

CLASS - 10th

SUBJECT - SCIENCE

L = 2 ACIDS, BASES AND SALTS

ACIDS → Those substances which dissociate H^+ ion in their aqueous solution.

Physical Properties - (1) Sour in taste

(2) Turn Blue litmus to Red

(3) do not change colour phenolphthalein

(4) Corrosive in nature (5) Conduct Electricity

Types of Acids ON the Basis of occurrence

(a) Mineral Acids → HCl, HNO_3 , H_2SO_4

(b) Organic Acids → Citric Acid, Oxalic Acid, Lactic Acid

Types of Acids on the Basis of concentration

(a) Strong Acid → Those Acid which completely dissociate into H^+ ions. Example HCl, H_2SO_4 , HNO_3

(b) Weak Acid → Those Acid which do not completely dissociate H^+ ions. Examples. All organic Acids.

BASES → Those substances which dissociate OH^- ions in their aqueous solution.

Properties of Bases (1) Bitter in taste

(2) Turn Red litmus into Blue

(3) Slippery or soapy touch

(4) They turn phenolphthalein solⁿ pink

(5) Conduct Electricity

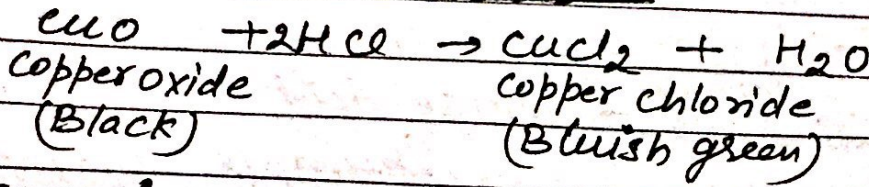
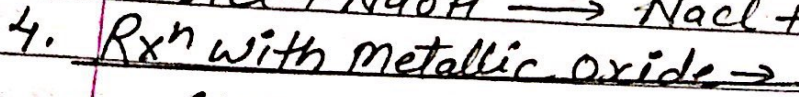
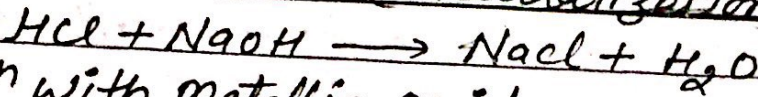
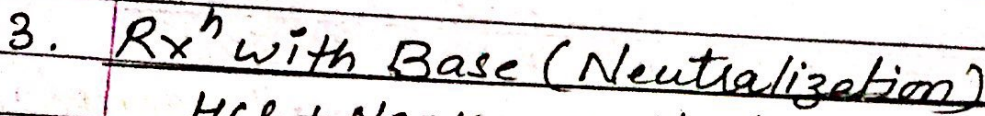
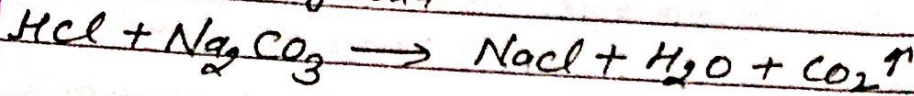
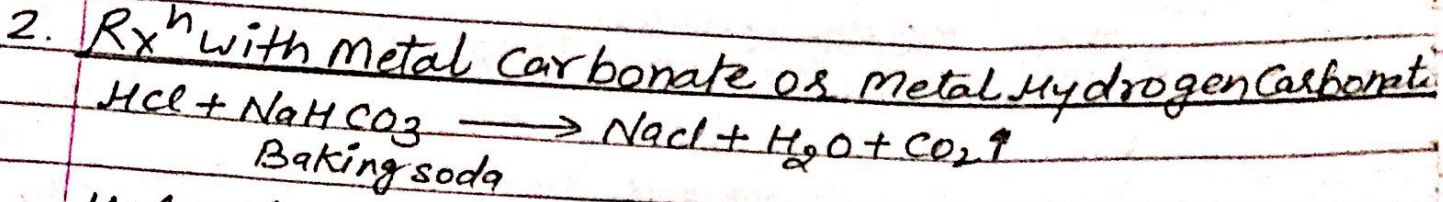
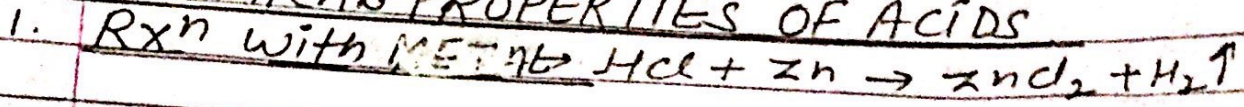
INDICATORS → Those substances which ~~the~~ change their colour in Acidic or Basic medium.

(a) Natural Indicators → Turmeric, China Rose, litmus solution, Red cabbage leaves

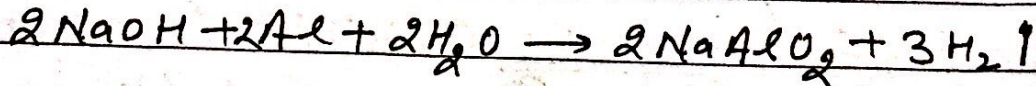
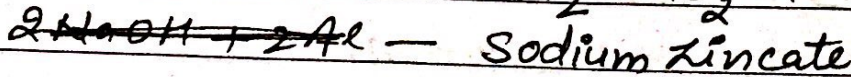
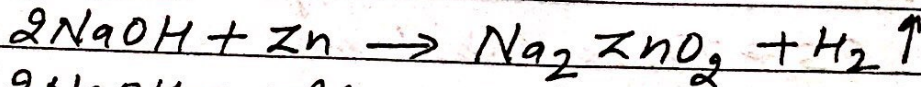
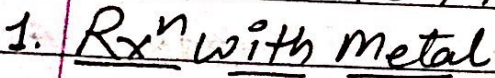
(b) Artificial Indicator → Methyl Orange, phenolphthalein

olfactory Indicator → Some substances change their smell in Acidic or Basic medium called olfactory Indicators
 Example Vanilla, clove oil, onion.

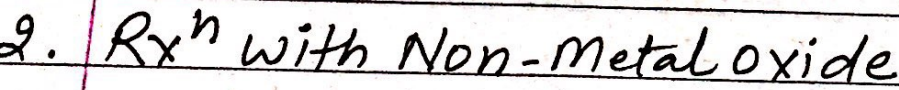
CHEMICAL PROPERTIES OF ACIDS



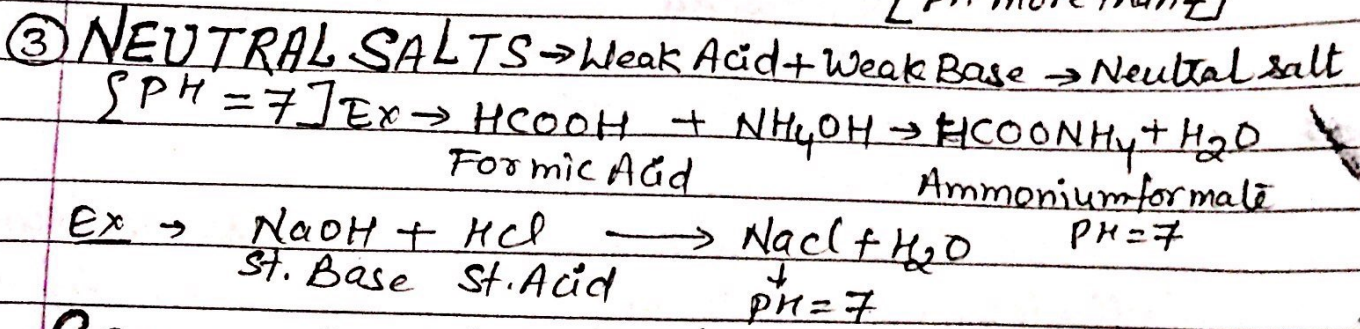
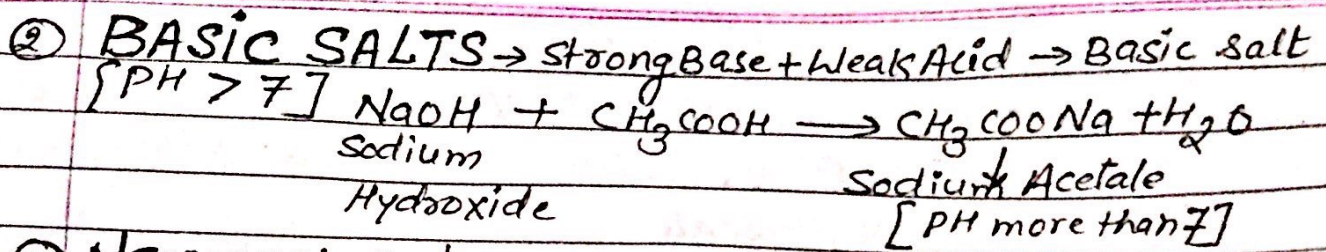
CHEMICAL PROPERTIES OF BASES



Sodium Aluminate



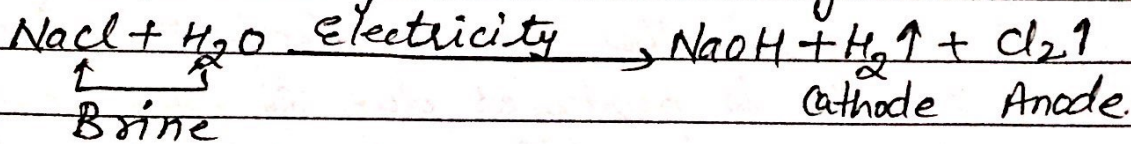
pH of Solution → The Acidity or alkalinity of a solution is expressed in terms of pH. The pH of a solution is magnitude of the negative power to which 10 must be raised to express the H^+ ion concentration in moles per litre.



COMMON SALT (NaCl) PH = 7 → occurrence of common salt - (a) Sea water, (b) Rock salt.

Caustic Soda (NaOH)

Manufacture of caustic Soda → By chlor-Alkali process



Uses - (A) NaOH → (1) In paper industry (2) In manufacture of soap, detergent (3) for degreasing metals (4) In Artificial fibres.

(B) Uses of Hydrogen → (1) It is used a Rocket fuel (2) In manufacture of fertilizers, Ammonia (3) In the manufacture of vegetable ghee.

(C) Uses of Chlorine → (1) In manufacture of bleaching powder. (2) In manufacture of CFCs (3) In PVC, (4) Disinfecting water

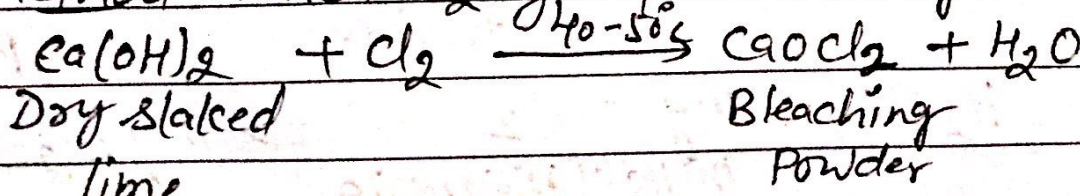
BLEACHING POWDER

COMMON NAME → Bleaching Powder

Chemical Name → calcium oxy chloride

Chemical formula → $CaOCl_2$

Lab Method → When Cl_2 gas pass into dry slaked lime



Uses of Bleaching Powder → (1) In textile for bleaching cotton and linen (2) making wool unshrinkable (3) In paper industry to bleach wood pulp (4) used for disinfecting drinking water

PROPERTIES → When bleaching powder expose into air



BAKING SODA NaHCO_3

Common Name → Baking Soda

Chemical Name → Sodium Hydrogen Carbonate

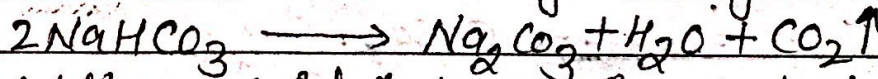
Chemical formula → NaHCO_3

Lab Method → $\text{NaCl} + \text{H}_2\text{O} + \text{NH}_3 + \text{CO}_2 \rightarrow \text{NH}_4\text{Cl} + \text{NaHCO}_3$
Brine Ammonia Ammonium Chloride Baking soda

Uses of Baking Soda → (1) It is used as an Acid (2) It is used in cake, Bread to make them soft and spongy

(3) It is used as Acid fire extinguishers.

PROPERTIES (1) On heating Baking soda Release CO_2



(2) On Adding Acid into Baking soda to form Baking Powder.

WASHING SODA

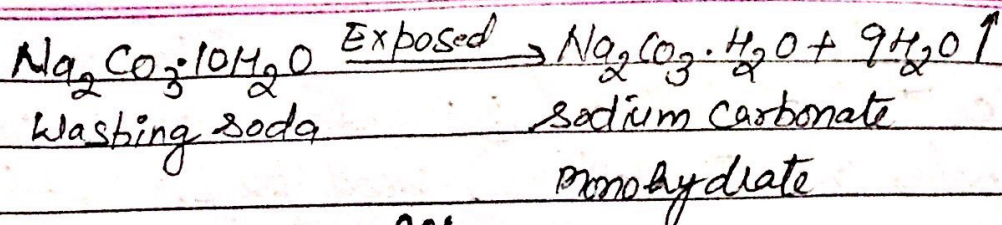
Common Name → Washing Soda

Chemical Name → Sodium Carbonate decahydrate

Chemical formula → $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$

Preparation Method → $\text{Na}_2\text{CO}_3 + 10\text{H}_2\text{O} \xrightarrow[\text{Crystallization}]{\text{Recrystallization}} \text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$

Properties of Washing Soda → (1) It is white colour crystal (2) when expose into air it lose nine mole of water

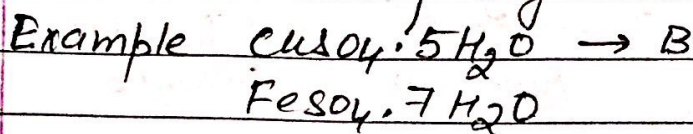


This process called **Efflorescence**

Uses of Washing Soda → (1) It is used for cleaning clothes

- (2) It is used for removing permanent hardness of water
 (3) It is used in manufacture glass, paper, borax.

WATER OF CRYSTALLISATION → Fixed No. of water molecules present in one formula unit mass of salt, is called water of crystallisation.



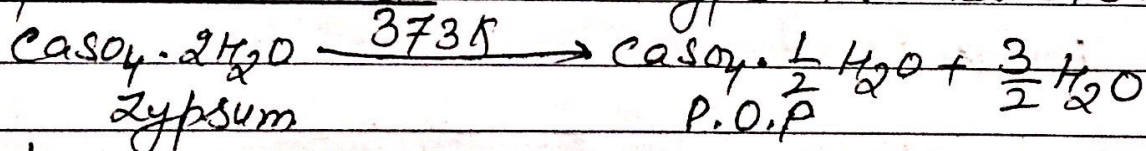
PLASTER OF PARIS (P.O.P)

Common Name → P.O.P

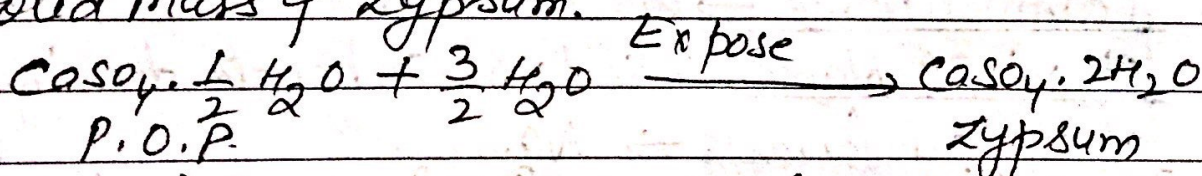
Chemical Name → Calcium Sulphate Hemihydrate

Chemical formula → $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$

Preparation Method → When Zypsum heated 373 K temp



Properties of P.O.P → (1) When P.O.P Expose into air it absorb water molecule from Atmosphere and form solid mass of Zypsum.



- Uses of P.O.P → (1) It is used for setting fractured bone
 (2) In making toys, statue (3) In making Chalk (4) In making fire proof material

END

ANUPAMA
10th Science