

CHEMISTRY STUDY MATERIALS FOR CLASS 10

(NCERT Based notes of Chapter -02)

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ACIDS, BASES AND SALTS

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Question 1: You have two solutions, A and B. The pH of solution A is 6 and pH of solution B is 8. Which solution has more hydrogen ion concentration? Which of this is acidic and which one is basic?

Answer : A pH value of less than 7 indicates an acidic solution, while greater than 7 indicates a basic solution. Therefore, the solution with pH = 6 is acidic and has more hydrogen ion concentration than the solution of pH = 8 which is basic.

Question 2: What effect does the concentration of $H^+_{(aq)}$ ions have on the nature of the solution?

Answer : Concentration of $H^+_{(aq)}$ can have a varied effect on the nature of the solution. With an increase in H^+ ion concentration, the solution becomes more acidic, while a decrease of H^+ ion causes an increase in the basicity of the solution.

Question 3: Do basic solutions also have $H^+_{(aq)}$ ions? If yes, then why are these basic?

Answer : Yes, basic solution also has $H^+_{(aq)}$ ions. However, their concentration is less as compared to the concentration of OH^- ions that makes the solution basic.

Question 4: Under what soil condition do you think a farmer would treat the soil of his fields with quick lime (calcium oxide) or slaked lime (calcium hydroxide) or chalk (calcium carbonate)?

Answer : If the soil is acidic and improper for cultivation, then to increase the basicity of soil, the farmer would treat the soil with quick lime or slaked lime or chalk.

SALT

Salts are the ionic compounds which are produced after the neutralization reaction between acid and base. Salts are electrically neutral. There are number of salts but sodium chloride is the most common among them. Sodium chloride is also known as table salt or common salt. Sodium chloride is used to enhance the taste of food.

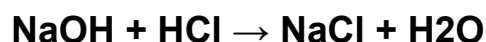
CHARACTERISTICS OF SALT:

- Most of the salts are crystalline solid
- Salts may be transparent or opaque
- Most of the salts are soluble in water
- Solution of salts conducts electricity. Salts conduct electricity in their molten state also
- The salt may be salty, sour, sweet, bitter and umami (savoury)
- Neutral salts are odourless
- Salts can be colourless or coloured

Classification of salts

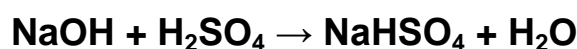
1. Normal salts

A normal salt is obtained by complete neutralization of an acid by a base



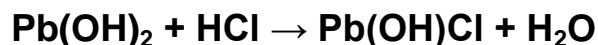
2. Acid salts

Acid salts are derived by the partial replacement of hydrogen ions of an acid by a metal. When a calculated amount of a base is added to a polybasic acid, acid salt is obtained, as follows.



3. Basic salts

Basic salts are formed by the partial replacement of hydroxide ions of a diacidic or triacidic base by an acid radical. A basic salt may further reacts with an acid to give a normal salt.



Diacidic base Basic salt

4. Double salts

Double salts are formed by the combination of saturated solution of two simple salts in equimolar ratio followed by crystallization. e.g. potash alum

FAMILY OF SALT:

Salts having common acidic or basic radicals are said to belong to same family.

Example

- Sodium chloride (NaCl) and Calcium chloride (CaCl₂) belong to chloride family.
- Calcium chloride (CaCl₂) and calcium sulphate (CaSO₄) belong to calcium family.
- Zinc chloride (ZnCl₂) and Zinc sulphate (ZnSO₄) belong to zinc family.
