

Acids, Bases Salts

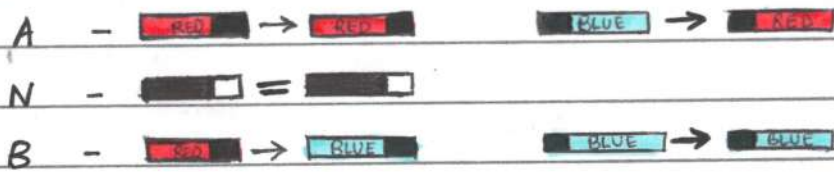
INDICATORS :

- Indicators are dyes that change colour when put in, an acid / base.
- Types:

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* Natural Indicators

▷ LITMUS

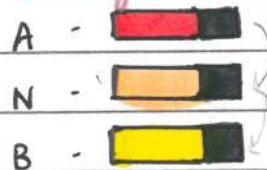


litmus - lichens - Neutral - VIOLET

- ▷ red cabbage
- ▷ turmeric
- ▷ petals of HYDRANGEA, PETUNIA, GERANIUM

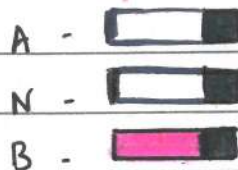
* Synthetic Indicators:

▷ Methyl Orange



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▷ Phenolphthalein:



* Olfactory Indicators

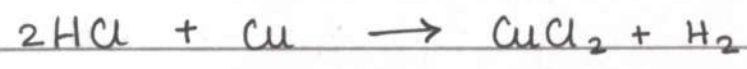
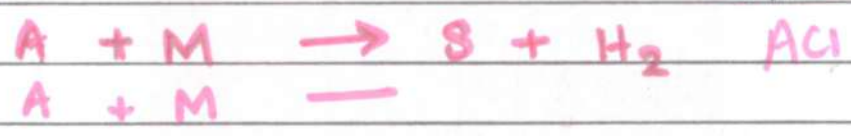


- ▷ onion
- ▷ vanilla
- ▷ clove

CHEMICAL REACTIONS OF ACIDS

o METAL

CII



CHEMICAL REACTIONS OF ACIDS

Metals



Carbonates · M

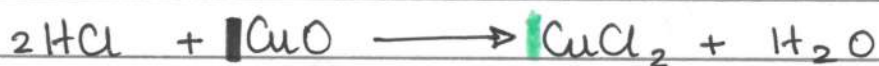


CHEMICAL REACTION OF ACIDS

Metals



Metal Oxide



Metal hydroxide

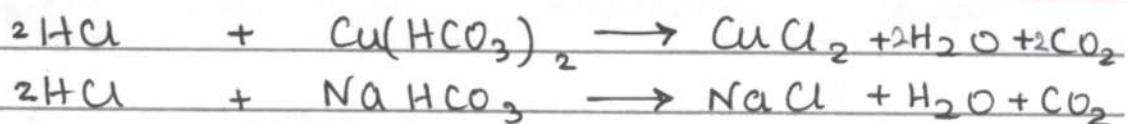


Metal Carbonate

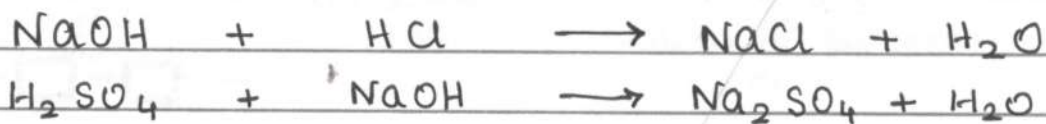


Metal Bicarbonate





Base - NEUTRALISATION

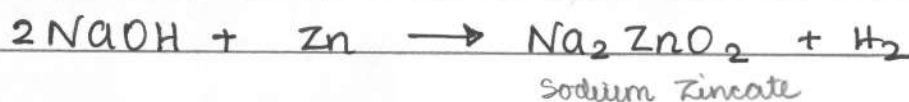


Water

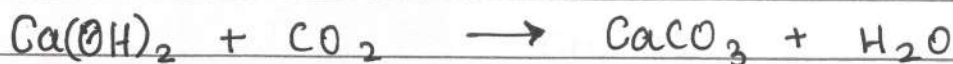


CHEMICAL REACTION OF BASES

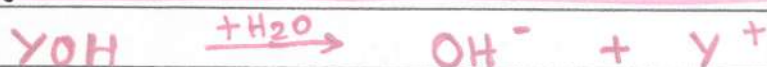
Metal



Non-Metallic Oxide

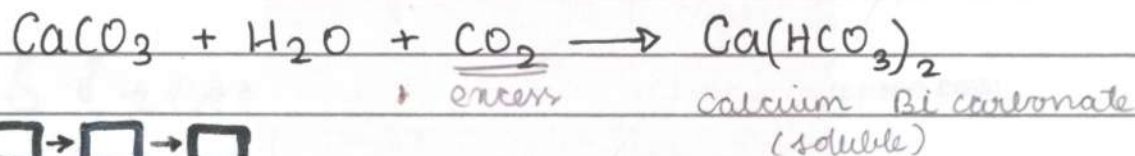
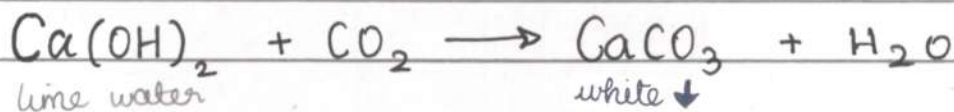


Water



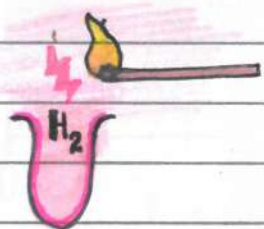
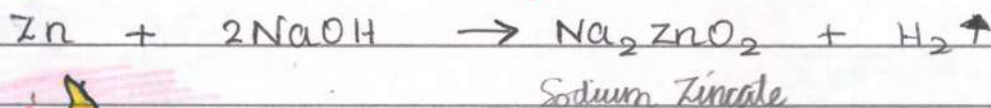
TEST

CO₂



H₂ - fuel rockets ↑

- soluble in water = lighter than AIR



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$2\text{H}_2 + \text{O}_2 \longrightarrow 2\text{H}_2\text{O} + \triangle$
 heat - exothermic reaction ∴ it heats up air in Test Tube and so air expands and meets the stationonery air and leads to a mini EXPLOSION with a Pop - Sound

Acid

sour
 B → R
 H⁺ / H₃O⁺ ions - CATION
 hydronium

Base

bitter
 R → B
 OH⁻ ions hydroxide - ANION



acid

+ (stir)

H₂O

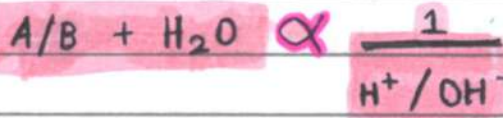
EXOTHERMIC

↓
 excessive LOCAL HEATING

↓
 break - burn

Dilution:

mixing an acid / base with H_2O .

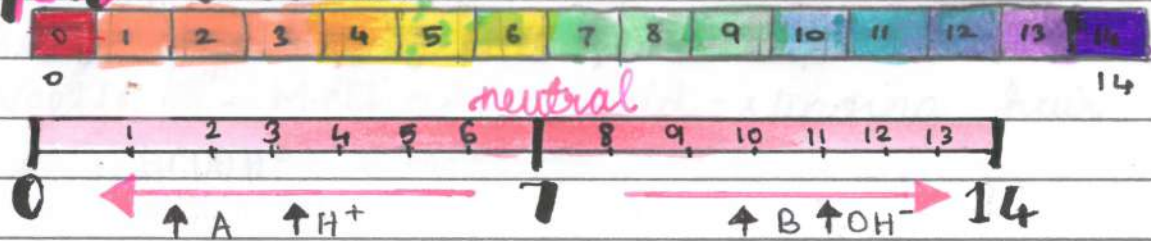


Strength

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$H^+ \propto$ Acid strength
 $OH^- \propto$ Base strength

ph scale



IMPORTANCE

1 plants & animals

♀ body 7.0 - 7.8

acid rain pH < 5.6 - - - ↓ pH rivers

2 Venus

atmosphere - thick white & yellowish cloud



3 Soil

plant 5.5 - 7.0

base { quick lime } + ∞ acid
 { limestone }
 { ammonia }

4 Digestive System

indigestion - stomach ↑ acid (HCl)
pain, irritation

ANTACID (B) - neutralise $Mg(OH)_2$ milk of magnesia

5 Tooth Decay

ph < 5 = TD starts - decays - degrades (sugars)
sugar + food + BACTERIA → acids

Calcium hydroxyapatite [crystalline of Ca_3PO_4]
Tooth enamel

Tooth Paste - Basic

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6 Self Defence

Bee sting - acid → pain, irritation

Nettle - Methanoic acid - stinging hair
HCOOH ← Formic acid

SALT

SA	+	SB	=	neutral	=	PH	=	7
SA	+	WB	=	acidic	=	PH	>	7
WA	+	SB	=	basic	=	PH	<	7

* NaCl

deposits - solid salt - large crystals

BROWN - impurities = ROCK SALT

beds of rock salt → seas of bygone ages

* NaOH Sodium hydroxide Caustic Soda

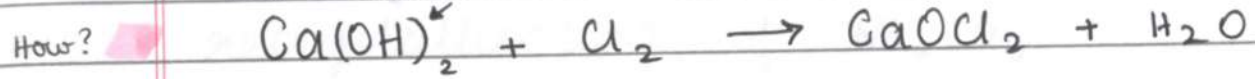
How?



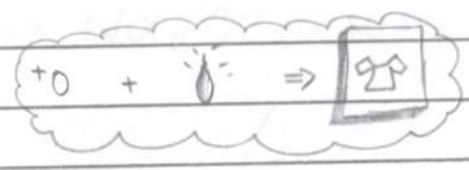
(H)
metals
ngent
ibre

★ CaOCl_2 Bleaching Powder

DRY SLAKED LIME

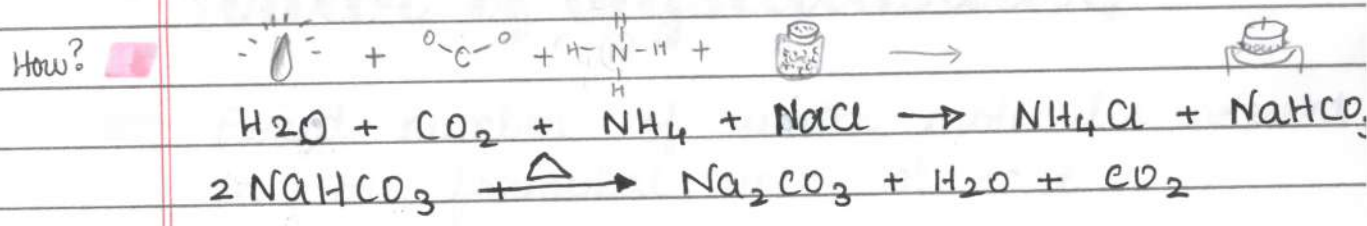


- Uses?
- ▷ oxidising agent (O⁺)
 - ▷ disinfecting H₂O (O⁻)
 - ▷ bleach (99%)
 - cotton, linen
 - paper
 - washed clothes



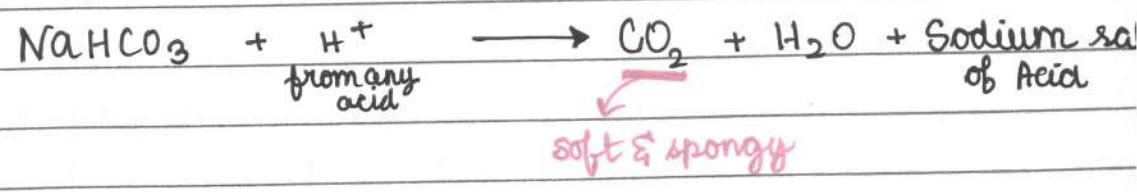
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★ NaHCO_3 Baking Soda - SOLVAY



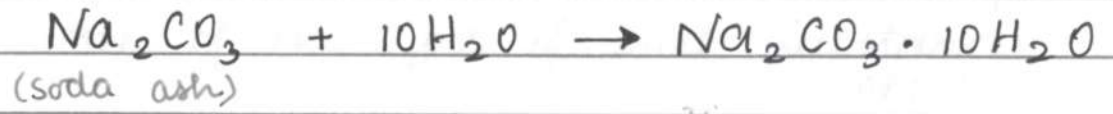
- Uses?
- ▷ baking
 - ▷ faster cooking
 - ▷ soda acid fire extinguisher
 - ▷ antacids


▷ BAKING POWDER [BS + mild edible base (TARTARIC)]



$\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ Washing soda

How? ■ recrystallisation of Na_2CO_3

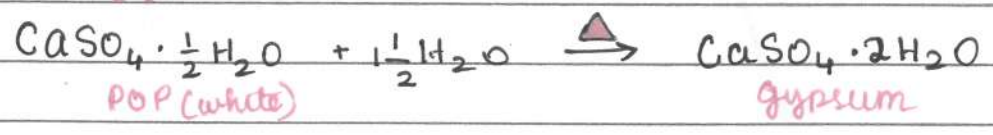
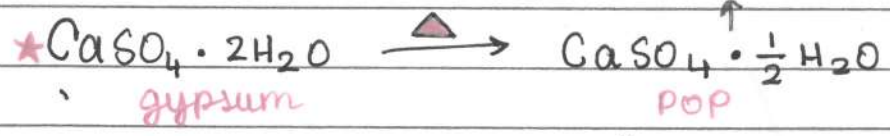
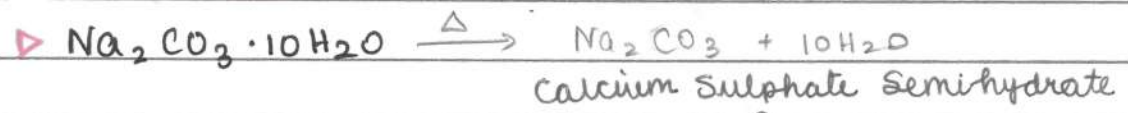
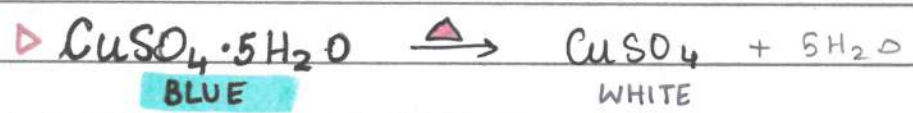


- uses? ■
- ▷ glass, soap, paper 
 - ▷ sodium compounds - BORAX
 - ▷ cleaning - domestic

↓ H_2O hardness → H_2O + minerals dissolved
 W.S + hardwater \leftarrow = binds with minerals and removes them

Water of Crystallisation

■ Fixed number of water molecules present in one formula unit of salt.



- ★ smoothen surfaces
- fix fractured bones
- toys, decoration