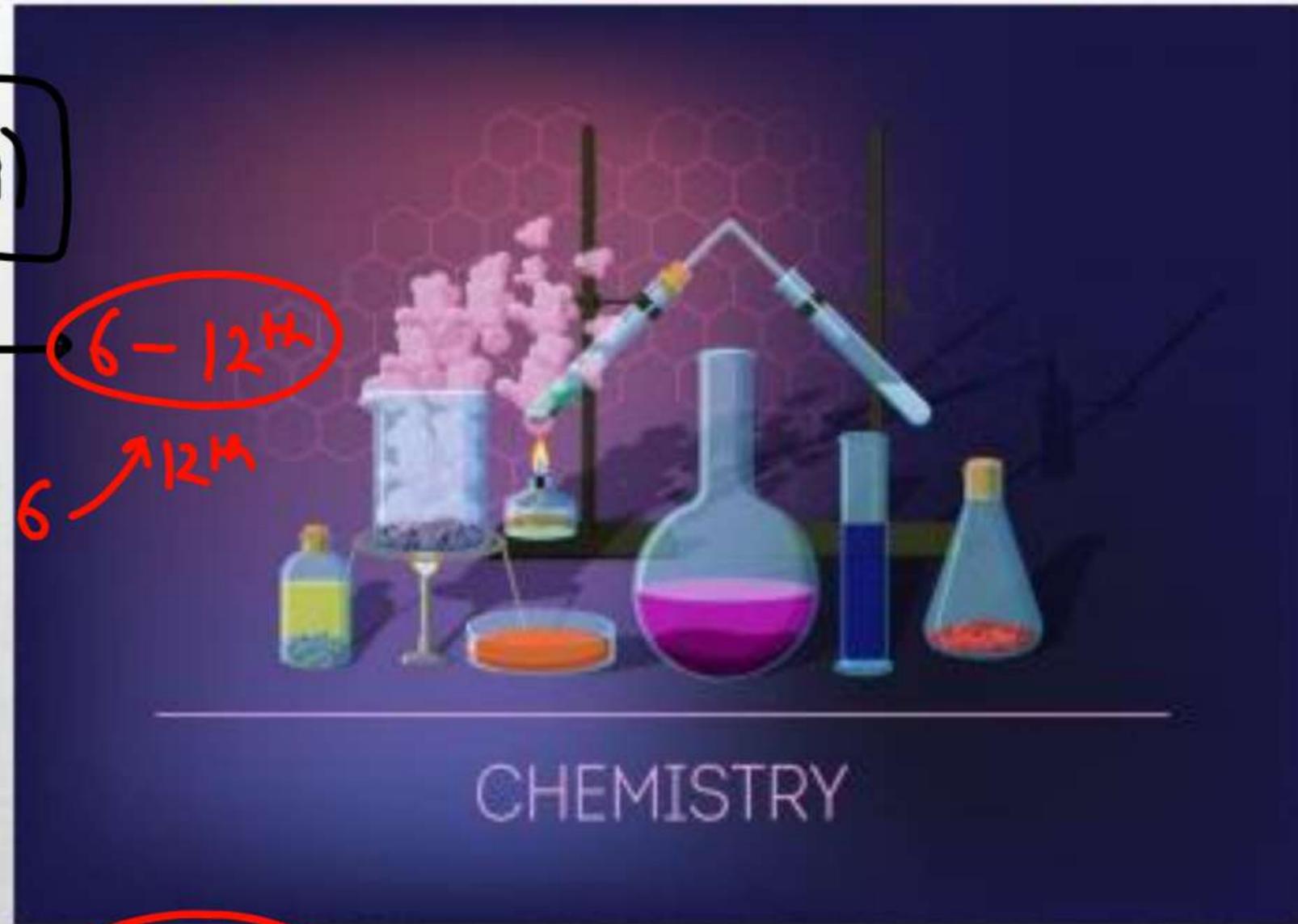
6-12th

(B) Physics

6 → 12th

(C) Chemistry

8th - 12th



रसायन विज्ञान (Chemistry)

①

■ **Physical chemistry**

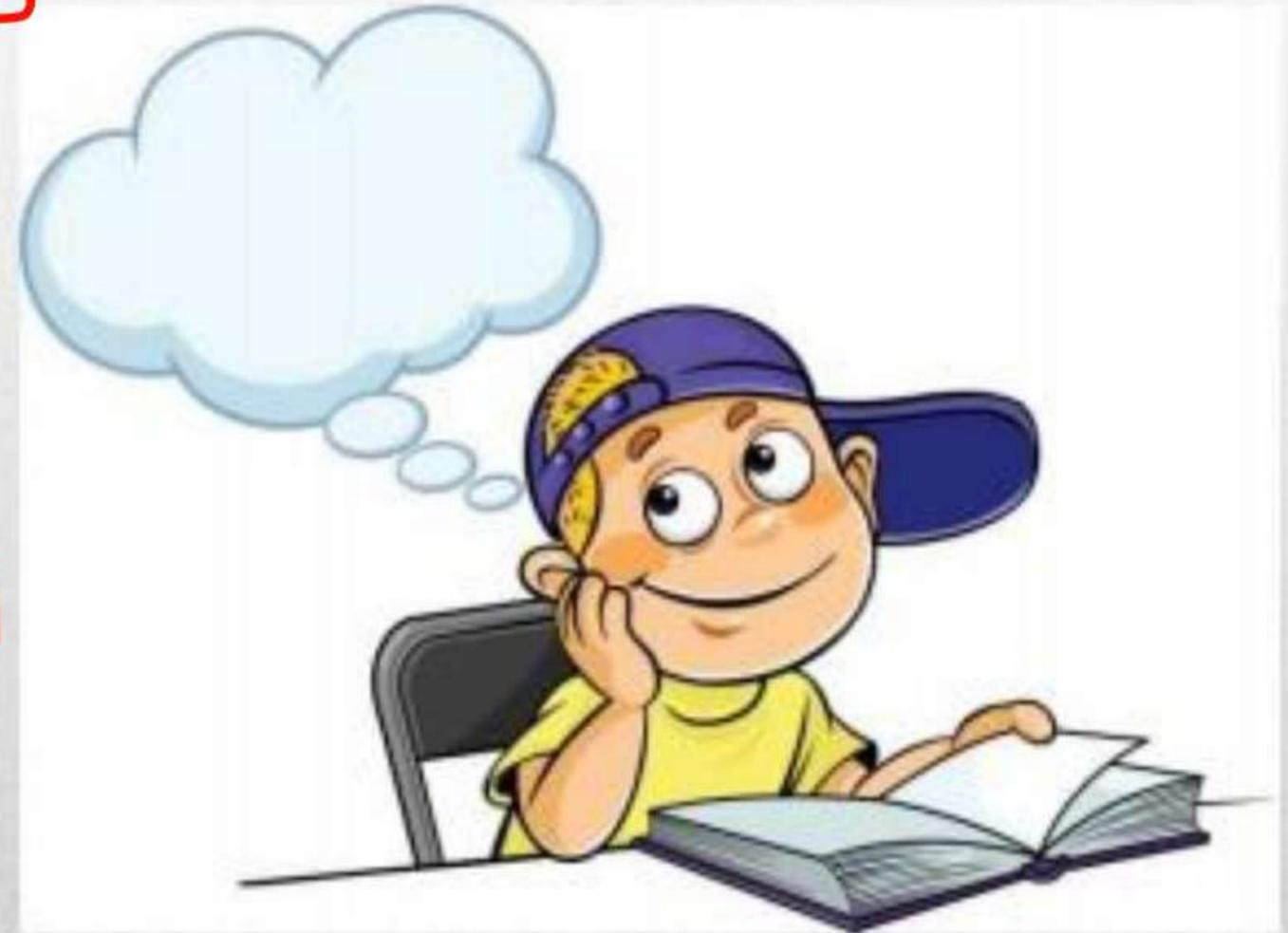
भौतिक रसायन विज्ञान

■ **Inorganic chemistry**

अकार्बनिक रसायन विज्ञान

■ **Organic chemistry**

कार्बनिक रसायन विज्ञान



- 1 अम्ल, क्षार और लवण
- 2 भौतिक और रासायनिक परिवर्तन
- 3 परमाणु संरचना और रेडियो एक्टिवता
- 4 तत्वों का आवर्ती वर्गीकरण
- 5 रासायनिक अभिक्रिया और समीकरण
- 6 धातु
- 7 अधातु
- 8 उपधातु और मिश्रधातु
- 9 दैनिक जीवन में रसायन विज्ञान
- 10 ऊर्जा
- 11 पर्यावरणीय रसायन विज्ञान

Notes

(N) ≡

- 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

Topic

अम्ल , क्षार और लवण

**Acids, Bases
and Salts**

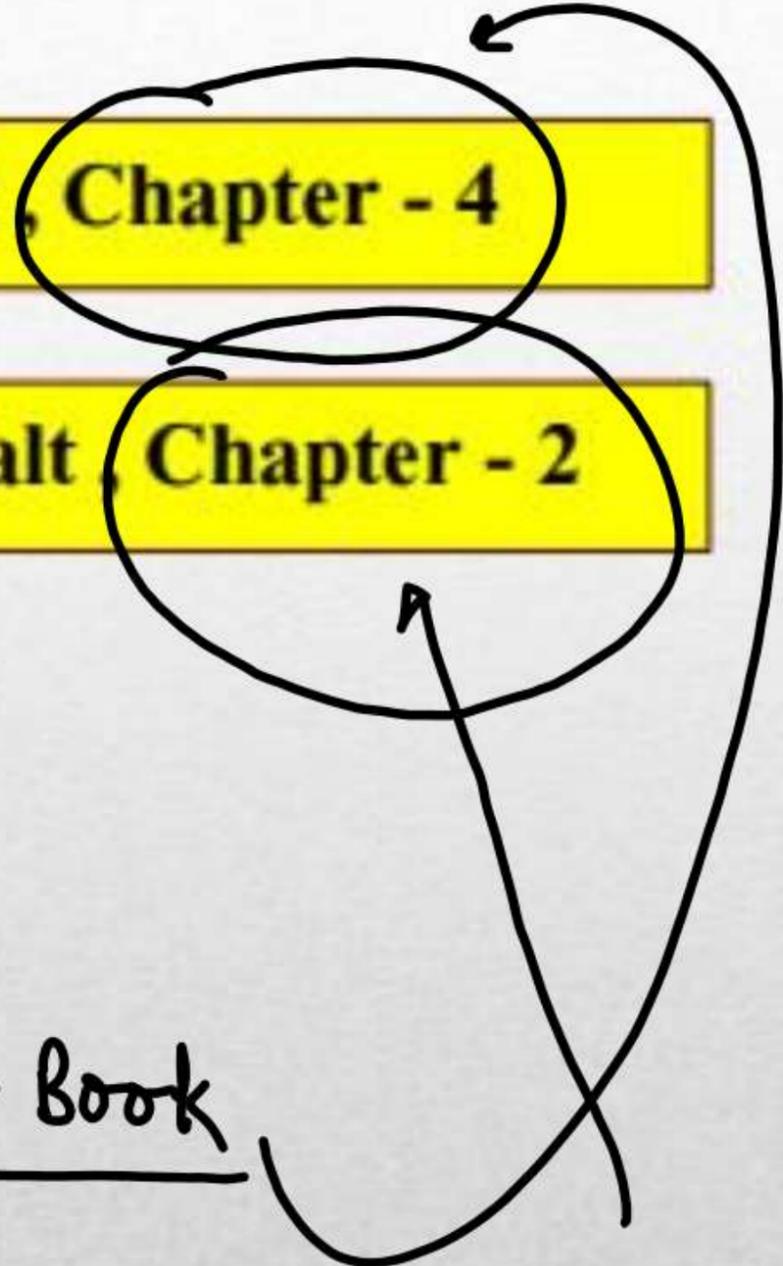


NCERT CLASS - 7 : Acid , Base and Salt , Chapter - 4

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

↓
Homework

6th — 10th NCERT-Book



Acid (अम्ल) (सामान्य जानकारी) Simple Intro



Properties of Acids

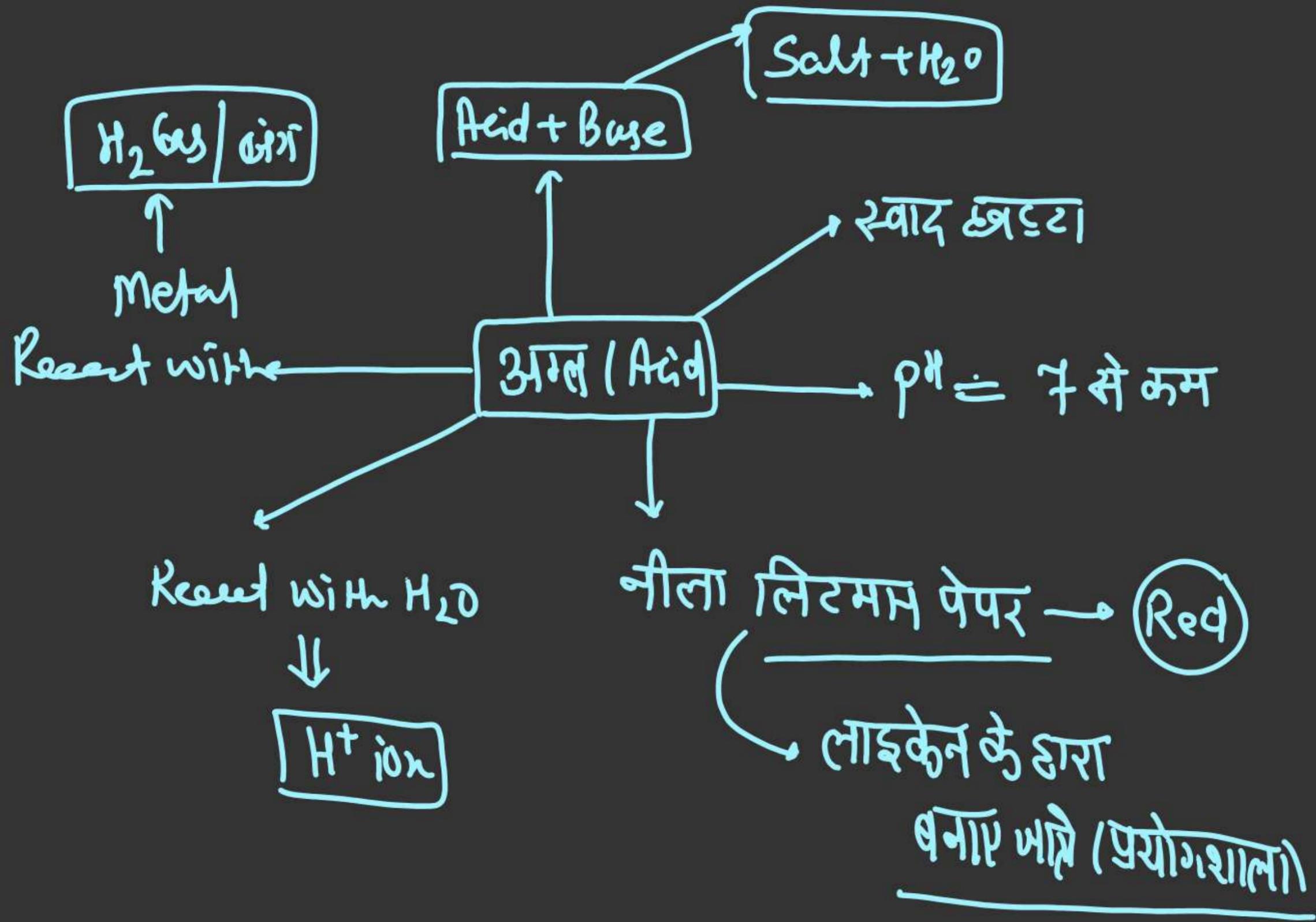
- taste sour \rightarrow बड़ा स्वाद
- cool to use in movies
- corrode metals (produce H_2 gas)
- react with bases to form salt and water
- pH is less than 7
- turns blue litmus paper to red
- strong acids are strong electrolytes, weak acids are weak electrolytes



अम्ल का pH \rightarrow 7 से कम

नीले लिटमस पेपार/पान

खराब/जंग
क्षार के साथ
लवण व जली



प्रमुख अम्ल और उनके प्राकृतिक स्रोत

Imp. Acid and Natural Source

✓ Hydrochloric Acid

हाइड्रोक्लोरिक अम्ल (HCl)

आमाशय (Stomach)

भोजन पाचन (Digestion)

Nitric Acid

नाइट्रिक अम्ल

प्रबल (Strong Acid)

धातु का लिखने

फोटोग्राफी

Oxalic Acid

आम्लीय अम्ल

रसायन

पालक की पत्ती

दागें व धब्बे

भोजन / दिल्यावद खाद्यप

Benzoic Acid

खाद्यप परिरक्षण (Food Preserv)

(मेथेनोइक अम्ल)

Formic Acid

कार्बिक अम्ल

फल संरक्षण

पीटी / विं चू → (इं)

Antibacterial (जीवाणु
नाश)

Glutamic Acid

ग्लूटेमिक अम्ल

दाले / योरे अणाम

Orthophosphoric Acid

आन्तिरोधी कपडा ✓
fireproof cloth

Tannic Acid

लेग्युम सीड (दलहन) → मटर / अरंड
चाय | कोको ✓

Acetic Acid

सिरका (विनेगा)

✓ Citric Acid

→ नींबू / संतरा / बड़े कले

≈ Tartaric Acid

→ इमली / कच्चे अंगूर

≈ Maleic Acid

→ सेब / पने की पत्ती

Lactic Acid

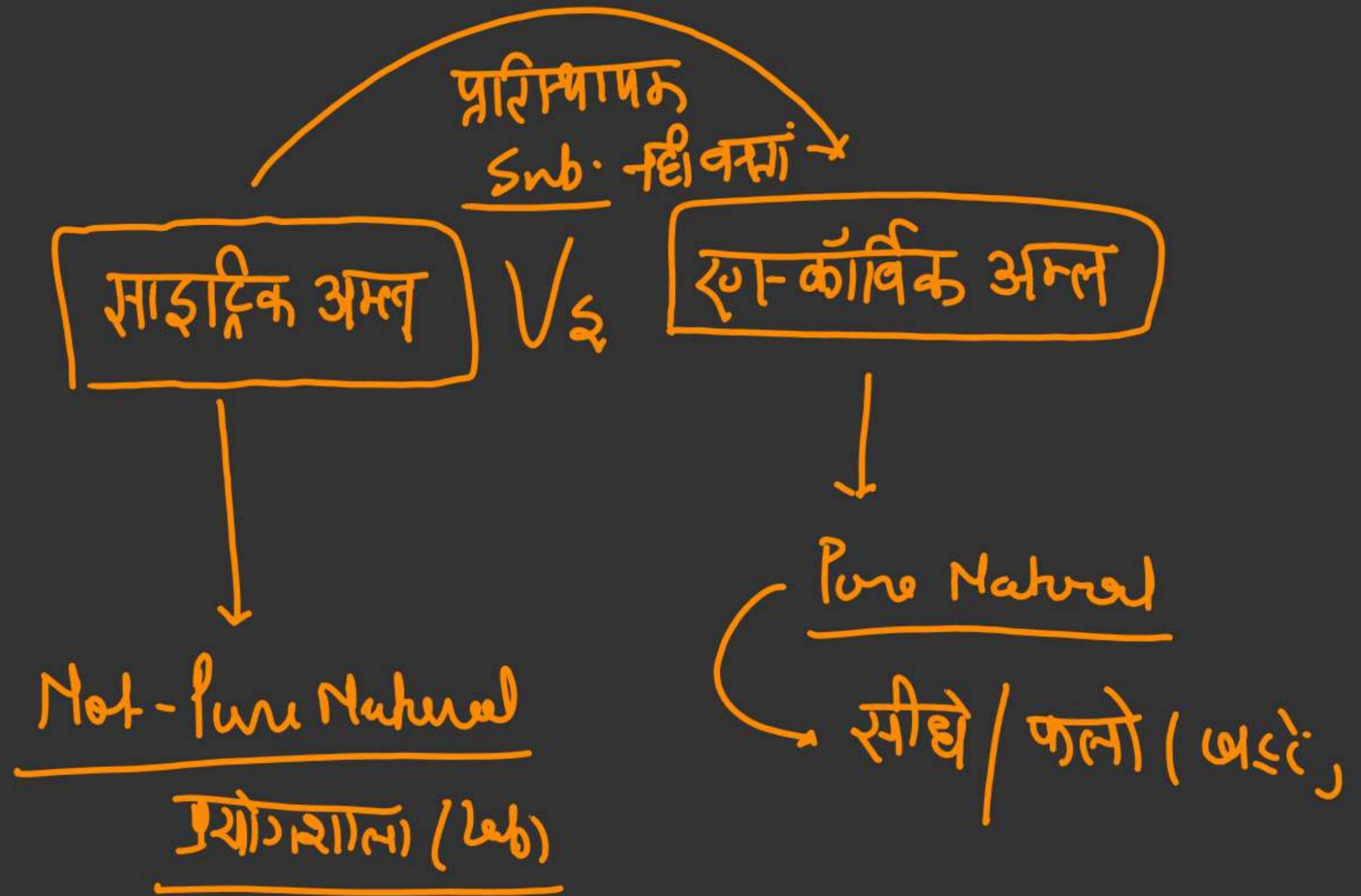
→ curd (दही), मांसपेशीजमाव
Muscles
दर (Cramp)

Butyric Acid

→ Butter मालवत / अरोमा,
हिंगड

Ascorbic Acid

→ विटामिन C → आंवला / नींबू)
खट्टे फल



COMMON ACIDS

दुर्बल अम्ल

प्रबल Strong Acids		Weak Acids	
<u>HCl</u>	<u>Hydrochloric acid</u>	$\text{HC}_2\text{H}_3\text{O}_2$	<u>Acetic acid</u>
<u>HBr</u>	<u>Hydrobromic acid</u>	H_2CO_3	<u>Carbonic acid</u>
<u>HI</u>	<u>Hydroiodic acid</u>	H_3PO_4	<u>Phosphoric acid</u>
<u>HNO_3</u>	<u>Nitric acid</u>	HF	<u>Hydrofluoric acid</u>
<u>H_2SO_4</u>	<u>Sulfuric acid</u>	HCN	<u>Hydrocyanic acid</u>
		H_2S	<u>Hydrosulfuric acid</u>

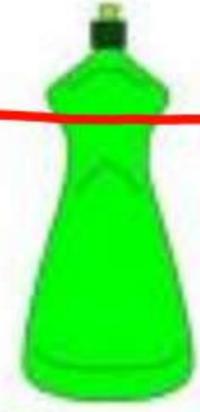
अम्ल

क्षार और सामान्य परिचय

Base and Gen-Intro.

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"



अम्ल के साथ क्रिया → OH⁻

र-वाक → नीबू / कमेंला

हाथों को तरल पिकने

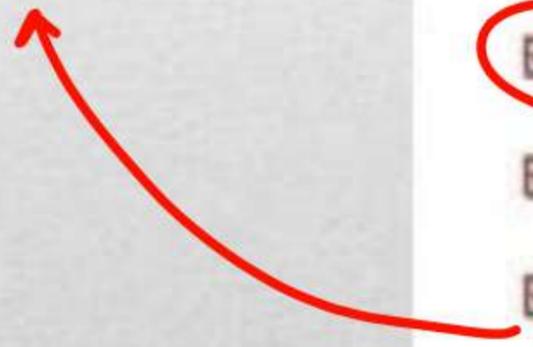
अम्ल के साथ क्रिया → लवण + पल

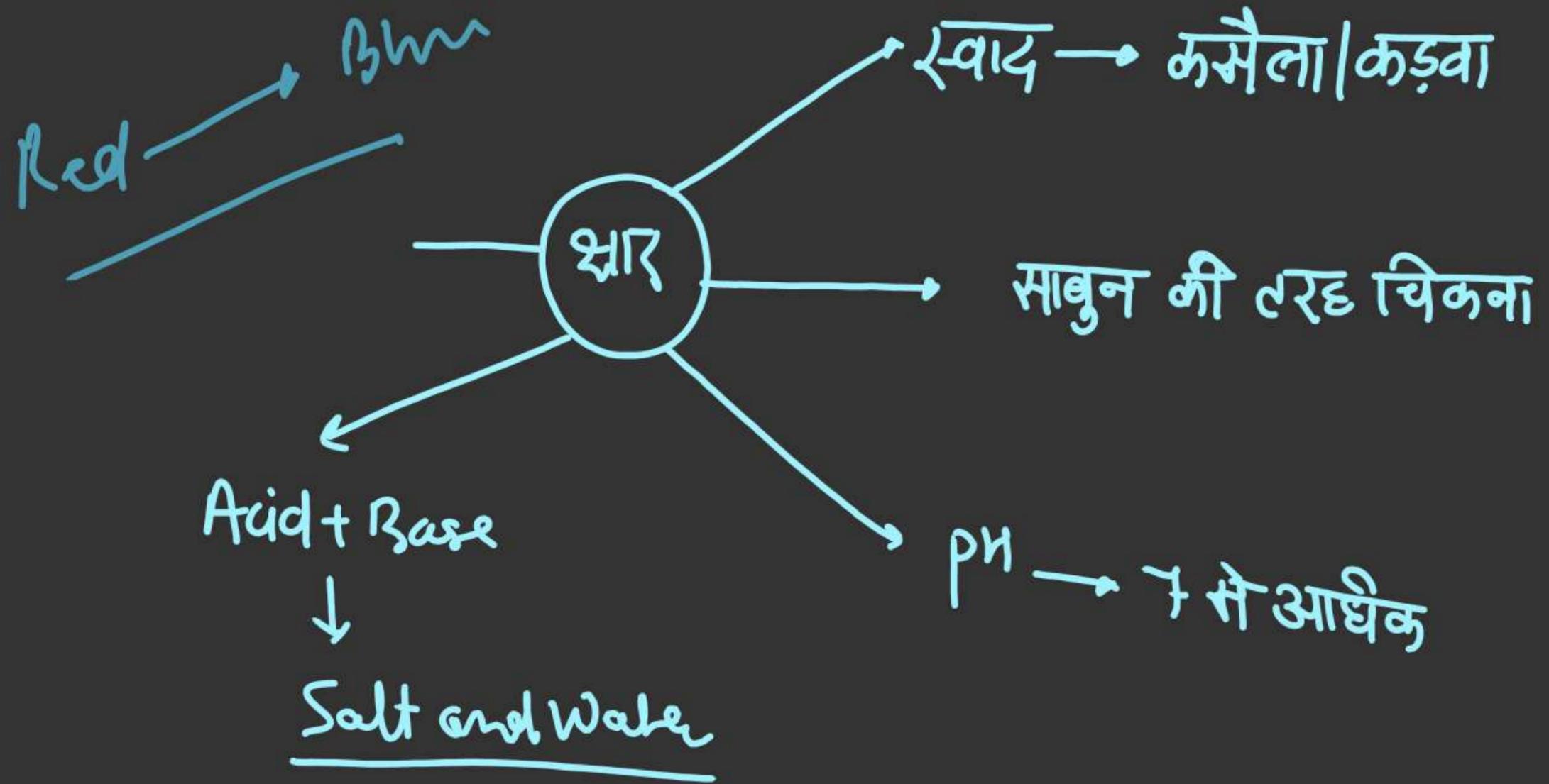
लाल लिटमस → नीला

अम्ल

OH⁻

अम्ल





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_4OH , $\{\text{NH}_3(\text{aq})\}$	ammonia water	detergent, fertilizer, explosives, fibers	Weak

हाइड्रॉक्साइड सोडियम →

पोटैशियम

हाइड्रॉक्साइड

कैल्शियम

हाइड्रॉ

सोडियम बाई

कार्बोनेट

(NH_4OH)

कॉस्टिक सोडा

पेट्रोल रिफाइनिंग साबुन (SDAP)

कपड़े साबुन

सीमेंट

स्वतरोही बेन्गी

एंटिसिड

डिटर्जेंट / आध

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

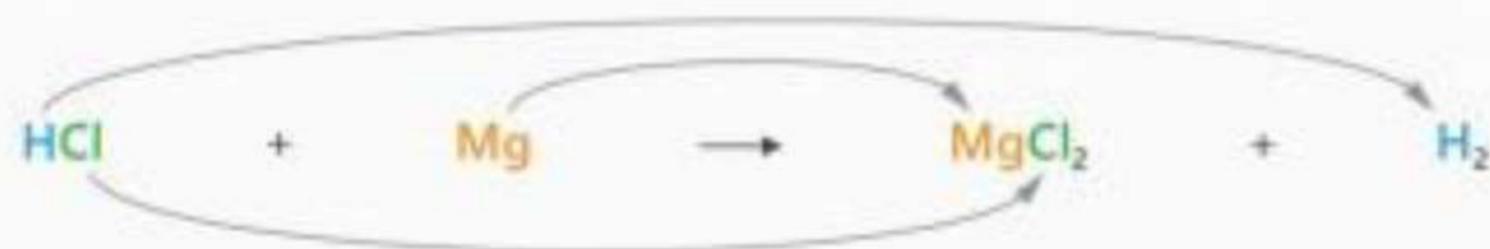
✓ **The smell of vanilla vanishes with the base, but it's smell does not Vanish with an acid .**

Reaction of Acid with Metals



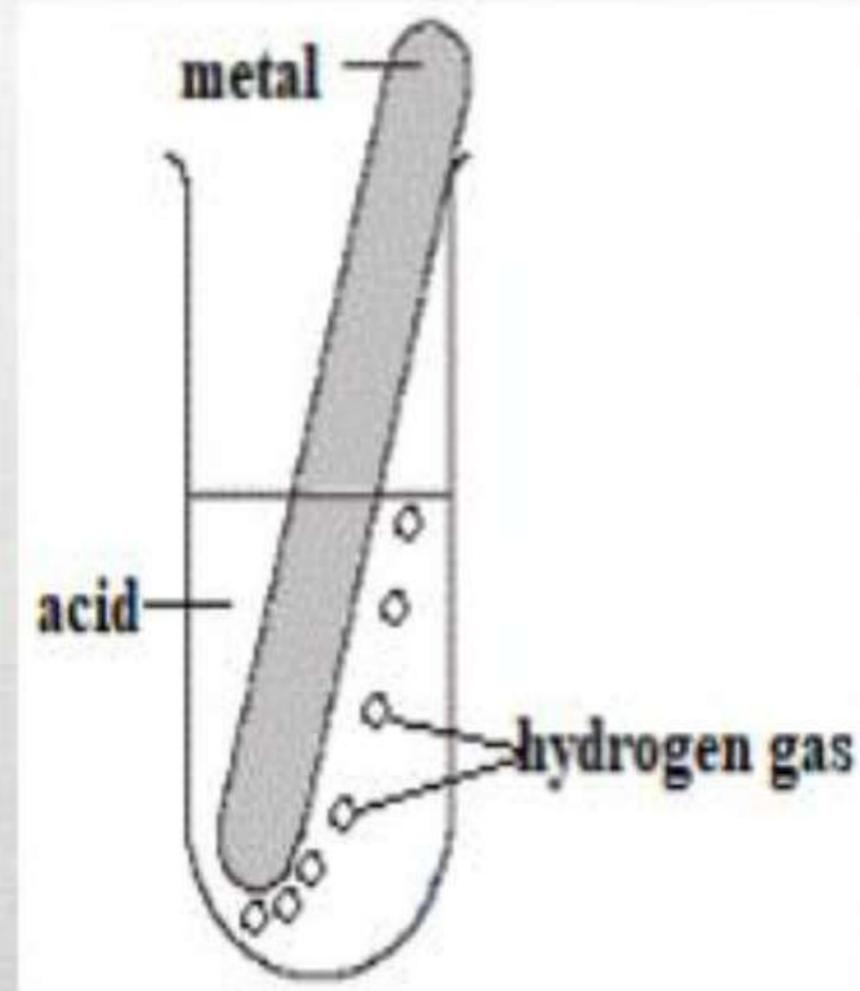
Example

hydrochloric acid + magnesium \longrightarrow magnesium chloride + hydrogen



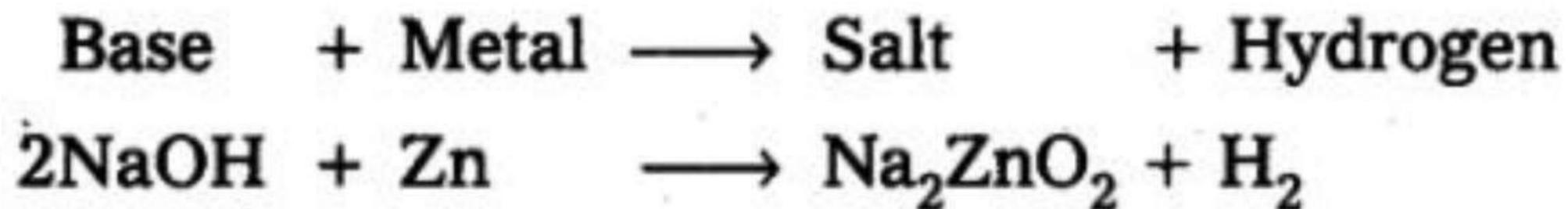
www.gmsscience.com.au

Acid-Metal Reactions



Reaction of Bases with Metals

Chemical reaction :



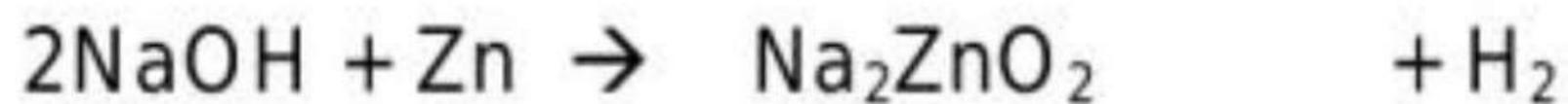
- All Metal do not react with base
 - The metal must be more reactive than the metals present in the base for the reaction to take place .
-

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

Generally;

Base + Metal \rightarrow Metalate + Hydrogen gas

Example:



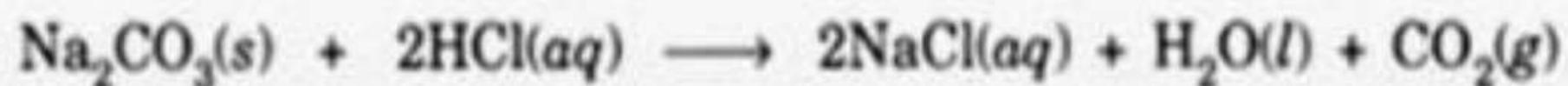
(Sodium Zincate)

Reaction of Metal Carbonates and Metal Hydrogen Carbonates with Acid

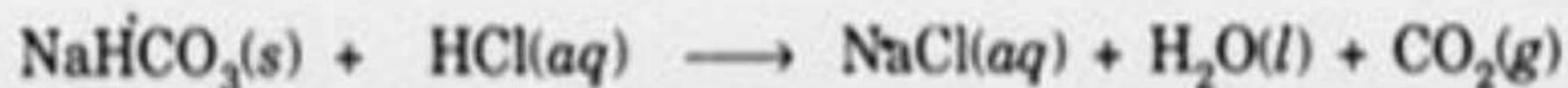
Acid react with metal carbonates and metal hydrogen carbonate to form salt ,carbon dioxide and water

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

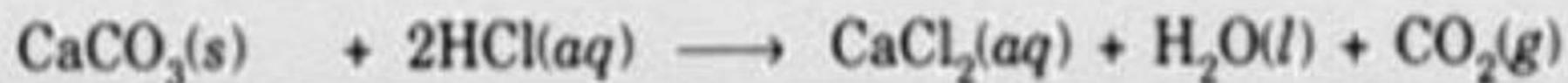
For example,



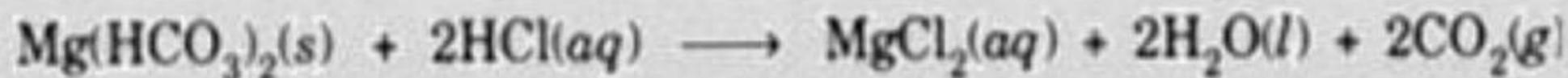
Sodium
carbonate



Sodium hydrogen
carbonate



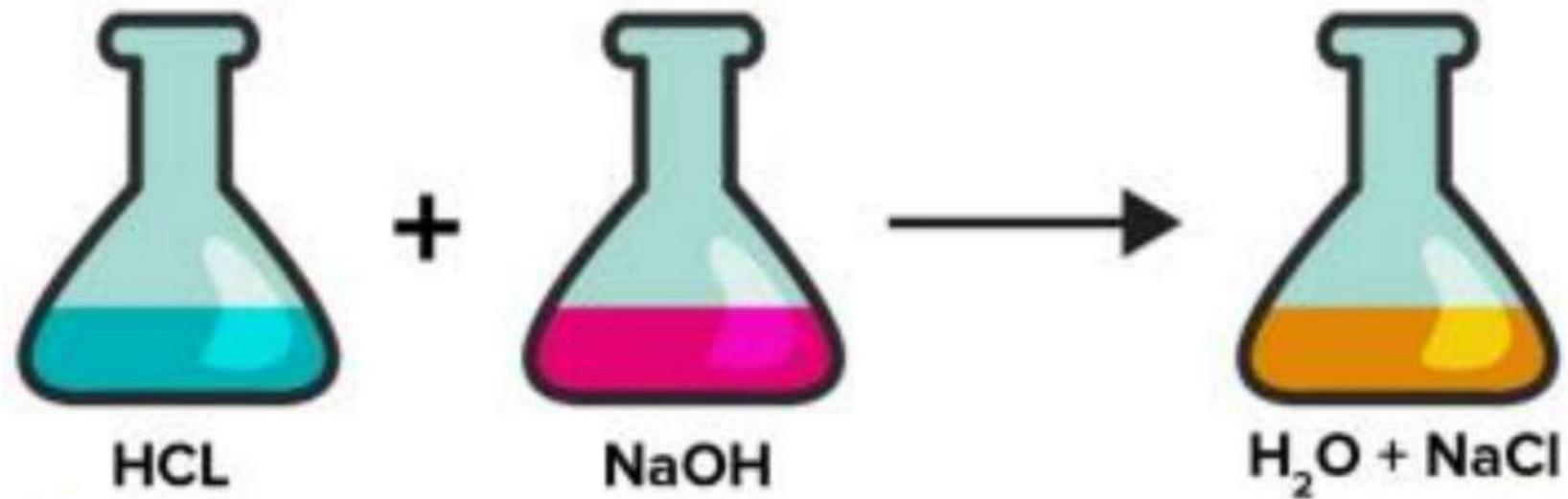
Calcium
carbonate



Magnesium
hydrogen
carbonate

Reaction of Acid and Base with each other

NEUTRALIZATION REACTION EQUATION



ACID + BASE



H⁺OH⁻ + SALT

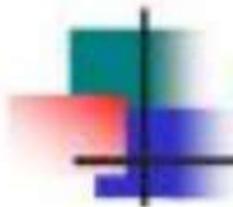
Reaction of Metallic Oxide with Acid

- ❑ **Metallic oxide are basic in nature ,they react with dilute acid to form water and salt .**
- ❑ **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



Common Feature Between All Acid and Base



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

- 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 .
 - All bases do not dissolve in water. an alkali is a base that dissolve in water . they are sappy to touch, bitter and corrosive. never taste or touch them as they may cases harm .
-



THE pH SCALE

Acidic

Alkaline



0
Battery Acid



1
Stomach Acid



2
Lemon juice



3
Wine



4
Bananas



5
Black Coffee



6
Milk



7
Pure Water



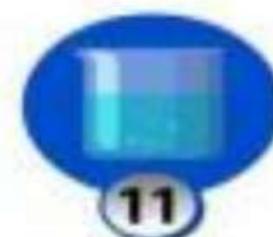
8
Blood



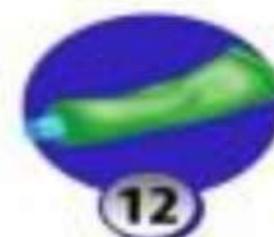
9
Egg White



10
Household bleach



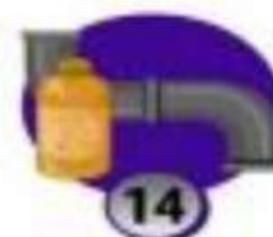
11
Household Ammonia



12
Hair Remover



13
Oven Cleaner



14
Drain cleaner

