

Acids, Bases and Salts

Long Answer Type Questions

Q1. Write chemical equation when zinc granules react with

- a) Sulphuric acid
- b) Hydrochloric acid
- c) Aluminium chloride
- d) Sodium hydroxide
- e) Nitric acid

Q2. How sodium hydroxide is obtained from common salt? Name the other by products obtained during the process.

Q3. How can pH change cause tooth decay, and how is it prevented ?

Q4. How washing soda is obtained? Write the uses of washing soda.

Q5. The metal salt 'A' is blue in colour. When salt 'A' is heated strongly over a burner, then a substance 'B' present in it is eliminated and a white powder 'C' is left behind. When a few drops of a liquid 'D' are added to powder 'C', it becomes blue again.

- a) Identify A, B, C, D
- b) Write the chemical equations involved.
- c) Give an example of the salt which also shows above property.

Q6. Equal lengths of magnesium ribbon are taken in two test tubes A & B.  $\text{H}_2\text{SO}_4$  is added to a test tube A and  $\text{H}_2\text{CO}_3$  in test tube B in equal amounts.

- a) Identify the test tube showing vigorous reaction.
- b) Give reason to support your answer.
- c) Name the gas liberated in both the test tubes. How will you prove its liberation?
- d) Write chemical equations for both the reactions.
- e) Out of the two acids taken above, which one will have lower pH value and lower  $\text{H}^+$  concentration respectively?

Q7. What is baking soda? How is it prepared? Give its important properties and uses.

Q8. Define pH. What is the importance of pH in everyday life?

Q9. How is Plaster of Paris prepared? Give important uses of Plaster of Paris.

Q10. How pH scale determines the strength of acids and bases?

Q11. How is Bleaching powder prepared? Give its important uses?

Q12. What are the three steps involved in the manufacture of washing soda?

Q13. What is meant by water of crystallisation? Explain with example?

### Very Short Answer Type Questions

- Q1. What is the difference between mineral acids and organic acids?
- Q2. How is the concentration of hydronium ions ( $\text{H}_3\text{O}^+$ ) affected when a solution of an acid is diluted.
- Q3. What is the cause of tooth decay? What is the pH of mouth required?
- Q4. What happens when metal reacts with dil. HCl or dil.  $\text{H}_2\text{SO}_4$ ?
- Q5. Explain why aqueous solution of an acid conducts electricity.
- Q6. Three acidic solutions A, B and C have pH= 0,3 and 5 respectively.
- Which solution has the highest concentration of  $\text{H}^+$  ions?
  - Which solution has the lowest concentration of  $\text{H}^+$  ions?
- Q7. Why does 1M HCl solution have a high concentration of  $\text{H}^+$  ions than 1M  $\text{CH}_3\text{COOH}$  solution?
- Q8. What is the biological importance of pH?
- Q9. What is the chemical formula of washing soda? What is the chemical name and chemical formula of washing soda?
- Q10. Why is sodium hydrogen carbonate an essential ingredient in ant acids?
- Q11. Why should curd and sour substances not be kept in brass and copper vessels?

### Multiple Choice Questions

- Tomato is a natural source of which acid?
  - Acetic acid
  - Citric acid
  - Tartaric acid
  - Oxalic acid
- What is the pH of Blood?
  - 7
  - 8
  - 73
  - 83
- $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$  is
  - Washing soda
  - Baking soda
  - Bleaching powder
  - Tartaric acid

4. The acid present in stomach is
- HCl
  - $\text{HNO}_3$
  - $\text{H}_2\text{SO}_4$
  - None of these
5. At what temperature is gypsum heated to form Plaster of Paris?
- $90^\circ\text{C}$
  - $100^\circ\text{C}$
  - $110^\circ\text{C}$
  - $120^\circ\text{C}$
6. How many water molecules does hydrated calcium sulphate contain?
- 5
  - 10
  - 15
  - 20
7. Tooth enamel is made up of
- Calcium phosphate
  - Calcium carbonate
  - Calcium oxide
  - Potassium
8. What is the pH of acid rain.
- Below 7
  - Below 6
  - Below 5.6
  - Above 7
9. What is the chemical formula of Plaster of Paris
- $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
  - $\text{CaSO}_4 \cdot 1/2\text{H}_2\text{O}$
  - $\text{CaSO}_4 \cdot \text{H}_2\text{O}$
  - $\text{CaSO}_4 \cdot 10\text{H}_2\text{O}$
10. Lime water is
- CaO
  - $\text{Ca}(\text{OH})_2$
  - $\text{CaCO}_3$
  - $\text{CaSO}_4$
11. pH of base solution is
- 7
  - <7
  - 77
  - None of these.

12. Which of the following acids is a strong acid?

- a) HCl
- b)  $\text{CH}_3\text{COOH}$
- c)  $\text{H}_3\text{PO}_4$
- d)  $\text{H}_2\text{CO}_3$

13. Acid present in apple is

- a) Oxalic acid
- b) Acetic acid
- c) Formic acid
- d) Tartaric acid

14. Range of pH scale is

- a) 7 to 10
- b) 0 to 10
- c) 0 to 14
- d) 7 to 14

### **Assertion and Reasoning Type Questions**

Two statements (Assertion-A and Reason-R) are given. Select the correct answer to these questions from codes a, b, c and d as given below

- a) Both A and R are true, and R is the correct explanation of the assertion.
- b) Both A and R are true, but R is not the correct explanation of the assertion.
- c) A is true but R is false.
- d) A is false but R is true.

1. Assertion : When an acid reacts with a metal, hydrogen gas is evolved and a corresponding salt is formed.

Reason: When a base reacts with a metal along with the evolution of hydrogen gas a salt is formed which has a negative ion composed of the metal and oxygen.

2. Assertion: When an acid reacts with a metal carbonate or metal hydrogen carbonate, it gives the corresponding salt, carbon dioxide gas and water.

Reason: Acidic and basic solutions in water conduct electricity because they produce hydrogen and hydroxide ions respectively.

3. Assertion: Mixing concentrated acids or bases with water is a highly exothermic process.

Reason: Acid and Bases neutralise each other to form corresponding salts and water.

Q:- Read the following and answer any four questions:-

Sorensen in 1909 suggested a convenient method of expressing the  $\text{H}_3\text{O}^+$  ion concentration in terms of pH. Thus, to express the acidity or alkalinity of a solution, it is sufficient to express only the  $\text{H}_3\text{O}^+$  ion concentration.

- a) What is the meaning of the symbol pH?
- b) How is the pH of a solution of an acid influenced when it is diluted.
- c) What is the nature of the salt if pH of its solution is greater than 7.
- d) What is the nature of the solution if its pH is below 7.
- e) What is the pH of water?

Q. Read the following and answer any four questions.

Electrolysis of aqueous solution of sodium chloride is a method used for the manufacture of sodium hydroxide.

- a) Name the process used.
- b) Write the chemical reaction involved in the above method.
- c) Name the gas liberated at anode.
- d) Name the gas liberated at cathode.
- e) What is brine?