Class- 7 Ch-5 Acids, Bases and Salts

II. Very short answer type questions

Give one word for the following.

Q.1 Bases that dissolve in water

Ans: Alkali

Q.2 A substance that shows a change in colour when brought in contact with an acid or a base

Ans: Indicator

Q.3 Universal indicator that is soaked into paper

Ans: Litmus

Q.4 Substance formed when a strong acid reacts with a strong base

Ans: Salt

Q.5 Salts with water of crystallization

Ans: Hydrated

III. Short answer type questions

Q.1 State any two properties of acids and bases.

Ans: **Acids:**

a) Acids have a sour taste.

b) They turn blue litmus paper red.

Bases:

a) Bases have a bitter taste and feel soapy to touch.

b) They turn red litmus paper blue.

Q.2 Why acids or bases are sometimes added to soil?

Ans: a) Acids or bases are added to soil to correct its pH level.

b) If the soil is too acidic, bases like quicklime or slaked lime are added.

c) If the soil is too basic, organic matter or acids may be added to make it neutral and suitable for plant growth.

Q.3 What is a neutralization reaction? Give an example.

Ans: A neutralization reaction is a chemical reaction in which an acid reacts with a base to form salt and water.

Ex - Hydrochloric acid (HCl) + Sodium hydroxide (NaOH) → Sodium chloride (NaCl) + Water (H_2O)

Q.4 How can a hydrated salt be converted into an anhydrous salt? Give an example.

Ans: A hydrated salt can be converted into an anhydrous salt by heating it, which removes the water of crystallization.

Ex: Copper sulphate (blue) → on heating → Copper sulphate (white) + Water

Q.5 Complete the following table by filling the colour of the indicator in the given solutions:

Ans:

Substance	Blue Litmus	Red Litmus	Phenolphthalein	Methyl Orange
Hydrochloric acid	Red	Red	Colourless	Red
Sodium hydroxide solution	Blue	Blue	Pink	Yellow
Sodium chloride solution	No change	No change	Colourless	Orange

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IV. Long answer type questions

Q.1 How are natural indicators prepared? Give examples of a flower, root, stem, and leaf that can be used as an indicator. What are the colour changes observed with red cabbage juice in acidic, neutral, and basic medium?

Ans: Natural indicators are prepared by extracting coloured substances from parts of plants like flowers, roots, stems, or leaves. These extracts change colour when mixed with acidic or basic solutions, helping to identify the nature of the substance.

Examples of natural indicators:

a) Flower: China rose – turns pink in acid and green in base
b) Root: Turmeric – yellow in acid and reddish-brown in base
c) Stem: Beetroot – shows colour change with pH
d) Leaf: Red cabbage – rich in anthocyanin, a natural pH indicator

Colour changes observed with red cabbage juice:

a) In acidic medium – Red or pink
b) In neutral medium – Purple
c) In basic medium – Green or yellowish-green

Q.2 Explain the following:

a. Vinegar is used in packaged food items.

Ans: Vinegar contains acetic acid, which acts as a preservative. It creates an acidic environment that prevents the growth of harmful bacteria and fungi in food, thereby increasing its shelf life. It also adds a sour taste to enhance flavour.

b. Slaked lime is added to factory waste.

Ans: Factory waste can be highly acidic. Slaked lime (calcium hydroxide), being a mild base, is added to neutralize the acidity before the waste is released into the environment. This prevents pollution and harm to aquatic life.

c. Magnesium hydroxide is used as an antacid.

Ans: Magnesium hydroxide is a weak base that helps neutralize excess acid in the stomach. It is used in medicines like milk of magnesia to relieve acidity, heartburn, and indigestion.

d. Strong acids and bases should be handled carefully.

Ans: Strong acids and bases are corrosive and can cause burns or injuries. They must be handled using safety equipment like gloves and goggles. Proper storage, dilution, and supervision are important while working with them in labs or industries.

Q.3 What is water of crystallization? Explain with the help of an example.

Ans: Water of crystallization is the fixed number of water molecules that are chemically bound in the structure of a salt crystal. These water molecules are essential for maintaining the crystal's colour and shape.
For example, copper sulphate ($CuSO_4 \cdot 5H_2O$) is a blue-coloured salt. The five water molecules give it the blue colour. On heating, it loses its water of crystallization and turns white, forming anhydrous copper sulphate.

Reaction:

$CuSO_4 \cdot 5H_2O \rightarrow (heat) \rightarrow CuSO_4$ (white) + $5H_2O$

This shows that the water of crystallization plays an important role in the physical properties of certain salts.