



**OBJECTIVE TYPE QUESTIONS**  
**MULTIPLE CHOICE QUESTIONS**

- A solution reacts with zinc granules to give a gas which burns with a pop sound. The solution contains:-  
(a)  $\text{Mg}(\text{OH})_2$     (b)  $\text{Na}_2\text{CO}_3$     (c)  $\text{NaCl}$     (d)  $\text{HCl}$
- Phenolphthalein's colour in basic medium is \_\_\_\_\_ but in acid it is \_\_\_\_\_.  
a. Pink, Colorless  
b. Yellow, Pink  
c. Pink, Orange  
d. Blue, Red
- Bleaching powder's chemical name is \_\_\_\_\_  
a. Calcium hypochloride  
b. Calcium oxychloride  
c. Calcium chloride  
d. Calcium oxide
- pH scale of a neutral solution is  
a. 14  
b. 7  
c. 10  
d. 12
- The salt which will give an acidic solution on dissolving in water is:-  
(a)  $\text{KCl}$     (b)  $\text{NH}_4\text{Cl}$     (c)  $\text{Na}_2\text{CO}_3$     (d)  $\text{CH}_3\text{COONa}$
- The pH values of four solutions A, B, C and D are 6, 8, 10, 5 respectively. Arrange the solution in the increasing order of hydrogen ion concentration.  
(a) A, B, C, D    (b) D, C, B, A    (c) C, A, D, B    (d) C, B, A, D
- In terms of acidic strength, which one of the following is in the correct increasing order?  
(a) Water < Acetic acid < Hydrochloric acid  
(b) Water < Hydrochloric acid < Acetic acid  
(c) Acetic acid < Water < Hydrochloric acid  
(d) Hydrochloric acid < Water < Acetic acid

8. What is formed when zinc reacts with sodium hydroxide?
- (a) Zinc hydroxide and sodium
  - (b) Sodium zincate and hydrogen gas
  - (c) Sodium zinc-oxide and hydrogen gas
  - (d) Sodium zincate and water
9. Brine is an
- (a) aqueous solution of sodium hydroxide
  - (b) aqueous solution of sodium carbonate
  - (c) aqueous solution of sodium chloride
  - (d) aqueous solution of sodium bicarbonate
10. Sodium carbonate is a basic salt because it is a salt of a
- (a) strong acid and strong base
  - (b) weak acid and weak base
  - (c) strong acid and weak base
  - (d) weak acid and strong base
11. Tooth enamel is made up of
- (a) calcium phosphate
  - (b) calcium carbonate
  - (c) calcium oxide
  - (d) potassium
12. Rain is called acid rain when its:
- (a) pH falls below 7
  - (b) pH falls below 6
  - (c) pH falls below 5.6
  - (d) pH is above 7
13. Chemical formula of washing soda is
- (a)  $\text{Na}_2\text{CO}_3 \cdot 7\text{H}_2\text{O}$
  - (b)  $\text{Na}_2\text{CO}_3 \cdot 5\text{H}_2\text{O}$
  - (c)  $\text{Na}_2\text{CO}_3 \cdot 2\text{H}_2\text{O}$
  - (d)  $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$

### Assertion and Reason Questions

**Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:**

- (a) Both A and R are true and R is the correct explanation of A.
  - (b) Both A and R are true but R is not the correct explanation of A.
  - (c) A is true but R is false.
  - (d) A is false but R is true
14. Assertion (A) : The aqueous solutions of glucose and alcohol do not show acidic character.  
Reason (R) : Aqueous solutions of glucose and alcohol do not give  $\text{H}^+$  ions.
15. Assertion (A) : During electrolysis of concentrated aqueous solution of sodium chloride, hydrogen is produced at anode and chlorine gas is produced at cathode.  
Reason (R) : Ions get attracted to oppositely charged electrodes.
16. Assertion (A): Plaster of Paris is stored in a moisture proof container.  
Reason (R) : Plaster of Paris sets into a hard mass on wetting with water to form anhydrous

calcium sulphate.

17. Assertion : HCl is a stronger acid than acetic acid.

Reason: On dissociation, HCl yields lesser hydrogen ions for the same concentration as compared to acetic acid.

18. Assertion : pH of ammonium nitrate solution is acidic.

Reason: Solution of a salt of weak base and strong acid is acidic.

## **Case study based questions**

**Read the following and answer any four questions:**

Salt of a strong acid and strong base is neutral with a pH value of 7. NaCl common salt is formed by a combination of hydrochloride and sodium hydroxide solution. This is the salt that is used in food. Some salt is called rock salts, bed of rock salt were formed when seas of bygone ages dried up. The common salt thus obtained is an important raw material for various materials of daily use, such as sodium hydroxide, baking soda, washing soda, bleaching powder.

19. Which of the following does not form an acidic salt?

- (a) Phosphoric acid
- (b) Carbonic acid
- (c) Hydrochloric acid
- (d) Sulphuric acid

20. Which of the following salts has no water of crystallization?

- (a) Blue vitriol
- (b) Washing soda
- (c) Baking soda
- (d) Gypsum

21. The formula of baking soda is

- (a)  $K_2CO$
- (b)  $KHCO_3$
- (c)  $NaHCO_3$
- (d)  $Na_2CO_3$

22. Which of the following is treated with chlorine to obtain bleaching powder

- (a)  $CaSO_4$
- (b)  $Ca(OH)_2$
- (c)  $Mg(OH)_2$
- (d) KOH

23. Which of the following salt is used for removing the permanent hardness of water

- (a) Washing soda
- (b) Baking soda
- (c) Bleaching powder
- (d) NaOH

### **ONE MARK QUESTIONS**

24. Name the gas evolved when dilute HCl reacts with sodium hydrogen carbonate.

25. What is the name of the indicator which can be used for testing the pH of a solution?

26. Two solutions X and Y have pH=4 and pH=8 respectively. Which solution will give alkaline reaction and which one acidic?

### THREE MARK QUESTIONS

- 27.(a) Define olfactory indicators. Name two substances which can be used as olfactory indicators.  
(b) Choose strong acids from the following:-  
 $\text{CH}_3\text{COOH}$ ,  $\text{H}_2\text{SO}_4$ ,  $\text{H}_2\text{CO}_3$ ,  $\text{HNO}_3$
28. You have four solutions A, B, C and D. The pH of solution A is 6, B is 9, C is 12 and D is 7.  
(i) Identify the most acidic and most basic solutions.  
(ii) Arrange the above four solutions in the increasing order of  $\text{H}^+$  ion concentration.  
(iii) State the change in colour of pH paper on dipping in solution C and D.
29. Equal length of magnesium ribbon are taken in two test tubes A and B.  $\text{H}_2\text{SO}_4$  is added to test tube A and  $\text{H}_2\text{CO}_3$  in the test tube B in equal amounts.  
(a) Identify the test tube having 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.

### PREVIOUS YEAR BOARD QUESTIONS

30. A chemical compound X is used in the soap and glass industry. It is prepared from brine.  
(a) Write the chemical name, common name and chemical formula of X.  
(b) Write the equation involved in its preparation.  
(c) What happens when it is treated with water containing Ca or Mg salts?
31. Why do acids not show acidic behaviour in the absence of water?
32. Give two important uses of washing soda and baking soda.

### ANSWERS

#### OBJECTIVE TYPE QUESTIONS

#### MULTIPLE CHOICE QUESTIONS

- (d) HCl
- (b) Yellow, Pink
- (b) calcium oxychloride
- (b) 7
- (b)  $\text{NH}_4\text{Cl}$
- (d) C, B, A, D
- (a) Water < Acetic acid < Hydrochloric acid
- (b) Sodium zincate and hydrogen gas
- (c) aqueous solution of sodium chloride
- (d) weak acid and strong base
- (a) calcium phosphate
- (c) pH falls below 5.6
- (d)  $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$

#### Assertion and Reason Questions

- (a) Both A and R are true and R is the correct explanation of A
- (d) A is false but R is true
- (c) A is true but R is false.

17. (c) A is true but R is false.  
18. (a) Both A and R are true and R is the correct explanation of A.

**Case study based questions**

19. (b) Carbonic acid  
20. (c) Baking Soda  
21. (c)  $\text{NaHCO}_3$   
22.  $\text{Ca(OH)}_2$   
23. Washing soda

**ONE MARK QUESTIONS**

24. Carbon dioxide gas  
25. Universal indicator.  
26. Y will give alkaline and X will give acidic.

**THREE MARK QUESTIONS**

27. (a) Those substances whose smell changes in acidic or basic solution.  
Eg:- Onion and vanilla  
(b)  $\text{H}_2\text{SO}_4$ ,  $\text{HNO}_3$
28. (i) A is most acidic and C is most basic.  
(ii)  $C < B < D < A$   
pH paper will become blue in C and green in D.
29. (a) A will show vigorous reaction.  
(b) It is because  $\text{H}_2\text{SO}_4$  is a strong acid.  
(c) Hydrogen gas will be formed. Bring a burning splinter near the gas. It will burn with pop sound. It shows gas liberated is hydrogen.  
(d)  $\text{Mg} + \text{H}_2\text{SO}_4 \rightarrow \text{MgSO}_4 + \text{H}_2$   
 $\text{Mg} + \text{H}_2\text{CO}_3 \rightarrow \text{MgCO}_3 + \text{H}_2$
30. (a) Sodium carbonate, washing soda,  $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$   
(b)  $\text{NaCl} + \text{H}_2\text{O} + \text{CO}_2 + \text{NH}_3 \rightarrow \text{NH}_4\text{Cl} + \text{NaHCO}_3$   
$$2\text{NaHCO}_3 \xrightarrow{\text{Heat}} \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2$$
  
$$\text{Na}_2\text{CO}_3 + 10\text{H}_2\text{O} \rightarrow \text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$$
  
(c) .It removes permanent hardness of water (due to the presence of Ca and Mg salts)
31. It is because acids do not dissociate into ions in absence of water. But when an acid is dissolved in water, it forms hydrogen ions and hence shows acidic behaviour.
32. Uses of washing soda:-  
(i) Used in the manufacture of glass, soap, paper and other compounds like borax etc.  
(ii) Used in softening of hard water.  
Uses of baking soda:-  
(i) Used as an antacid.  
(ii) It is an ingredient of baking powder.