**SUBJECT NAME –CHEMISTRY**

**GRADE- X**

**QUESTION BANK**

**CHAPTER 2**

 **ACIDS BASES AND SALTS**

**MCQ Type Questions**

1. The colour of phenolphthalein in acidic medium

(a) Yellow

(b) PInk

(c) Colourless

(d) Blue

2. The gas which burns with a pop sound

(a) H2

(b) CO2

 (c) CuSO4

(d) CH4

3. Milkiness of lime water disappear when excess CO2 is passed due to the formation of

(a) calcium hydroxide, calcium chloride, calcium bicarbonate, calcium carbonate

(b) calcium chloride

(c) calcium bicarbonate

(d) calcium carbonate

4. Greenish coating on copper articles can be removed by using

(a) lemon

 (b) tamarind

(c) vinegar

(d all of the above

5. Rain water usually have pH

(a) =7

 (b) <7

 (c) >7

(d) ≈7

6. The acid present in tomato is

(a) lactic acid

 (b) oxalic acid

(c) tartaric acid

(d) methanoic acid

7. A solution of sodium carbonate has pH around 13. The nature of solution is

(a) strongly acidic

 (b) weakly acidic

(c) strongly alkaline

(d) weakly alkaline

8. The gas which is produced at anode during chlor-alkali process

(a) Cl2

 (b) H2

(c) NaOH

(d) O2

9. The common name for the substance used as antacid

(a) washing soda

(b) plaster of Paris

(c) bleaching powder

(d) baking soda

10. The total no. of molecules of water of crystallization in washing soda is

(a) 2

(b) ½

(c) 10

(d) 5

11. Among the following, which is NOT a form of calcium carbonate

(a) chalk

(b) limestone

(c) egg shell

(d) quick lime

12 If a solution turns blue litmus to red, what colour will be observed if the same is placed on pH paper

(a) green

(b) blue

(c) red

(d) none of the above

13. Identify a fruit/ vegetable which is basic in nature?

(a) lemon

 (b) tomato

(c) broccoli

(d) oranges

14. Calcium carbonate reacts with hydrochloric acid to form X,Y,Z. What are X,Y,Z ?

(a) X: Ca(OH)2, Y:H2O, Z:CO2

(b) X:CaCl2 , Y:H2O, Z:CO2

(c) X:Ca(OH) 2 , Y:H2O, Z:H2

(d) X:CaCl2 , Y:H2O, Z:H2

15. When you clean a metal vessel with tamarind the reaction taking place is:

Metal oxide + X----------→Salt + Water. What is X ?

(a) acid

 (b) , base

(c) hydrogen

 (d) carbondioxide

16. A student wants to make a basic salt. which of the following pairs of acid and base should he use.

(a) HCl + NaOH

(b) H2CO3 + NaOH

(c) HCl+NH4OH

(d) H2SO4 + KOH

17. Ph of milk of magnesia is 10. Among following solutions which can neutralize milk of magnesia

(a) baking soda, common salt, vinegar, none of the above

(b) common salt

(c) vinegar

(d) none of the above

18. **Assertion (A) :** HCl gas does not change the colour of dry blue litmus paper.
**Reason (R) :** HCl gas dissolves in the water present in wet litmus paper to form H+ ions.

19. **Assertion (A) :** The acid must always be added to water with constant stirring.
**Reason (R) :**Mixing of an acid with water decreases the concentration of H+ ions per unit volume.

20. **Assertion (A) :** Copper sulphate crystals are wet because it contains water of crystallisation.
**Reason (R) :** Water of crystallisation is the fixed number of molecules of water present in one formula unit of salt.

21. **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 H+ ions.

22. **Assertion (A) :** Weak acids have low electrical conductivity.
**Reason (R) :** Strong acids and weak acids have equal concentration of hydrogen ions in their solutions.

23. **Assertion (A):**Pure water is neither acidic nor basic.
**Reason (R) :**The pH of a solution is inversely proportional to the concentration of hydrogen

24. **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.

25. **Assertion (A) :**Baking powder is used in making cake instead of using only baking soda.
**Reason (R) :** Baking powder contains tartaric acid which reacts with sodium carbonate and removes bitter taste.

**Very Short Answer Type Question [1 mark]**

**One Sentence Answer**

1. Name an olfactory indicator

2. Define water of crystallization

3. Can baking soda be used as antacid? Why?

 4. Why is the formula of plaster of Paris written as CaSO4 ½ H2O ?

5. Which sodium compound is used to remove permanent hardness of water?

 6. What is the common name of CaSO4 2 H2O ?

 7. Name the acid present in tomato

8. Which is the hardest substance in our body?

9. What should be the pH for a rain to be labelled as acid rain?

 10. What happens to H+ ion concentration when an acid is diluted in water?

11.Name the raw materials required for the manufacture of bleaching powder

12. Give another important use of sodium compound used for softening hard water

13. Can curd be used as an antacid. Justify your answer

14. When CaCO3 reacts with “X” , it gives CaCl2, water and CO2. Identify “X”

15. Which calcium compound has powerful smell of chlorine and is also used as disinfecting drinking water?

16. What is the common name given to a mixture of NaHCO3 and an edible acid like tartaric acid?

17. What is the use of universal indicator?

18. Name an acid base indicator which is easy to use for a visually impaired person

 19. Name a natural indicator extracted from lichens

20. Why a solution of glucose cannot change the colour of litmus paper?

**Short Answer Type Questions [2 & 3Marks]**

1. What are olfactory indicators? Give examples

 2. How does sodium carbonate react with hydrochloric acid?

3. Define neutralization reaction. Give example.

 4. How can we conclude metallic oxides are basic in nature. Justify your answer

 5. Should we prefer baking soda over tamarind while cleaning an old copper vessel? Justify

 6. The formula of glucose is C6H12O6. It has a lot of hydrogen atoms as indicated in the formula. Then why does it not act as acid?

7. Why is the formula of Plaster of Paris written as CaSO4 ½ H2O?

 8. Will a solution of alcohol in water conducts electricity? If not why?

 9. What happens when a wet litmus paper is shown to dry HCl gas? Will there be any colour change? Why?

10. Define the term dilution. What happens to the concentration of H+ ion when an acid is diluted?

 11. Does rain water conducts electricity? Why?

 12. What are antacids? Give the name of a house hold item which can be used as antacid

 13. How does tooth decay occur? Explain in terms of pH change

14. Name the acids present in the following a) oranges b) tamarind c) tomato d) Nettle sting 15. What is “chlor alkali” process? Write the equation.

15. Name the acid present in ant sting and give its chemical formula. Also, give the common method to get relief from the discomfort caused by the ant sting.

16. (a) Define olfactory indicators. Name two subtances which can be used as olfactory indicator.

 (b) Choose strong acids from the following:
 CH3COOH, H2SO4, H2CO3, HNO3

17. **.A white coloured powder is used by doctors for supporting fractured bones.**
**(a) Write chemical name and formula of the powder.**
**(b) When this white powder is mixed with water a hard solid mass is obtained. Write balanced chemical equation for the change.**

**18. Explain the action of dilute hydrochloric acid on the following with chemical equation:**
**(i) Magnesium ribbon (ii) Sodium hydroxide (iii) Crushed egg shells**

**19. Name the natural source of each of the following acid**
**(i) Citric acid. (ii)Oxalic acid.**
**(iii)Lactic acid. (iv)Tartaric acid.**

**20. A student detected the pH of four unknown solution A, B, C and D as follows 11, 5, 7 and 2. Predict the nature of the solution.**

**21. (i) Give the constituents of baking powder**
**(ii) Why cake or bread swells on adding baking powder? Write chemical equation.**

**Long Answer Type Questions [ 5 Marks ]**

1. **State reason for the following statements:**
**(i) Tap water conducts electricity whereas distilled water does not.**
**(ii) Dry hydrogen chloride gas does not turn blue litmus red whereas dilute hydrochloric acid does.**
**(iii) During summer season, a milk man usually adds a very small amount of baking soda to fresh milk.**
**(iv) For a dilution of acid, acid is added into water and not water into acid.**
**(v) Ammonia is a base but does not contain hydroxyl group.**

2. **(a) Write the chemical formula of hydrated copper sulphate and anhydrous copper sulphate. Giving an activity illustrate how these are inter convertible.**
**(b) Write chemical names and formula of plaster of paris and gypsum.**

3. **(a) State the chemical properties on which the following uses of baking soda are based:**
**(i) as an antacid**
**(ii) as a soda acid fire extiguisher**
**(iii) to make bread and cake soft and spongy.**

4. **Equal length of magnesium ribben are taken in two test tubes ‘A’ and ‘B\ H2SO4 is added to test tube ‘A’ and H2CO3 in the 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 tubes. How will you prove its liberation?**
**(d) Write chemical equations for both reactions.**
**(e) Out of the two acids taken above**
**(i) which one will have lower pH value.**
**(ii) lowerH+ concentration respectively.**

**Competency Based Questions**

1. Acid – base indicators are dyes or mixtures of dyes which are used to indicate the presence of acids and bases. Examples are litmus, phenolphthalein, methyl orange etc. these indicators tell us whether a substance is acidic or basic by change in colour. There are some substances whose odour changes in acidic or basic media. These are called olfactory indicators. Onion is an example of olfactory indicator. Acidic nature of a substance is due to the formation of H+ ions in solution whereas formation of OH ions in solution is responsible for basic nature of a substance. a) What is the colour of phenolphthalein in acidic medium? ( pink, yellow, colourless, blue) b) Name an olfactory indicator other than onion. c) What happens to the concentration of H+ ions when an acidic solution is diluted with water? d) Can you distinguish between acetic acid and HCl of same concentration using above mentioned indicators? If not, what should be used instead?
2. A reaction in which an acid and a base react to form salt and water is called neutralization reaction. Nature provides neutralization options. Nettle plant causes painful stings when touched. This is due to methanoic acid secreted by them. A remedy is rubbing this area with the leaf of dock plant which often grows beside nettle in the wild. a) Which acid is present in tomato? (lactic acid, methanoic acid, oxalic acid, citric acid) b) Under what soil conditions does a farmer treat the soil in fields with quick lime? c) If you mix 10 mL NaOH and 10mL HCl of equal strengths, what will be the pH of the resultant solution? ( =7, >7,<7,approx. 7)
3. Water of crystallization is the fixed no. of water molecules chemically attached to each formula unit of salt in its crystalline form. There are many salts with water of crystallization, blue coloured copper sulphate, washing soda, Plaster of Paris, gypsum are some of the examples. When we heat these crystals, they become anhydrous and lose some of its properties. a) Why is formula of Plaster of Paris written as CaSO4 ½ H2O? b) Blue coloured copper sulphate crystals loses its colour on heating to white. Can this be considered a physical or chemical change? Justify your answer. c) Write an equation to show the reaction between Plaster of Paris and water. d) What is the chemical name of washing soda?
4. The pH value of any solution is a number which simply represents the acidity and basicity of that solution. The pH value of any solution is numerically equal to the logarithm of the inverse of the hydrogen ion (H+) concentration.

a) What will be the pH value for distilled water?

 b) Using above picture can you predict the colour of pH paper when dipped in lime juice?

c) Why do we use basic tooth pastes commonly?

5. Here are some ways neutralisation is used:

 • Farmers use lime (calcium oxide) to neutralise acid soils.

 • Your stomach contains hydrochloric acid, and too much of this causes indigestion. Antacid tablets contain bases such as magnesium hydroxide and magnesium carbonate to neutralise the extra acid.

* Bee stings are acidic. They can be neutralised using baking powder, which contains sodium hydrogen carbonate i) Define neutralisation reaction ii) How does tooth paste helps in neutralisation iii) Name the plant whose leaves can be used to relieve thepainful stings of leaves of nettle

 6. When dry crystals of green ferrous sulphate is heated in a dry test tube water can be seen on the cooler sides of test tube. Why?

7. Zinc granules were taken in a bottle and dil HCl was added into it .A balloon covered the mouth of the bottle to collect the gas. When the end was tied the balloon started floating up in air. Why? Write the reaction occurring during the formation of gas. How can we test this gas?

8. Can plaster of Paris be converted to Gypsum and vice versa? Explain how

9. You are provided with lime water in which few drops of phenolphthalein is added (forms pink solution) and a straw. Using this how can you change the solution back to colourless?