

Chapter - (Acids, Bases And Salts)**Topic - 1 (Acids, Bases And Salts)****Very Short Answer Type Questions**

- Q.1. Name the acid present in ant sting.
- Q.2. Fresh milk has a pH of 6. When it changes into curd (Yogurt), will its pH value increase or decrease? Why?
- Q.3. Which gas is usually liberated when an acid reacts with a metal?
- Q.4. Which is a stronger acid, with pH = 5 or with pH = 2?
- Q.5. What is the effect of an increase in concentration of H^+ ions? M HCl or 1 M CH_3COOH .
- Q.6. Why does tooth decay start when the pH of mouth is lower than 5.5?
- Q.7. How is the concentration of hydronium ions (H_3O^+) affected, when a solution of an acid is diluted?

Short Answer Type Questions – I

- Q.1. What is meant by the term pH of a Solution? The pH of rain water collected from two cities A and B was found to be 6 and 5 respectively. The water of which city is more acidic?
- Q.2. What is alkali? Give an example.
- Q.3. Classify the following into acidic oxides and basic oxides:
 Na_2O, SO_2, MgO, CO_2
- Q.4. Write one word / term for the following:
- (i) Water soluble base
 - (ii) A substance which dissociates on dissolving in water to produce hydrogen ions. [H^+ (aq) ions]
 - (iii) A reaction between an acid and a base to form salt and water.
 - (iv) A substance which dissociates on dissolving in water to produce hydroxide ions [OH^- ions]
- Q.5. Explain why, an aqueous solution of sodium sulphate is neutral while an aqueous solution of sodium carbonate is basic in nature.
- Q.6. Name the gas which is liberated when an acid reacts with a metal. Illustrate with an example. How will you test the presence of this gas?
- Q.7. What is the change in pH values of milk when it changes into curd? Explain.
- Q.8. Give chemical equation to show the changes that occur when green coloured ferrous sulphate crystals are heated. Mention the change observed as well as reason for this change.
- Q.9. A knife, which is used to cut a fruit, was immediately dipped into water containing drops of blue litmus solution. If the colour of the solution is changed to red, what inference can be drawn about the nature of the fruit and why?

- Q.10. Dry HCl gas does not change the colour of dry blue litmus paper. Give reasons.
- Q.11. Write chemical equations that shows aluminium oxide reacts with acid as well as base.
- Q.12. While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid.
- Q.13. HCl and HNO₃ show acidic characteristics in aqueous solution while alcohol and glucose solutions do not. Give reasons .
- Q.14. Though the compounds such as glucose and alcohol have hydrogen atoms in their molecules yet they are not categorised as acids. Why?
- Q.15. You might have seen lemon or tamarind juice being used to clean tarnished surface of copper vessels. Explain why these sour substances are effective in cleaning the vessels ?
- Q.16. When a drop of orange juice is added to pure water, how the pH value will vary for water? If a drop of lemon juice is also added, will there be any more change in the pH value?
- Q.17. While constructing a house, a builder selects marble flooring and marble table tops for the kitchen where vinegar and juice of lemon, tamarind etc. are some often used for cooking. Will you agree to this selection and why?

Short Answer Type Questions – II

- Q.1. Differentiate between strong and weak acids. Identify the strong and weak acids from the following list of acids: hydrochloric acid, acetic acid, formic acid, nitric acid.
- Q.2. (i) Write the name given to bases that are highly soluble in water. Give an example.
(ii) How is tooth decay related to pH? How can it be prevented?
(iii) Why does bee-sting cause pain and irritation? Rubbing of baking soda on the sting area gives relief. How?
- Q.3 (i) Two solutions X and Y are tested with universal indicator. Solution X turns orange whereas solution Y turns red. Which of the solutions is a stronger acid?
(ii) State the meaning of strong acids and weak acids. Give one example of each.
- Q.4. Name the acid present in the following:
(i) Tomato, (ii) Vineager, (iii) Tamarind
- Q.5. A liquid has a pH less than 7 which represent an acidic solution:
(i) State the nature of solution, if its pH increases from 7 to 14.
(ii) Mention the ion whose concentration increases with the increase in pH value.
(iii) Suggest a method that is generally used for measuring the pH value.
- Q.6. Five solutions A, B, C, D and E showed pH as 4, 7, 1, 11 and 9 respectively when tested with universal indicator. Which solution is:
(i) Neutral, (ii) Strongly alkaline, (iii) Strongly acidic (iv) Weakly acidic and (v) Weakly alkaline
- Q.7. (i) Giving reason for each, state which of the following will conduct electricity and which will not:
(a) A solution of glucose (ii) Dil. Hydrochloric acid?

- (ii) If acetic acid and hydrochloric acid of same concentration are taken, which of the two is a stronger acid and why?
- (iii) How is the strength of an acid affected when some water is added to it?

Q.8. To the three solutions listed below, a few drops of phenolphthalein and blue litmus were added separately. Specify the colour change in each case, if any:

Sr. No.	Name of the solution	Colour change with phenolphthalein	Colour Change with blue litmus
1.	Sodium carbonate		
2.	Hydrochloric acid		
3.	Sodium chloride		

Q.9. 10 ml of water and 5 ml of sulphuric acid are to be mixed in a beaker.

- (i) State the method that should be followed.
- (ii) Why should this method be followed?
- (iii) What is this process called?

Q.10. Illustrate any three chemical properties of acids with examples.

Q.11. Sugandha prepares HCl gas in her school laboratory using certain chemicals. She puts both dry and wet blue litmus papers in contact with the gas.

- (i) Name the reagents used by sugandha to prepare HCl gas.
- (ii) State the colour changes observed with the dry and wet blue litmus paper.
- (iii) Show the formation of ions when HCl gas combines with water.

Q.12. Explain the action of dilute hydrochloric acid on the following with chemical equation:

- (i) magnesium ribbon
- (ii) sodium hydroxide
- (iii) Crushed egg shells

Q.13. (a) What is the action of litmus on:

- (i) Dry ammonia gas
- (ii) Solution of ammonia gas in water

(b) State the observations you would make on adding sodium hydroxide to aqueous solution of:

- (i) Ferrous sulphate
- (ii) Aluminium chloride.

Give balanced chemical equations.

Q.14. Draw a neat and labelled diagram to show the following activity:

Action of dilute sulphuric acid on zinc granules.

- (i) Name the gas evolved.
- (ii) How will you test for the gas?

Q.15. In the following schematic diagram for the preparation of hydrogen gas as shown in figure, what would happen if 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) Sodium hydroxide is taken in place of dilute sulphuric acid and the test-tube is heated.

Q.16. A few crystals of copper sulphate are heated in B / F dry boiling tube:

- (i) What is the colour before and after heating?
- (ii) What is the reason for the colour change?
- (iii) Can its original colour be restored? How?

Q.17. While eating food, you happen to spill some curry on your white shirt. You immediately scrub it with soap. What happens to its yellow colour on scrubbing with soap? Why? What happens to this stain when the shirt is washed with plenty of water?

Q.20. After drinking excess of cold drink, a person suffered from acidity. Explain.

Long Answer Type Questions

Q.1. (i) Define pH scale. Draw a figure showing variation of pH with the change in concentration of H^+ (aq) and OH^- (aq) ions.

(ii) Mention the range of pH of acidic solution, basic solution and neutral solution respectively.

Q.2. (i) Define universal indicator. For what purpose it is used?

(ii) Two solutions A and B have pH values of 3.0 and 9.5 respectively. Which of these will turn litmus solution from blue to red and which will turn phenolphthalein from colourless to pink?

(iii) Water is a neutral substance. What colour will you get when you add a few drops of universal indicator to a test tube containing distilled water?

Q.3. Account for the following:

(i) State the relation between hydrogen ion concentration of an aqueous solution and its pH.

(ii) An aqueous solution has a pH value of 7.0 Is this solution acidic, basic or neutral?

(iii) Which has a higher pH value, 1M HCl or 1 M NaOH solution?

(iv) Tooth enamel is one of the hardest substances in our body. How does it undergo damage due to eating chocolates and sweets? What should we do to prevent it?

(v) How do $[H^+]$ ions exist in water?

Q.4. (i) Acids as well as bases ionize in water. Name the ions produced by each in water.

(ii) If we have hydrochloric acid and acetic acid of equal concentration, which will be a stronger acid and why?

(iii) How will the concentration of hydrogen ions gets affected if an acid is diluted?

Q.5. (i) Explain why is hydrochloric acid a strong acid and acetic acid, a weak acid. How can it be verified?

(ii) Explain why aqueous solution of an acid conducts electricity.

(iii) 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,

- (a) Identify the most acidic and most basic solutions.
- (b) Arrange the above four solutions in the increasing order of H^+ ion concentration.
- (c) State the change in colour of pH paper on dipping in solution C and D.

Q.6. (a) In a tabular form, write the colours of the following indicators in presence of acid and bases: Litmus solution, phenolphthalein solution, methyl orange solution.

(b) Classify the following given solutions A and B in acidic and basic, giving reason.

Solution A: $[H^+]$ is greater than 1.0×10^{-7} .

Solution B: $[H^+]$ is lesser than 1.0×10^{-7} .

Q.7. A local magician was showing magic in a village street. He took egg shell and poured a solution over it. As a result, effervescences were formed. When he took a burning matchstick over it, it went off:

- (a) Identify the solution poured and the substance present in egg shell.
- (b) What is the reason behind effervescences?
- (c) Write its balanced chemical equation.
- (d) Give the common name of the substance present in the egg shell.
- (ii) Draw a labelled diagram to show that acid solution in water conducts electricity.

Q.8. (i) Name the gas which is liberated when an acid reacts with a metal. How will you test the presence of this gas?

(ii) Write the chemical equation for the reaction of zinc metal with:

- (a) hydrochloric acid and
- (b) with sodium hydroxide. Write the chemical name of salt obtained in each case.

(iii) Identify the acid and base for ammonium chloride salt. What would be the nature of this salt? Mention the pH range of this salt.

Q.9. (i) Bee-sting leaves a chemical substance that causes pain and irritation. Name the chemical substance. Identify the type of substance which may give relief on the sting area when applied on it.

(ii) Mention the pH value below which tooth decay begins. How this fall below this value? Explain the ill effect of the acidic medium in the mouth. How can this be prevented?

(iii) What are strong acids and weak acids? Give an example of each.

Q.10 (a) Five solutions A, B, C, D and E when tested with universal indicator showed pH as 4, 1, 11, 7 and 9 respectively. Which solution is:

- (i) neutral
- (ii) strongly alkaline
- (iii) Strongly acidic
- (iv) weakly acidic
- (v) weakly alkaline?

Arrange the solutions in increasing order of H^+ ion concentration.

(b) Name the acid and base from which the following salts have been formed.

- (i) Sodium acetate
- (ii) Ammonium chloride

Q.11 (i) Mention the pH range within which our body works. Explain how antacids give relief from acidity. Write the name of one such antacid.

(ii) How will the pH of fresh milk change as it turns to curd? Explain your answer.

(iii) A milkman adds a very small amount of baking soda to fresh milk. Why does this milk take longer time to set as curd?

(iv) Mention the nature of tooth pastes. How do they prevent tooth decay?

Q.12. (i) Write balanced chemical equations only for the following chemical properties of acids:

(a) When an acid reacts with a metal.

(b) When an acid reacts with a metal bicarbonate.

(c) When an acid reacts with a base.

(ii) Three solutions A, B and C has pH values 5, 8 and 10 respectively. Amongst the three, which solution has maximum hydrogen ion concentration? Classify the nature of the three solutions as acidic or basic.

Topic - 2 (Salts, Their Properties and Uses)

Very Short Answer Type Questions

Q.1. What would be the colour of litmus in a solution of sodium carbonate?

Q.2. Name a salt which does not contain water of crystallisation.

Q.3. Name the sodium compound which is used for softening hard water.

Q.4. What is the common name of the compound CaOCl_2 ?

Q.5. Write an equation to show the reaction between plaster of Paris and water.

Short Answer Type Questions – I

Q.1. Classify the following salts as acidic, basic or neutral:

(i) NaCl

(ii) Na_2SO_4

(iii) CaCl_2

(iv) K_2CO_3

Q.2. What is bleaching powder? How is it prepared? List two uses of bleaching powder.

Q.3. Classify the following salts into acidic, basic and neutral:

Potassium sulphate, ammonium chloride, sodium carbonate, sodium chloride.

Q.4 Explain why, an aqueous solution of sodium sulphate is neutral while an aqueous solution of sodium carbonate is basic in nature.

Q.5. Write the chemical name and formula of gypsum. What happens when gypsum is heated at 373 K. Write chemical equation for the reaction.

Q.6. Write the chemical formula of baking soda. How is baking soda prepared? Write the reaction which takes place when it is heated during cooking.

Q.7. Name the gas evolved when sodium hydrogen carbonate is made to react with dilute hydrochloric acid. How will you test the gas?

Q.8. The colour of copper sulphate solution changes when an iron nail is dipped in it. State the reason giving chemical equation for the reaction involved.

Q.9. A white powder is added while baking breads and cakes to make them soft and fluffy. What is the name of the powder? What are the main ingredients in it? What are the functions of each ingredient?

Q.10. A green coloured hydrated metallic salt on heating loses its water of crystallization and gives the smell of burning sulphur. Identify the salt and write down the reaction involved.

Q.11. What is the colour of $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ crystals? How does this colour change upon heating? Give balanced chemical equation for the changes.

Q.12. State the chemical name of Plaster of Paris. Write a chemical equation to show the reaction between Plaster of Paris. Write a chemical equation to show the reaction between Plaster of Paris and water.

Q.13. A milkman added a small amount of baking soda to fresh milk:

(i) Why does he shift the pH of fresh milk to slightly alkaline?

(ii) Why does this milk take longer time to set as a curd?

Q.14. Crystals of a substance changed their colour on heating in a closed vessel but regained after sometime, when they were allowed to cool down.

(i) Name one such substance.

(ii) Explain the phenomenon involved.

Q.15. An aluminium can is used to store ferrous sulphate solution. It is observed that in few days, holes appeared in the can. Explain the cause for this observation and write the chemical reaction to support your answer.

Q.16. (i) What would be the colour of the solution when copper oxide and dilute hydrochloric acid are mixed?

Q.17. How will you prove that a given salt is a carbonate of a metal?

Short Answer Type Questions – II

Q.1. Define water of crystallisation with two examples. How will you prove their existence in the examples given by you?

Q.2. (i) What is meant by the term hydrated salt?

(ii) Give two examples of hydrated salt which are white and state their chemical formula.

Q.3. What is meant by water of crystallization? How many molecules of water are present in hydrated copper sulphate? Write its formula. What colour change do you observe when it is heated?

Q.4. A sanitary worker uses a white chemical having strong smell of chlorine gas to disinfect the water tank.

(i) Identify the chemical compound, write its chemical formula.

(ii) Give chemical equation for its preparation.

(iii) Write its two uses other than disinfection.

Q.5. In one of the industrial processes used for manufacture of sodium hydroxide a gas X is formed as by product. The gas 'X' reacts with dry slaked lime to give a compound 'Y' which is used as bleaching agent in textile industry.

Q.6. (i) How chloride of lime chemically differs from calcium chloride?

(ii) What happens when chloride of lime reacts with sulphuric acid? Write chemical equation involved.

(iii) Mention two uses of chloride of lime.

Q.7. Write the chemical formula of bleaching powder. Write balanced chemical equation involved in the preparation of bleaching powder and write its three uses.

Q.8. (i) A white powder is an active ingredient of antacids and is used in preparation of baking powder. Name the compound and explain that how it is manufactured. Give chemical equation.

(ii) Write a chemical equation to show the effect of heat on this compound.

Q.9. "Sodium hydrogen carbonate is a basic salt". Justify the statement. How is it converted into washing soda? Explain.

Q.10. A student dropped few pieces of marble in dilute hydrochloric acid, contained in a test-tube. The evolved gas was then passed through lime water. What change would be observed in lime water? What will happen if excess of gas is passed through lime water?

Q.11. What happens when a solution of baking soda is heated? Write chemical equation for the same. Name the product which is responsible for making the bread or cake spongy and fluffy.

Q.12. State what happens when:

(i) Gypsum is heated at 373 K.

(ii) Blue crystals of copper sulphate are heated.

(iii) Excess of carbon dioxide gas is passed through lime water.

Q.13. (i) Write the chemical formula of each of the following:

(a) Plaster of Paris

(b) Gypsum.

(ii) How can plaster of paris be converted into gypsum?

(iii) List any one use of plaster of paris.

Q.14. A compound 'x' on losing partial crystallization of water gives compound 'y' which is used for making chalk and other pottery articles. But when 'x' is strongly heated, it gives 'z' which is used as drying agent. Identify x, y, z and write the chemical equation.

Q.15. Mention the products produced when an acid reacts with a base. Give equation of an example of the reaction involved. What is this kind of reaction known as?

Q.16. Name the three products of 'chlor-alkali' process. Write one commercially or industrially important material each that can be prepared from each of these products.

Q.17. (a) Crystals of a substance changed their colour on heating in a closed test-tube but regained it after sometime when they were allowed to cool down. Name the substance and write its formula and explain the phenomenon involved.

(b) Name the acid and base that would be used to prepare the following salts:

(i) Potassium sulphate

(ii) Ammonium chloride

Long Answer Type Questions

Q.1. Give suitable reasons for the following statements:

(i) Rain water conducts electricity but distilled water does not.

(ii) We feel burning sensation in the stomach when we overeat.

(iii) A tarnished copper vessel regains its shine when rubbed with lemon.

(iv) The crystals of washing soda change to white powder on exposure to air.

(v) An aqueous solution of sodium chloride is neutral but an aqueous solution of sodium carbonate is basic.

Q.2. (a) Write the chemical formula of hydrated copper sulphate and anhydrous copper sulphate. Giving an activity to illustrate how these two are inter convertible.

(b) Write chemical names and formula of plaster of paris and gypsum.

Q.3. (i) What is the chemical name and chemical formula of plaster of paris?

(ii) Write a reaction between Plaster of Paris and water.

(iii) Write two uses of washing soda.

(iv) What is chlor-alkali process? Name two products obtained during this process.

Q.4. (i) Identify the acid and the base whose combination forms the common salt that you use in your food. Write its formula and chemical name of this salt. Name the source from where it is obtained.

- (ii) What is rock salt? Mention its colour and the reason due to which it has this colour.
 (iii) What happens when electricity is passed through brine? Write the chemical equation for it.

Q.5. (a) Write the common name of CaOCl_2 . How is it prepared? Write the chemical equation of the reaction involved in the process. Give any two uses of it.

(b) Write the chemical name of washing soda. How is it prepared? Give the relevant chemical equations.

Q.6. (i) Write the chemical name and chemical formula of washing soda.

(ii) How is it obtained from sodium chloride? Give equations of the reaction.

(iii) Why is it called a basic salt? Give its any one use.

Q.7. Write the chemical name and formula of common salt. List two main sources of common salt in nature. Write any three uses of common salt. How is it connected to our struggle for freedom?

Q.8. Write the chemical name of $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ and Na_2CO_3 . Write the significance of $10\text{H}_2\text{O}$. Mention the term used for water molecules attached with a salt. With the help of a chemical equation, explain the method of preparation of both $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ and Na_2CO_3 . Also list two uses of $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$.

Q.9. (a) Study the following chemical equation:

$\text{CaSO}_4 \cdot 2\text{H}_2\text{O} \xrightarrow{373\text{ K}} \text{CaSO}_4 + \frac{1}{2}\text{H}_2\text{O} + \frac{1}{2}\text{H}_2\text{O}$ Name the reactant and the product and mention one use of the product.

(b) The following salts are formed by the reaction of an acid with a base.

(i) Sodium chloride

(ii) Ammonium nitrate.

Identify the acid and the base and tabulate your answer in the format given below:

S. No.	Salt	Acid	Base	Nature
(i)	Sodium chloride			
(ii)	Ammonium nitrate			

Q.10. We use colours dissolved in water during Holi and clothes gets spoiled. Many colours used to celebrate Holi are oxidized metals or industrial dyes mixed with engine oil. Doctors say these are harmful colours which should be banned for usage. Manufacturers mix dyes with colours, and sell them for their profits. Holi revelers can make their Holi colourful by using natural colours available in the market. Natural colours start fading when they come in contact with sunrays.

(i) Why doctors say that synthetic colours are harmful?

(ii) What are natural colours?

(iii) As a student what initiative you will take to motivate your classmates to use natural colours in Holi? Give any three suggestions.

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