

NCERT SOLUTION

(A) VERY SHORT PAGE No-18

Q1 → How will you test a gas which is liberated when HCl reacts with an Active metal?

Ans → Bring a burning candle near the mouth of the test tube if it burn with pop sound than the gas is H₂ gas

Q2 → Why should curd and sour substances not be kept in brass and copper vessels?

Ans → Brass contain copper and zinc metals, reacts with the organic acids present in curd form poisonous in nature and make unfit for consumption.

Q3 → Metal compound 'A' reacts with dil HCl to produce effervescence. The gas evolved extinguishes a burning candle. Write a balanced chemical equation for the reaction if one of the compounds formed is calcium chloride?

Ans → 1. One compound formed is calcium chloride, it means compound 'A' is salt of calcium.
 2. A burning candle is extinguished by carbon dioxide. This means CO₂ is produced

$$CaCO_3 + HCl \rightarrow CaCl_2 + CO_2 + H_2O$$

PAGE No-25

Q1 → Why do HCl, HNO₃ etc. show acidic characters in aq. solnⁿ while solution of compound like alcohol and glucose do not show acidic character?

Ans → compound like HCl and HNO₃ release H⁺ ions in solnⁿ. Therefore, they show acidic character.
 Alcohol, glucose do not release H⁺ ions in solnⁿ. so do not show acidic properties.

Q2 → Why does an aq. solnⁿ of an acid conduct electricity?

Ans → Electricity conduct by ions. An acid contain H⁺ ions in aq. solnⁿ so it conduct electricity.

Q3 → Why does dry HCl gas not change the colour of the dry litmus paper?

Ans → Colour of litmus paper changes in contact with H⁺ ions. dry HCl gas do not contain H⁺ ions

Q4 → While dil. an acid, why is it recommended that the acid should be added to water and not water to the acid?

Ans → Addition of water to acid is an exothermic process. If we add water to acid, lot of heat produced. Acid splash out. if acid is added to water, water absorb the extra heat.

Q5 → How is the conc. of H₃O⁺ affected when a solnⁿ of an acid is diluted?

Ans → conc. of H₃O⁺ ions decrease on diluting the solnⁿ.

Q6 → How is conc. of OH^- affected when excess base is dissolved in solution of Sodium Hydroxide?

Ans → When excess Sodium Hydroxide dissolve in a solution more OH^- ions release. so increase the conc. of OH^- ions.

Q7 → PAGE NO-28

Q1 → You have two soln 'A' and 'B'. The pH of soln 'A' is 6 and pH of soln 'B' is 8. Which soln has more hydrogen ion conc.? Which of this is Acidic and which one is basic?

Ans → 'A' soln having pH less than 7 is Acidic

'B' soln having pH more than 7 is basic

Q2 → What effect does the conc. of H^+ ions having on the Nature of soln?

Ans → Higher the conc. of H^+ ions, greater is the Acidic nature of soln.

Q3 → Do basic soln also have H^+ ions? If yes, then why are these basic?

Ans → Acid and Basic soln both have H^+ ions. But Acidic soln has more H^+ ions. But Basic has less H^+ ion, more OH^- ions.

Q4 → Under what soil condition do you think a farmer would treat the soil of his fields with quick lime or slaked lime or chalk?

Ans → To Neutralize the Acidic Effect of soil, Farmer add CaO , Ca(OH)_2 and CaCO_3

Q5 → PAGE NO-33

Q1 → What is the Common name of compound CaOCl_2 ?

Ans → Bleaching powder.

Q2 → Name the substance which on treatment with chlorine yields bleaching Powder?

Ans → calcium hydroxide, Ca(OH)_2

Q3 → Name the sodium compound which used for softening hard water?

Ans → sodium carbonate or washing soda ($\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$)

Q4 → What happen if a soln of sodium hydrogen carbonate is heated? Give the equation of Reaction involved?

Ans → When sodium hydrogen carbonate heated it give sodium carbonate, CO_2 and H_2O

$$2\text{NaHCO}_3 \xrightarrow{\Delta} \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2$$

Q5 → Write an equation to show the reaction between plaster of Paris and water?

Ans → $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O} + \frac{3}{2}\text{H}_2\text{O}$
Plaster of Paris

M.C.Q EXERCISES - TEXT BOOK

Q1 → A soln turn red litmus blue, its pH is likely to be -

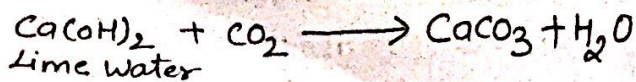
- (a) 1 (b) 4 (c) 5 (d) 10

Ans - (d) 10

Q2 → A soln react with crushed egg-shells to give a gas that turn lime water milky

- (a) NaCl (b) HCl (c) LiCl (d) KCl

Ans → $\text{CaCO}_3 + 2\text{HCl} \rightarrow \text{CaCl}_2 + \text{H}_2\text{O} + \text{CO}_2$
Egg cell



(b) is correct - HCl

Q4 → Which one of the following types of medicines is used for treating indigestion?

Ans → (a) Antibiotic (b) Analgesic (c) Antacid (d) Antiseptic
Option (c) → Antacid

Q5 → Compounds such as Alcohol and glucose also contain hydrogen but are not categorised as Acids.

Ans → Alcohol ($\text{C}_2\text{H}_5\text{OH}$) and glucose ($\text{C}_6\text{H}_{12}\text{O}_6$) Both have Hydrogen but Both of them do not produce H^+ ions. So they do not considered Acid.

Q6 → Why does Distilled water not conduct Electricity, where as Rain water does?

Ans → For the conduction of Electricity ions are necessary. Distilled water do not contain any type of ions Hence do not conduct Electricity

But Rain water contain small Amount of Acid (H^+ ions) which conduct Electricity.

Q7 → Five solnⁿ 'A', 'B', 'C', 'D' and 'E' having pH as 4, 1, 11, 7, and 9 respectively. Which solnⁿ is :-

(a) Neutral (b) strongly Alkaline (c) strongly Acidic
(d) weakly Acidic (e) weakly Alkaline

Ans → pH Equal to 7 is Neutral, pH range 0-7 is Acidic, pH range 7-14 Basic

(a) - Neutral - 7 - D, (b) strongly Alkaline - 11 - C

(c) strongly Acidic - 1 - B (d) weakly Acidic - 4 - A

(e) weakly Alkaline - 9 - E

Q8 → Equal lengths of Magnesium ribbons are taken in test tube 'A' and 'B'. HCl is added to test tube A, while Acetic Acid (CH_3COOH) is added to test tube B. In which test tube will the fizzing occur more vigorously and why?

Ans → HCl is stronger than CH_3COOH Hence Reaction will take place faster in test tube 'A' than 'B'. So in test tube 'B' fizzing will occur more vigorously.

Q9 → Fresh milk has pH of 6. How do you think the pH will change as it turns into curd? Explain?

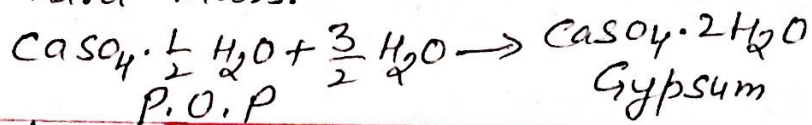
Ans → Bacteria change the fresh milk into curd producing lactic Acid. Because of lactic Acid the pH will come down from 6 to lower Value.

Q12 → A milkman adds a very small amount of baking soda to milk - (a) Why does he shift the pH of the fresh milk from 6 to slightly alkaline? (b) Why does this milk take long time to set as curd?

Ans → pH of milk slightly change 6 to Alkaline by adding Baking Soda. So that it take longer time to convert into curd.
(b) Because by Adding Baking Soda, pH of milk slightly increase so this milk take long time to set as curd.

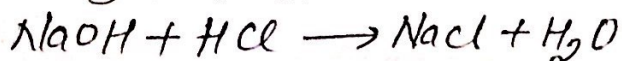
Q13 → Plaster of Paris should be stored in a moisture proof container. Explain why?

Ans → Plaster of Paris reacts with moisture to form Gypsum and set to hard mass.



Q14 → What is Neutralization Rxn? Give two examples?

Ans → Reaction b/w Acid and Base to form salt and water is called Neutralization Rxn



Q15 → Give two important uses of washing soda and Baking Soda.

Ans → Uses of washing soda → (1) It is used in glass, soap and paper Industries (2) It remove the permanent hardness of water.

10th SCIENCE END OF CHAPTER-2

ANUPAMA TAGI

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

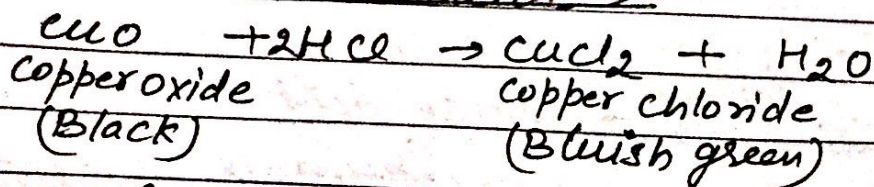
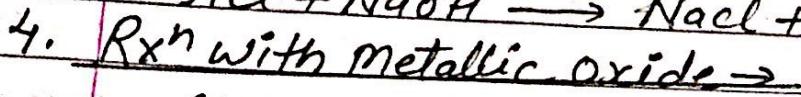
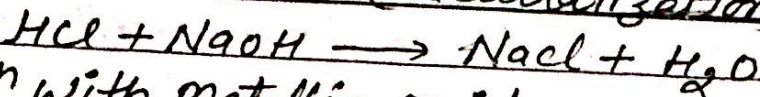
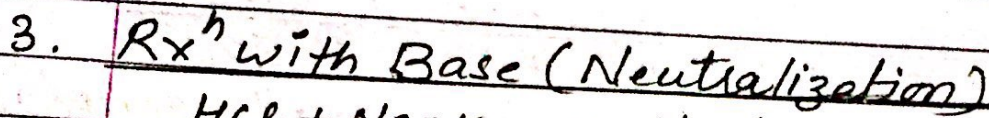
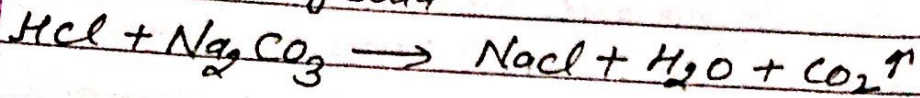
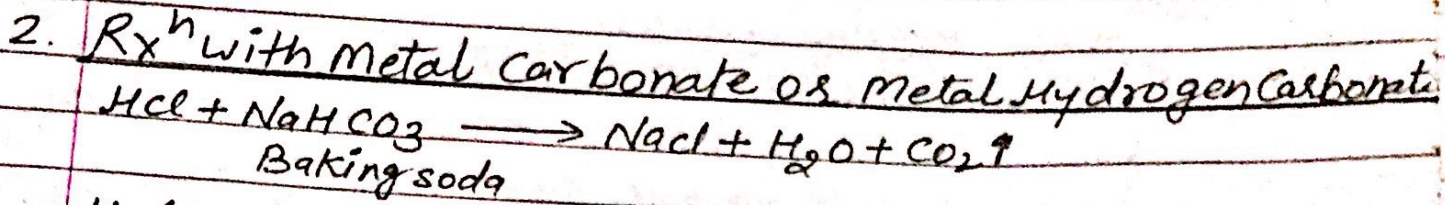
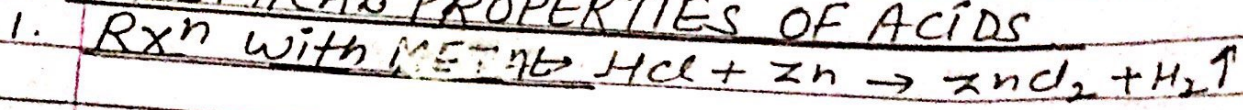
INDICATORS → Those substances which ~~the~~ change their colour in Acidic or Basic medium.

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

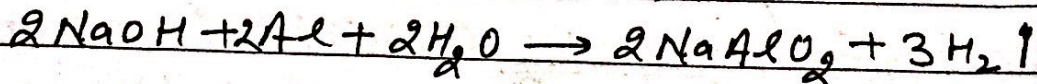
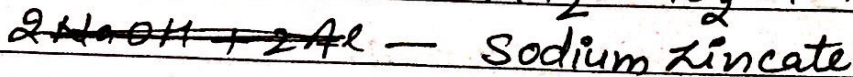
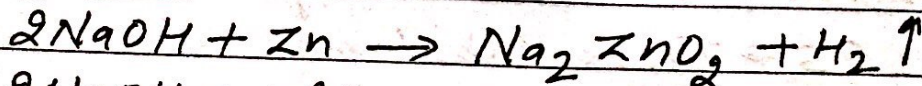
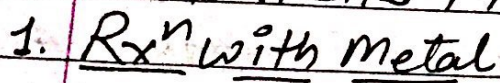
(b) Artificial Indicator → Methyl Orange, phenolphthalein

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

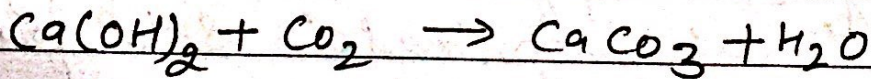
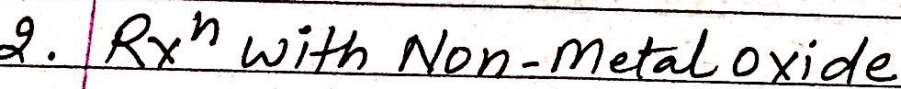
CHEMICAL PROPERTIES OF ACIDS



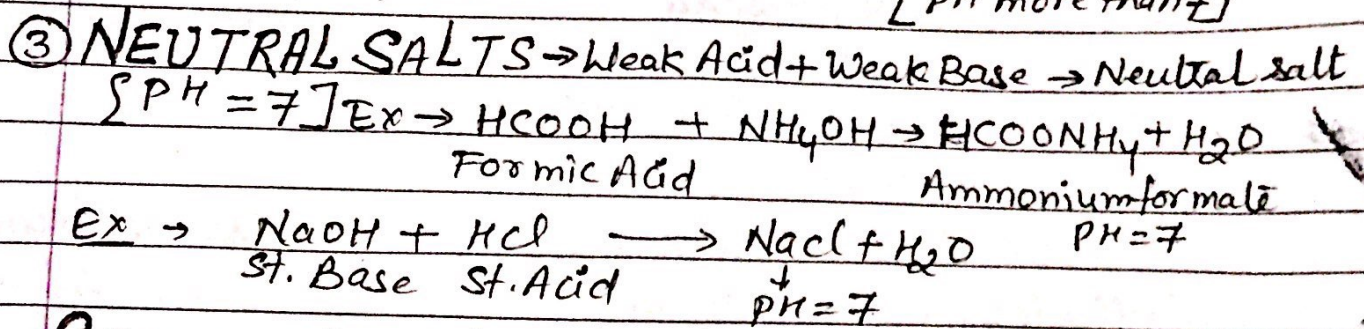
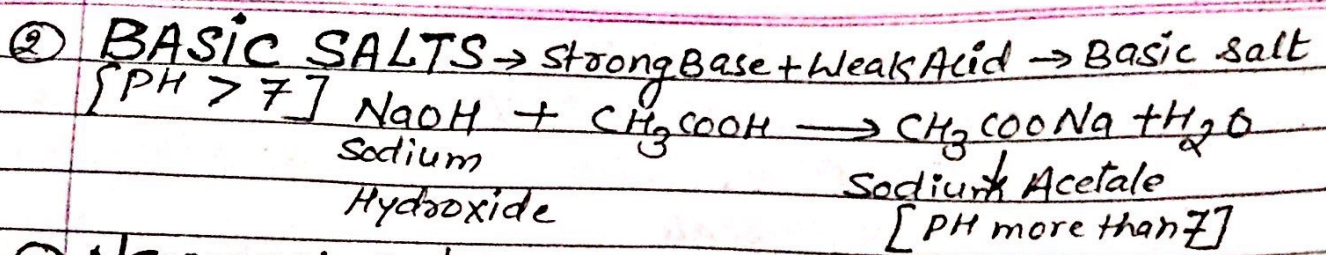
CHEMICAL PROPERTIES OF BASES



Sodium Aluminate



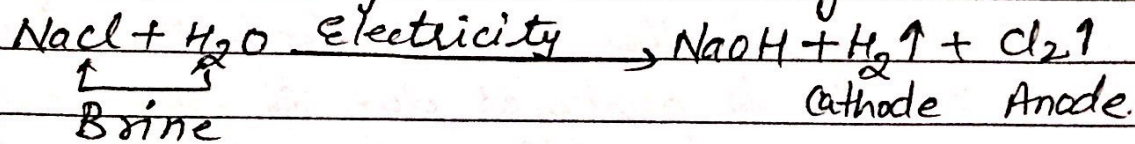
pH of Solution \rightarrow The Acidity or alkalinity of a solution is expressed in terms of pH. The pH of a solution is magnitude of the negative power to which 10 must be raised to express the H^+ ion concentration in moles per litre.



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

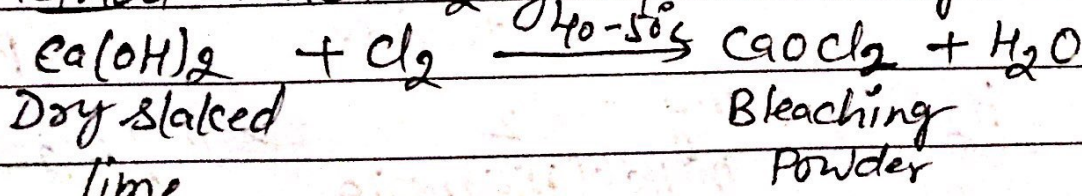
BLEACHING POWDER

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

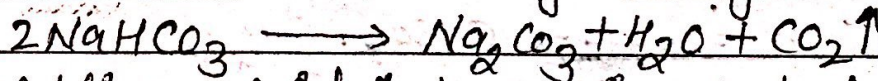
Chemical formula → NaHCO_3

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

