

CBSE Test Paper-02
Chapter 02 Acid Base and Salt

1. Tooth pastes are generally **(1)**
 - a. natural
 - b. acidic
 - c. basic
 - d. neutral

2. Lemon contains **(1)**
 - a. Formic acid
 - b. Citric acid
 - c. Tartaric acid
 - d. Lactic acid

3. 10 mL of a solution of NaOH is found to be completely neutralized by 8 mL of a given solution of HCl. If we take 20 mL of same solution of NaOH, the amount of HCl solution required to neutralize it will be **(1)**
 - a. 12 mL
 - b. 16 mL
 - c. 8 mL
 - d. 4 mL

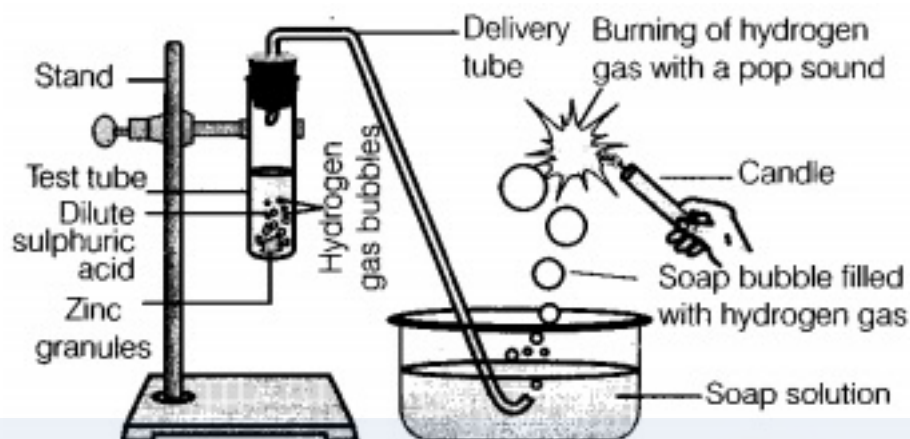
4. On passing CO_2 through lime water for a longer time, why does the milkiness disappear? **(1)**
 - a. Due to formation of $\text{Ca}(\text{OH})_2$
 - b. Due to formation of water soluble $\text{Ca}(\text{HCO}_3)_2$
 - c. Due to formation of CaCO_3
 - d. Due to formation of CaO.

5. Which of the following gives CO_2 on heating? **(1)**

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- a. Quick lime
 - b. Limestone
 - c. Slaked lime
 - d. Soda ash
6. What will happen if water is added to an acid or a base? **(1)**
 7. Write the chemical name and formula of baking soda. **(1)**
 8. How can CuSO_4 be used for detecting the presence of water ? **(1)**
 9. What is pH paper ? **(1)**
 10. Plaster of Paris should be stored in a moisture-proof container. Explain why? **(3)**
 11. A group of students, while on excursion trip is campaigning on the hills. One morning, they find themselves engulfed in a thick blanket of snow. One of the senior member of the group suggests to sprinkle common salt on the ice slit covering the pavement. Now answer the following questions: **(3)**
 - i. What is the purpose of sprinkling common salt on ice slit?
 - ii. Can we use any other substance in place of common salt?
 - iii. What values are associated with the students?
 12. Two solutions P and Q have pH 2 and 12. Which solution has more concentration of H^+ (aq) ions ? **(3)**
 13. A road tanker carrying an acid was involved in an accident and its contents spilled on the road. At the side of the road iron drain cover began melting and fizzing as the acid ran over them. A specialist was called to see if the acid actually leaked into the nearby river. **(3)**
 - (a) Explain why specialist could carry out sample test to see of the river water contains some acid or not
 - (b) Suggest a better report name for the word 'melting'
 - (c) Explain why the drain covers began fizzing as the acid ran over them.

14. How is plaster of Paris prepared ? Why is temperature control necessary during its preparation ? How does it react with water ? **(5)**

15. In the following schematic diagram for the preparation of hydrogen gas as shown in the figure, what would happen if the following changes are made?



- i. In place of zinc granules, same amount of zinc dust is taken in the test tube.
- ii. Instead of dilute sulphuric acid, dilute hydrochloric acid is taken.
- iii. In place of zinc, copper turnings are taken.
- iv. Sodium hydroxide is taken in place of dilute sulphuric acid and the test tube is heated. **(5)**

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Answers

1. c. basic

Explanation: Toothpastes are generally basic because their function is to react with the excess acid in our mouth and thus prevent tooth decay.

2. b. Citric acid

Explanation: Lemon constitutes citric acid and is therefore referred under the category of citrus fruits.

3. b. 16 mL

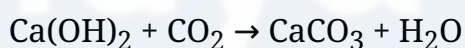
Explanation: 10 mL of NaOH neutralises 8mL of HCl

i.e. 1 mL of NaOH neutralises $\frac{8}{10}$ mL of HCl

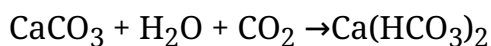
so, 20 mL of NaOH will neutralise $\frac{8}{10} \times 20 = \mathbf{16\text{mL of HCl}}$

4. b. Due to formation of water soluble $\text{Ca}(\text{HCO}_3)_2$

Explanation: When carbon dioxide gas is passed through lime water, it turns milky due to the formation of calcium carbonate which is insoluble in water.



However, when excess of carbon dioxide is passed through this solution, the milkyness disappears. This is due the formation of calcium bicarbonate, which is soluble in water. Thus, a clear solution is obtained.



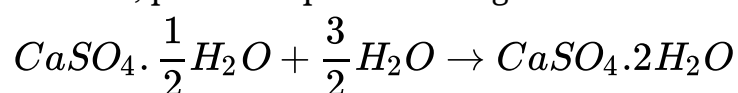
5. b. Limestone

Explanation: Limestone (CaCO_3) decomposes on heating to produce quicklime (CaO) and CO_2 gas.

6. If water is added to an acid or base a large amount of heat energy is evolved which may cause the reaction mixture to splash out and cause injury to the person.

7. The chemical name of baking soda is sodium hydrogen carbonate.
The formula of baking soda is NaHCO_3 .

8. Anhydrous copper sulphate(CuSO_4) is white in colour but turns blue when comes in contact with water to form $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$. Thus, it can be used to detect the presence of moisture.
9. A filter paper soaked in universal indicator and then dried is called pH paper.
10. Plaster of Paris should be stored in a moisture-proof container, because in presence of moisture, plaster of paris sets to give a hard mass.



Plaster of Paris (*Hard mass*)

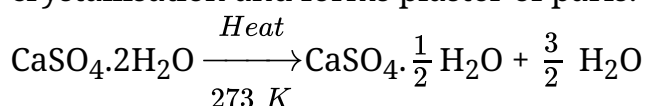
It can be no longer used for making moulds and statues. To avoid above reaction to occur Plaster of Paris be stored in moisture- proof containers.

11. i. Sprinkling common salt on icy roads, ice/snow lowers the freezing point of ice due to which the ice or snow melts down. The softened ice/snow can be easily cleared from the roads.
- ii. Calcium chloride can be used in place of common salt. It can lower the freezing point up to -55°C .
- iii. The students are caring, helping, have supporting nature and have scientific knowledge.
12. The pH value of a solution varies from 0 to 14. The pH value is 0 for a very strong acid and the pH value is 14 for a very strong base. The pH value is 7 for a neutral solution. Hence P is acidic and Q is basic in nature. The concentration of hydrogen ion decreases from pH value of 0 to 14 therefore P has more hydrogen ion concentration.
13. 1. It can be done by adding a strip of blue litmus paper into a tube containing a small amount of sample water if the colour changes into red, this means that some acid has gone into the river.
2. The acid has reacted chemically with the drain cover which is usually made of iron. The correct word is corrosion.
3. Iron reacts with an acid (H_2SO_4 or HCl) to evolve H_2 gas. Since the gas is released immediately accompanied by large number of bubbles Fizzing of drain covers is expected.

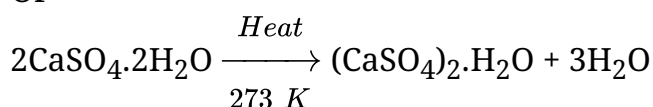
14. Plaster of paris is prepared from gypsum.

Gypsum is calcium sulphate dihydrate. The chemical formula of gypsum is $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$

Plaster of paris is prepared by heating gypsum to a temperature of 373K. When gypsum is heated to a temperature of 373k ,It loses three-Fourths of its water of crystallisation and forms plaster of paris.



Or



It may be noted the temperature should be controlled carefully. It should not be allowed to rise above 425 K, because the whole of water is lost and anhydrous calcium sulphate (CaSO_4) is produced. It is called dead burnt plaster. It has not such property as that of plaster of paris.

When mixed with water, it forms a paste which sets into a hard mass. This is called setting of Plaster of Paris. The setting of Plaster of Paris is due to its hydration into gypsum.



Plaster of paris Gypsum

15. i. Since the zinc dust has a larger surface area than zinc granules. If the same amount of zinc dust is taken in the test tube then the reaction will be comparatively faster and hydrogen gas will evolve with greater speed.
- ii. With dilute hydrochloric acid, almost the same amount of gas is evolved.
- iii. With copper turnings, hydrogen gas will not evolve because copper is less reactive and it will not displace hydrogen from the acid. Hence, no reaction will take place.
- iv. Zinc also reacts with NaOH. So, if sodium hydroxide is taken, then hydrogen gas will be evolved.

