Year 2024

Multiple choice question [1 Mark]

1) Juice of tamarind turns blue litmus to red. It is because of the presence ofan acid called : **[(31/2/1); (31/2/2); (31/2/3)]**
   (a) methanoic acid (b) acetic acid (c) tartaric acid (d) oxalic acid
2) Tooth decay begins at the pH of : **[(31/2/2)]**
   (a) 5.1 (b) 5.8 (c) 6.5 (d) 8.0
3) Solid Calcium oxide reacts vigorously with water to form Calcium hydroxide accompanied by the liberation of heat. From the information given above it may be concluded that this reaction **[(31/2/1); (31/2/2); (31/2/3)]**
   (a) is endothermic and pH of the solution formed is more than 7.
   (b) is exothermic and pH of the solution formed is 7.
   (c) is endothermic and pH of the solution formed is 7.
   (d) is exothermic and pH of the solution formed is more than 7..
4) Select a pair of natural indicator from the following : **[(31/3/1); (31/3/2); (31/3/3)]**
   (a) Litmus and methyl] orange
   (b) Turmeric and Litmus
   (c) Phenolphthalein and methyl] orange
   (d) Methyl orange and Turmeric
5) A chemical compound used in glass, soap and paper industries is **[(31/3/1); (31/3/3)]**
   (a) Washing Soda (b) Baking Soda (c) Bleaching Powder (d) Common Salt
6) An aqueous solution of a salt turns blue litmus to red. The salt could be the one obtained by the reaction of : **[(31/4/1); (31/4/2)]**
   (a) HNO_3 and NaOH (b) H_2SO_4 and KOH (c) CH_3COOH and NaOH (d) HCl and NH_4OH
7) The acid produced in our stomach during digestion and the base used to neutralise the excess acid during indigestion respectively are : **[(31/4/3)]**
   (a) HCl, $Mg(OH)_2$ (b) HCl, $Ca(OH)_2$ (c) Amino acids, $Ca(OH)_2$ (d) Lactic acid, $Mg(OH)_2$
8) The salt present in tooth enamel is : **[(31/5/1); (31/5/2)]**
   (a) Calcium phosphate
   (b) Magnesium phosphate
   (c) Sodium phosphate
   (d) Aluminium phosphate
9) An aqueous solution of sodium chloride is prepared in distilled water. The pH of this solution is : **[(31/5/1); (31/5/2); (31/5/3)]**
   (a) 6 (b) 8 (c) 7 (d) 3
10) An aqueous solution 'A' turns phenolphthalein solution pink. When another aqueous solution 'B' is added to the pink solution, the pink colour disappears. Now when a few drops of solution 'A' are added to this reaction, the mixture appears pink again. The respective changes in the nature of the solution are from : **[(31/5/3)]**
   (a) acidic ⟶ basic ⟶ basic
   (b) basic ⟶ acidic ⟶ acidic
   (c) acidic ⟶ basic ⟶ acidic
   (d) basic ⟶ acidic ⟶ basic

Assertion and Reasoning [1 Mark]

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

(a) Both Assertion(A) and Reason(R) are true and Reason(R) is the correct explanation of the Assertion(A).

(b)Both Assertion(A) and Reason(R) are true, but Reason(R) is not the correct explanation of the Assertion(A).

(c)Assertion(A) is true, but Reason(R) is false.

(d)Assertion(A) is false, but Reason(R) is true.

1) Assertion (A): Hydrogen gas is not evolved when zinc reacts with nitric acid.
Reason (R): Nitric acid oxidises the hydrogen gas produced to water and itself gets reduced.
[(31/1/1); (31/1/2); (31/1/3)]

Very Short Answer Type Question [2 Marks]

1) 1 gram of solid sodium chloride was taken in a clean and dry test tube and concentrated sulphuric acid was added to it. **[(31/4/1); (31/4/2); (31/4/3)]**
(i) Name the gas evolved in the reaction.
(ii) What will be observed when this gas is tested with (I) dry, and (II) wet blue litmus paper ? Write your conclusion about the nature (acidic/basic) of this gas.
2) Some metals react with acids to produce salt and hydrogen gas. Illustrate it with an example. How will you test the presence of this gas ? **[(31/4/1); (31/4/2); (31/4/3)]**

Short Answer Type Question [3 Marks]

1) (i) The pH of a sample of tomato juice is 4.6. How is this juice likely to be in taste ? Give reason to justify your answer.
(ii) How do we differentiate between a strong acid and a weak base in terms of ion-formation in aqueous solutions ?
(iii) The acid rain can make the survival of aquatic animals difficult. How ? **[(31/1/1); (31/1/2); (31/1/3)]**
2) A compound which is prepared from gypsum has the property of hardening when water is mixed in right quantity with it :
(i) Write common name and the chemical name of this compound.
(ii) Give chemical equation for its preparation.
(iii) List its two uses. **[(31/1/3)]**
3) Write the common name and the chemical name of the compound $CaSO_4.\frac{1}{2}H_2O$. Write the method of its preparation. Give chemical equation for the reaction, when water reacts with $CaSO_4.\frac{1}{2}H_2O$. **[(31/4/1); (31/4/3)]**
4) A small amount of copper oxide was taken in a beaker and dilute hydrochloric acid was added with continuous stirring of the solution. Name the compound formed and state the colour of its solution. Write balanced chemical equation for the reaction that occurs. Based on the reaction, state the nature (acidic/basic) of copper oxide. **[(31/4/2)]**

Long Answer Type Question [5 Marks]

1) (i) Five solutions A, B, C, D and E when tested with pH paper showed pH as 4, 1, 18, 7 and 10 respectively. Which solution is :
(1) Strongly acidic (2) Strongly alkaline (3) Weakly acidic (4) Neutral and (5) Weakly alkaline ?
Arrange the solutions in increasing order of H^+ ion concentration.
(ii) Write the name and formula of (1) an acidic salt and (2) a basic salt giving the name of the parent acid and parent base used to form the salt in each case. **[(31/3/1); (31/3/2); (31/3/3)]**
2) Name and state in brief the process which is used to prepare sodium hydroxide from sodium chloride. In this process along with the main product two gases 'X' and 'Y' are also given off at the two electrodes. Name 'X' and 'Y' specifying the name of their respective electrode at which each gas is obtained. One of these gases when reacts with dry calcium hydroxide produces a compound 'Z' which is widely used in water treatment plants and textile industries. Name Z and write chemical equation for the reaction involved in its formation. **[(31/3/1); (31/3/2); (31/3/3)]**
3) (a) A few crystals of ferrous sulphate were taken in a dry boiling tube and heated. Tiny water droplets were observed in the tube after some time.
(i) From where did these water droplets appear ? Explain.
(ii) What colour change will be observed during heating ?
(iii) How many molecules of water are attached per molecule of $FeSO_4$ crystal ? Write the molecular formula of crystalline forms of (I) Copper sulphate, and (II) Sodium carbonate.
(iv) State how is Plaster of Paris obtained from gypsum. Write two uses of Plaster of Paris.
[(31/5/1); (31/5/3)]
4) An acid 'X' present in tamarind when mixed with 'Y', produces a mixture 'Z'. 'Z' on addition to a dough when heated makes cakes soft and spongy. 'Y' is prepared from common salt and helps in faster cooking
(i) Write the common names of 'X', 'Y' and 'Z', and the chemical formula of 'Y'.
(ii) How is 'Y' prepared and how does it help in making cakes soft and spongy ? Illustrate the reaction with suitable chemical equation.
(iii) Write the name and chemical formula of a mild base other than 'Y' used as an antacid.
[(31/5/1); (31/5/3)]
5) Explain chlor-alkali process and write balanced chemical equations for the reactions that occur. Name the gases obtained at the anode and cathode respectively. Mention two uses each of the two gases obtained in the above process. **[(31/5/2)]**
6) Common salt is a very important raw material as many compounds of industrial use can be prepared from it. Explain, giving chemical equations, the method of preparation of washing soda from sodium chloride. List four industrial/domestic uses of washing soda. **[(31/5/2)]**

Case Study [4 Marks]

1) Salts play a very important role in our daily life. Sodium chloride which is known as common salt is used almost in every kitchen. Baking soda is also a salt used in faster cooking as well as in baking industry. The family of salts is classified on the basis of cations and anions present in them.
(a) Identify the acid and base from which Sodium chloride is formed.
(b) Find the cation and the anion present in Calcium sulphate.
(c) "Sodium chloride and washing soda both belong to the same family of salts." Justify this statement.
OR

Define the term pH scale. Name the salt obtained by the reaction of Potassium hydroxide and Sulphuric acid and give the pH value of its aqueous solution.**[(31/2/1); (31/2/2); (31/2/3)]**

Year 2023

Multiple choice question [1 Mark]

1) Select washing soda from the following: **[(31/1/2); (31/1/3)]**
(a) $NaHCO_3$ (b) $Na_2CO_3.5H_2O$ (c) $Na_2CO_3.10H_2O$ (d) NaOH

2) The tablebelow has information regarding pH and the nature (acidic/basic) of four different solutions. Which one of the options in the table is correct? **[(31/1/1); (31/1/2); (31/1/3)]**

Option	Solution	Colour of pH paper	Approximate pH value	Nature of solution
(a)	Lemon juice	Orange	3	Basic
(b)	Milk of magnesia	Blue	10	Basic
(c)	Gastric juice	Red	6	Acidic
(d)	Pure water	Yellow	7	Neutral

3) Which of the following gives the correct increasing order of acidic strength?
(a)Sodium chloride < Acetic acid < Hydrochloric acid
(b)Sodium chloride < Hydrochloric acid < Acetic acid
(c)Acetic acid < Sodium chloride < Hydrochloric acid
(d)Hydrochloric acid < Sodium chloride < Acetic acid

4) Select the correct option(s) in the following table :

Option	Natural Sources	Acid present
(i)	Tamarind	Tartaric acid
(ii)	Tomato	Acetic acid
(iii)	Ant sting	Oxalic acid
(iv)	Nettle sting	Methanoic acid

(a) (i) only (b) (iii) only (c) (i) and (iv) (d) (i), (ii) and (iv)

5) Select the correct option from the following :

	Salt	Parent acid	Parent base	Nature of salt
(a)	Sodium acetate	CH_3COOH	NaOH	Neutral
(b)	Sodium carbonate	H_2CO_3	NaOH	Basic
(c)	Sodium chloride	HCl	NaOH	Acidic
(d)	Sodium nitrate	HNO_3	NaOH	Acidic

6) When Sodium bicarbonate reacts with dilute hydrochloric acid, the gas evolved is : **[(31/4/1); (31/4/2); (31/4/3)]**

(a) Hydrogen; it gives pop sound with burning match stick.
(b) Hydrogen; it turns lime water milky.
(c) Carbon dioxide; it turns lime water milky.
(d) Carbon dioxide; it blows off a burning match stick with a pop sound.

7) Acid present in tomato is : **[(31/4/1); (31/4/2); (31/4/3)]**
(a) Methanoic acid (b) Acetic acid(c) Lactic acid (d) Oxalic acid

8) Sodium hydroxide is termed an alkali while Ferric hydroxide is not because : **[(31/4/1); (31/4/2); (31/4/3)]**
(a) Sodium hydroxide is a strong base, while Ferric hydroxide is a weak base.
(b) Sodium hydroxide is a base which is soluble in water while Ferric hydroxide is also a base but it is not soluble in water.
(c) Sodium hydroxide is a strong base while Ferric hydroxide is a strong acid.
(d) Sodium hydroxide and Ferric hydroxide both are strong base but the solubility of Sodium hydroxide in water is comparatively higher than that of Ferric hydroxide.

9) The name of the salt used to remove permanent hardness of water is : **[(31/4/1); (31/4/2)]**
(a) Sodium hydrogen carbonate ($NaHCO_3$)
(b) Sodium chloride (NaCl)
(c) Sodium carbonate decahydrate ($Na_2CO_3.10H_2O$)
(d) Calcium sulphate hemihydrate ($CaSO_4.\frac{1}{2}H_2O$)

10) Hydronium ions are formed by the reaction between : **[(31/5/1);(31/5/2); (31/5/3)]**
(a) Sodium hydroxide and water (b) Calcium chloride and water
(c) Hydrogen chloride gas and water (d) Ethanol and water

11) Fresh milk has a pH of 6. To delay its curdling, a chemical substance is added to it, which is :**[(31/5/1); (31/5/2); (31/5/3)]**
(a) Sodium carbonate
(b) Baking powder
(c) Sodium hydroxide (Caustic soda)
(d) Baking soda (Sodium hydrogen carbonate)

12) Select a pair of olfactory indicators from the following : **[(31/5/1); (31/5/2); (31/5/3)]**
(a) Clove oil and vanilla essence (b) Onion and turmeric
(c) Clove oil and litmus solution (d) Vanilla and methyl orange

13) Metal oxides generally react with acids, but few oxides of metal also react with bases. Such metallic oxides are :
I.MgO
II.ZnO
III.Al_2O_3
IV.CaO
(a) I and II(b) Il and III (c) III and IV (d) IandIV

14) Few drops of aqueous solution of ammonium chloride are put on a universal indicator paper. The paper turns pink. Study the following table and choose the correct **[(31/6/1); (31/6/3)]**

Nature	Ammonium chloride is a salt of	Range of pH
(a) acidic	weak acid and strong base	less than 7
(b) basic	weak acid and strong base	more than 7
(c) acidic	strong acid and weak base	less than 7
(d) basic	strong acid and strong base	7

15) Two salts 'X' and 'Y' are dissolved in water separately. When phenolphthalein is added to these two solutions, the solution 'X' turns pink and the solution 'Y does not show any change in colour, therefore 'X' and 'Y' are **[(31/6/1); (31/6/2)]**

	(X)	(Y)
(a)	Na_2CO_3	NH_4Cl
(b)	Na_2SO_4	$NaHCO_3$
(c)	NH_4Cl	Na_2SO_4
(d)	$NaNO_3$	Na_2SO_4

16) A solution turns the colour of turmeric to reddish brown. If the same solution is poured on universal indictor, its colour would change to
(a) violet (b) blue (c) red (d) green

17) There are four solutions A, B, C, and D with pH values as follows :

Solution	A	B	C	D
pH	2.0	7.0	8.0	12.0

Which solution(s) would liberate hydrogen gas with zinc ?
(a) A only (b) D only (c) A and D (d) B and C

Assertion and Reasoning [1 Mark]

These consist of two statements —Assertion(A) and Reason(R). Answer these questions selecting the appropriate option given below:
(a) Both Assertion(A) and Reason(R) are true and Reason(R) is the correct explanation of the Assertion(A).
(b)Both Assertion(A) and Reason(R) are true, but Reason(R) is not the correct explanation of the Assertion(A).
(c)Assertion(A) is true, but Reason(R) is false.
(d)Assertion(A) is false,but Reason(R) is true.

1) Assertion (A) : It is advised that while diluting an acid one should add water to acid and not acid to water keeping the solution continuously stirred.
Reason (R) : The process of dissolving an acid into water is highly exothermic.**[(31/6/1); (31/6/2); (31/6/3)]**

Very Short Answer Type Questions [2 Marks]

1) (i)A compound 'X' which is prepared from gypsum has the property of hardening when mixed with proper quantity of water.
Identify 'X' and write its chemical formula.
(ii) State the difference in chemical composition between baking soda and baking powder.
[(31/1/1); (31/1/2); (31/1/3)]
2) Write balanced chemical equation for the reaction that occurs when: [**(31/1/1); (31/1/2); (31/1/3)]**
(i) blue coloured copper sulphate crystals are heated and
(ii) Sodium hydrogen carbonate is heated during cooking.
3) A knife which is used to cut a fruit was immediately dipped in to 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? **[(31/1/2)]**

4) A student took a small amount of copper oxide in a conical flask and added dilute hydrochloric acid to it with constant stirring. He observed a change in colour of the solution.
(i) Write the name of the compound formed and its colour.
(ii) Write a balanced chemical equation for the reaction involved.**[(31/4/1); (31/4/2); (31/4/3)]**

5) The industrial process used for the manufacture of caustic soda involves electrolysis of an aqueous solution of compound 'X'. In this process, two gases 'Y' and 'Z' are liberated. 'Y' is liberated at cathode and 'Z', which is liberated at anode, on treatment with dry slaked lime forms a compound 'B'. Name X, Y, Z and B. **[(31/4/1); (31/4/2);(31/4/3)]**

6) On heating 'X' at 373 K, it losses water molecules and becomes 'Y'. 'Y' is a substance which doctors use for supporting fractured bones in the right position. **[(31/5/1);(31/5/2); (31/5/3)]**
(i) Identify 'X' and 'Y'
(ii) How can 'X' be reobtained from 'Y' ?

7) Two solutions M and N give Red and Blue colour respectively with a universal indicator.**[(31/5/1);(31/5/2); (31/5/3)]**
(i) In which solution will the hydrogen ion concentration be more ? Justify your answer.
(ii) If both M and N solutions are mixed and the resultant mixture is tested with a universal indicator, it turns green. What is the nature of the salt formed ? Justify your answer.

Short Answer Type Questions [3 Marks]

1) (a) Suggest one remedial measure each to counteract the change in pH in human beings in following cases: **[(31/1/1)]**
(i) Production of too much acid in stomach during indigestion
(ii) Stung by a honey bee/nettle leaves
(b) Fresh milk has a pH of 6. When it changes into curd will its pH increase or decrease? Why?

2) Write the chemical composition of tooth enamel. Under what conditions of pH it starts corroding? Explain the reason of tooth decay and suggest one method to prevent it. [**(31/1/2)]**

3) A chemical compound X is used in glass, soap and paper industries. On treatment with ethanoic acid, it forms salt, water and carbon dioxide.
(a)Identify X.
(b)How is this compound obtained from brine? Write the equations involved.
(c) State the numbers of molecules of water of crystallization present in compound X.[**(31/1/3)]**

4) (i) Suggest a safe procedure of diluting a strong concentrated acid.
(ii) Name the salt formed when sulphuric acid is added to sodium hydroxide and write its pH.
(iii) Dry HCl gas does not change the colour of dry blue litmus paper. Why ?**[(31/4/1)]**

5) (i) Why is acidified water considered to be a good conductor of electricity ?
(ii) Write a chemical equation showing the ionic products formed on dissolving potassium hydroxide in water.
(iii) Care must be taken while diluting concentrated nitric acid with water. Why ?**[(31/4/2)]**

6) Consider the following salts :
(i) YCl (ii) NH_4X (iii) ZCO_3
(a) What would be the pH of the salt solution if in YCl, Y is sodium ?Give reason for your answer.
(b) If in salt NH_4X, X is nitrate, then its solution will give what colour with universal indicator ? Why ?
(c) What would be the change in colour in blue litmus solution if $ZCO_3$is added to it and Z is potassium ? **[(31/4/3)]**

7) (a) Sometimes the pH of our mouth gets lower than 5·5. Why ?

(b) A basic salt 'X' is obtained by heating baking soda followed by crystallization. Identify 'X' and state its two industrial uses.
(c) Why do copper sulphate crystals turn white on heating ? **[(31/5/1)]**

8) (a) How is a universal indicator better than litmus solution ?
(b) State two features of pH scale.
(c) Why should we not add water to a concentrated acid ? **[(31/5/2)]**

9) (a) Write a balanced equation to show the reaction that occurs when a piece of aluminium is dipped in a dilute solution of (i) sulphuric acid and (ii) sodium hydroxide.
(b) Write the colour of the solution formed when copper oxide is treated with hydrochloric acid. Give reason for this observation. **[(31/5/3)]**

10) A substance 'X' is used as a building material and is insoluble in water. When it reacts with dil. HCl, it produces a gas which turns lime water milky. **[(31/6/1); (31/6/2)]**
(i) Write the chemical name and formula of 'X'.
(ii) Write chemical equations for the chemical reactions involved in the above statements

11) A metal 'M' on reacting with dilute acid liberates a gas 'G'. The same metal also liberates gas 'G' when reacts with a base. **[(31/6/1); (31/6/2)]**
(i) Write the name of gas 'G'.
(ii) How will you test the presence of this gas?
(iii) Write chemical equations for the reactions of the metal with(1) an acid and (2) a base.

12) (i) What property do acids and bases have in common ? Explain it with an example.
(ii) A compound which is prepared from gypsum has the property of hardening when mixed with water.
Identify the compound and write its formula. How is this compound prepared ? Describe it in the form of a chemical equation only. **[(31/6/3)]**

13) (i) Write the chemical name and Molecular formula of tooth enamel.
(ii) How does it get corroded ? What is the preventive measure for this ? **[(31/6/3)]**

Case Study [4 Marks]

1) The teacher while conducting practicals in the laboratory divided the students into three groups and gave them various solutions to find out their pH and classify them into acidic, basic and neutral solutions.
Group A – Lemon juice, vinegar, colourless aerated drink
Group B – Tomato juice, coffee, ginger juice
Group C – Sodium hydroxide, sodium chloride, lime water
(a)For the solutions provided, which group is/are likely to have pH value (i) less than7,and (ii) greater than 7? 1
(b)List two ways of determining pH of a solution 1
(c)Explain, why the sour substances such as lemon juice are effective in cleaning the tarnished copper vessels.
or
"pH has great importance in our daily life." Justify this statement by giving two examples.

Year 2020

Multiple choice question [1 Mark]

1) Baking soda is a mixture of
   (a) Sodium carbonate and acetic acid .
   (b) Sodium carbonate and tartaric acid
   (c) Sodium hydrogen carbonate and tartaric acid
   (d) Sodium hydrogen carbonate and acetic acid **[(31/1/1); (31/1/2)]**
2) The chemical formula for plaster of Paris is:
   (a) $CaSO_4.2H_2O$ (b)$CaSO_4.H_2O$
   (c) $CaSO_4.\frac{1}{2}H_2O$ (d) $2CaSO_4.H_2O$ **[(31/1/1); (31/1/2)]**
3) When a small amount of acid is added to water, the phenomena which occur are:
   (A) Dilution (B) Neutralisation (C) Formation of H_3O^+ ion (D) Salt formation
   (a) (A) and (C) (b) (B) and (D)
   (c) (A) and (B) (d) (C) and (D) **[(31/1/3)]**
4) A visually challenged student, has to perform a lab test to detect the presence of acid in a given solution. The acid-base indicator preferred by him will be :
   (a) Blue litmus (b) Clove oil
   (c) Red cabbage extract (d) Hibiscus extract **[(31/2/1); (31/2/2); (31/2/3)]**
5) Several factories were pouring their wastes in rivers A and B. Water samples were collected from these two rivers. It was observed that sample collected from river A was acidic while that of river B was basic. The factories located near A and B are
   (a) Soaps and detergents factories near A and alcohol distillery near B.
   (b) Soaps and detergents factories near B and alcohol distillery near A.
   (c) Lead storage battery manufacturing factories near A and soaps and detergents factories near B.
   (d) Lead storage battery manufacturing factories near B and soaps and detergents factories near A. **[(31/3/1); (31/3/2); (31/3/3)]**
6) An aqueous solution 'A' turns phenolphthalein solution pink. On addition of an aqueous solution 'B' to 'A', the pink colour disappears. The following statement is true for solution 'A' and 'B'.
   (a) A is strongly basic and B is a weak base.
   (b) A is strongly acidic and B is a weak acid.
   (c) A has pH greater than 7 and B has pH less than 7.
   (d) A has pH less than 7 and B has pH greater than 7. **[(31/3/1); (31/3/2); (31/3/3)]**
7) If 10 mL of H_2SO_4 is mixed with 10 mL of $Mg(OH)_2$ of the same concentration, the resultant solution will give the following colour with universal indicator :
   (a) Red (b) Yellow (c) Green (d) Blue **[(31/5/1); (31/5/2); (31/5/3)]**

Short Answer Type Questions [3 Marks]

1) List the important products of the Chlor-alkali process. Write one important use of each.**[(31/1/1); (31/1/2); (31/1/3)]**
2) How is washing soda prepared from sodium carbonate? Give its chemical equation. State thetype of this salt. Name the type of hardness of waterwhichcan be removed by it? **[(31/1/1); (31/1/2); (31/1/3)]**
3) A compound 'A' is used in the manufacture of cement. When dissolved in water, it evolves a large amount of heat and forms compound 'B'.
   (i) Identify A and B.

(ii) Write chemical equation for the reaction of A with water.
(iii) List two types of reaction in which this reaction may be classified. **[(31/2/1); (31/2/2); (31/2/3)]**

4) Give reasons for the following :
(i) Only one half of water molecule is shown in the formula of Plaster of Paris.
(ii) Sodium hydrogen carbonate is used as an antacid.
(iii) On strong heating, blue coloured copper sulphate crystals turn white. **[(31/2/1); (31/2/2)]**

5) (i) Draw a labelled diagram to show the preparation of hydrogen chloride gas in laboratory.
(ii) Test the gas evolved first with dry and then with wet litmus paper. In which of the two cases, does the litmus paper show change in colour?
(iii) State the reason of exhibiting acidic character by dry HCl gas / HCl solution.**[(31/2/1); (31/2/2)]]**

6) (a) What is 'Water of crystalisation'?
(b) With the help of equations, state what happens when
(i) baking soda is heated during cooking?
(ii) gypsum is heated at 373 K? **[(31/2/3)]**

7) With the help of labelled diagram, show an experimental setup for the reaction of Magnesium with dilute sulphuric acid. Give equation of the reaction involved. **[(31/2/3)]**

8) (i) $NaOH(aq) + Zn(s) \rightarrow$
(ii) $CaCO_3\ (s) + H_2O(l) + CO_2(g) \rightarrow$
(iii) $HCl\ (aq) + H_2O(l) \rightarrow$

[(31/3/1); (31/3/2); (31/3/3)]

9) During electrolysis of brine, a gas 'G' is liberated at anode. When this gas 'G' is passed through slaked lime, a compound 'C' is formed, which is used for disinfecting drinking water.
(i) Write formula of 'G' and 'C'.
(ii) State the chemical equation involved.
(iii) What is common name of compound 'C'? Give its chemical name.**[(31/3/1); (31/3/2); (31/3/3)]**

10) 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? **[(31/5/1); (31/5/2); (31/5/3)]**

Long Answer Type Questions [5 Marks]

1) A cloth strip dipped in onion juice is used for testing a liquid 'X'. The liquid 'X' changes its odour. Which type of an indicator is onion juice ? The liquid 'X' turns blue litmus red. List the observations the liquid 'X' will show on reacting with the following :
(a) Zinc granules
(b) Solid sodium carbonate
Write the chemical equations for the reactions involved. **[(31/4/1); (31/4/2); (31/4/3)]**

2) Define water of crystallisation. Give the chemical formula for two compounds as examples. How can it be proved that the water of crystallisation makes a difference in the state and colour of the compounds? **[(31/4/1); (31/4/2); (31/4/3)]**

Year 2019

Very Short Answer Type Questions [2 Marks]

1) Out of HCl and CH3COOH, which one is a weak acid and why? Explain with the help of an example. **[(31/5/1)]**
2) ‘‘Sodium hydrogen carbonate is a basic salt.’’ Justify this statement. How is it converted into washing soda?**[(31/5/1)]**
3) 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. **[(31/5/3)]**
4) A student prepared solutions of (i) an acid and (ii) a base in two separate beakers but forgot to label the solutions and litmus paper is not available in the laboratory. Since both the solutions are colourless, how will he distinguish between the two using (a) phenolphthalein and (b) methyl orange?**[(31/5/3)]**

Short Answer Type Questions [3 Marks]

1) Identify the acid and the base from which sodium chloride isobtained. Which type of salt is it? When is it called rock salt? Howis rock salt formed?**[(31/1/1)**
2) Identify the acid and base which form sodium hydrogen carbonate. Write chemical equation in support of your answer. State whether this compound is acidic, basic or neutral. Also write its pH value.**[(31/1/2)**
3) (a)While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid?
   (b)Dry hydrogen chloride gas does not change the colour of dry litmus paper. Why?**[(31/2/1); (31/2/2)]**
4) How is sodium hydroxide manufactured in industries ? Name the process. In this process a gas X is formed as by-product. This gas reacts with lime water to give a compound Y, which is used as a bleaching agent in the chemical industry. Identify X and Y and write the chemical equation of the reactions involved.**[(31/2/1); (31/2/2); (31/2/3)]**
5) State the effect of concentration of H^+ (aq) ions on the nature of the solution. Do basic solutions also have H^+ (aq) ions? If yes, then why are these basic?**[(31/3/1)]**
6) A dry pellet of a common base B, when kept in open absorbs moisture and turns sticky. The compound B is also a by-product of chlor-alkali process. Identify B. State the type of reaction that occurs when B is treated with an acidic oxide, say sulphur dioxide. Also write chemical equation for the reaction involved.**[(31/3/2)]**
7) Write the chemical formula of washing soda. How can it be obtained from baking soda? List two industries in which washing soda is used for other purposes than washing clothes.**[(31/3/3)]**
8) A white powder is used by doctors to support fractured bones.
   (a) Write the name and chemical formula of the powder.
   (b) How is this powder prepared?
   (c) When this white powder is mixed with water, a hard solid mass is obtained. Write a balanced chemical equation for the change.
   (d) Give one more use of this white powder.**[(31/4/1); (31/4/3)]**
9) Salt ‘P’, commonly used in bakery products, on heating gets converted into another salt ‘Q’ which itself is used for the removal of hardness of water and a gas ‘R’ is evolved. The gas ‘R’ when passed through freshly prepared lime water turns milky. Identify ‘P’, ‘Q’ and ‘R’, giving chemical equation for the justification of your answer.**[(31/4/2)]**

10) A white powder is added while baking cakes to make it soft and spongy. Name its main ingredients. Explain the function of each ingredient. Write the chemical reaction taking place when the powder is heated during baking.**[(31/5/1); (31/5/2)]**

11) In an industrial process used for the manufacture of sodium hydroxide, a gas 'A' is formed as a by-product. The gas 'A' reacts with lime water to give a compound 'B' which is used as a bleaching agent in the chemical industry. Identify 'A' and 'B'. Also give the chemical equations of the reactions involved.**[(31/5/3)]**

Long Answer Type Questions [5 Marks]

1) Write the main difference between an acid and a base. With the help of suitable examples explain the term neutralization and the formation of -
   a. acidic,
   b. basic and
   c. neutral salts **[(31/1/3)]**

Practical Skilled Based Question

1) Blue litmus solution is added to two test tubes A and B containing dilute HCl and NaOH solution respectively. In which test tube a colour change will be observed? State the colour change and give its reason.**[(31/1/1); (31/1/2); (31/1/3)]**
2) What is observed when 2 mL of dilute hydrochloric acid is added to 1 g of sodium carbonate taken in a clean and dry test tube? Write chemical equation for the reaction involved.**[(31/1/1); (31/1/2); (31/1/3)]**
3) A teacher provided acetic acid, water, lemon juice, aqueous solution of sodium hydrogen carbonate and sodium hydroxide to students in the school laboratory to determine the pH values of these substances using pH papers. One of the students reported the pH values of the given substances as 3, 12, 4, 8 and 14 respectively. Which one of these values is not correct? Write its correct value stating the reason.**[(31/2/1); (31/2/2); (31/2/3)]**
4) What is observed when a pinch of sodium hydrogen carbonate is added to 2 mL of acetic acid taken in a test tube? Write chemical equation for the reaction involved in this case. **[(31/2/1); (31/2/2); (31/2/3)]**
5) A solution 'X' gives orange colour when a drop of it falls on pH paper, while another solution 'Y' gives bluish colour when a drop of it falls on pH paper. What is the nature of both the solutions ? Determine the pH of solutions 'X' and 'Y'.**[(31/4/1); (31/4/2); (31/4/3)]**
6) How is the presence of an acid tested with a strip of red litmus paper? **[(31/5/1); (31/5/2); (31/5/3)]**
7) A student is performing an experiment to study the properties of acetic acid. Answer the following questions:
   (i) Name the substance he must add to acetic acid to produce carbon dioxide.
   (ii) Give the relevant chemical equation for the reaction.
   (iii) How would he test CO_2 gas in the laboratory?**[(31/5/1); (31/5/2); (31/5/3)]**

Year 2018

Short Answer Type Questions [3 Marks]

1) 2 mL of sodium hydroxide solution is added to a few pieces of granulated zinc metal taken in a test tube. When the contents are warmed, a gas evolves which is bubbled through a soap solution before testing. Write the equation of the chemical reaction involved and the test to detect the gas. Name the gas which will be evolved when the same metal reacts with dilute solution of a strong acid.**[All India]**
2) The pH of a salt used to make tasty and crispy pakoras is 14. Identify the salt and write a chemical equation for its formation. List its two uses.**[All India]**
3) Write the name of the white powder generally added to besan to make soft and crisp pakoras. List two ingredients of this powder and write function of each. Also give the equation for the chemical reaction that takes place when this powder is heated. **[For Blind Student]**
4) What is water of crystallization? Name and give formula of two salts which contain water of crystallization. **[For Blind Student]**

Practical Skill Based Questions [2 Marks]

1) A student dips one pH paper in solution A and another pH paper in solution B and observes that the pH paper turns blue in solution A and orange in solution B respectively. Identify solution A and B. Find the value of pH of solutions A and B.**[For Blind Student]**

Year 2015

Very Short Answer Type Questions [2 Marks]

1) Name the acid present in the following:
   (i) Tomato (ii) Vinegar (iii) Tamarind
2) 2.15 mL of water and 10 mL of sulphuric acid are to be mixed in a beaker
   (i) State the method that should be followed with reason.
   (ii)What is this process called?
3) Explain how antacid works.

Short Answer Type Questions [3 Marks]

1) (a) Define olfactory indicators. Name two subtances which can be used as olfactory indicator.
   (b) Choose strong acids from the following:CH_3COOH, H_2SO_4, H_2CO_3, HNO_3
2) 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.
3) Explain the action of dilute hydrochloric acid on the following with chemical equation:
   (i) Magnesium ribbon (ii) Sodium hydroxide (iii) Crushed egg shells

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.
(b) How is washing soda is obtained from baking soda? Write balanced chemical equation.

Year 2014

Short Answer Type Question [2 Marks]

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

Year 2013

Short Answer Type Question [2 Marks]

1) 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.

Short Answer Type Question [3 Marks]

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

Long Answer Type Question [5 Marks]

1) Equal length of magnesium ribbons are taken in two test tubes 'A' and 'B'. H_2SO_4 is added to test tube 'A' and H_2CO_3 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.

Year 2012

Very Short Answer Type Question [1 Mark]

1) How will you test for the gas which is liberated when hydrochloric acid reacts with an active metal? **[CBSE (CCE)]**

Short Answer Type Questions [3 Marks]

1) (a) Write the name given to bases that are highly soluble in water. Give an example.
(b) How is tooth decay related to pH? How can it be prevented?
(c) Why does bee sting cause pain and irritation? Rubbing of baking soda on the sting area gives relief. How? **[CBSE (CCE)]**
2) A white powder is added while baking breads and cakes to make them soft and fluffy. Write the name of the powder. Name its main ingredients. Explain the function of each ingredient. Write the chemical reaction taking place when the powder is heated during baking.**. [CBSE (CCE)]**
3) "Sodium hydrogencarbonate is a basic salt". Justify the statement. How is it converted into washing soda? Explain**. [CBSE (CCE)]**

Long Answer Type Questions [5 Marks]

1) Describe an activity with diagram to illustrate that the reaction of metal carbonates and metal bicarbonates with acids produces carbon dioxide. Write the relevant equations of all the reactions that take place. Name any two forms in which calcium carbonate is found in nature. **[CBSE (CCE)]**
2) (a) 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.
(b) What is rock salt? Mention its colour and the reason due to which it has this colour.
(c) What happens when electricity is passed through brine? Write the chemical equation for it. **[CBSE (CCE)]**
3) (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. **[CBSE (CCE)]**
4) (i) Dry pellets of a base 'X' when kept in open absorbs moisture and turns sticky. The compound is also formed by chlor-alkali process. Write chemical name and formula of X. Describe chlor-alkali process with balanced chemical equation. Name the type of reaction occurs when X is treated with dilute hydrochloric acid. Write the chemical equation.
(ii) While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid? **[CBSE (CCE)]**
5) 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? With the help of balanced chemical equations for all the changes explain the observations. **[CBSE (CCE)]**
6) (a) Identify the compound of calcium which is yellowish white powder and is used for disinfecting drinking water. Write its chemical name and formula. How is it manufactured? Write the chemical equation for the reaction involved. Also list two other uses of the compound.
(b) Write the balanced chemical equation of chlor-alkali process. **[CBSE (CCE)]**
7) (a) Mention the pH range within which our body works. Explain how antacids give relief from acidity. Write the name of one such antacid.
(b) Fresh milk has a pH of 6. How does the pH will change as it turns to curd? Explain your answer.
(c) A milkman adds a very small amount of baking soda to fresh milk. Why does this milk take a

longer time to set as curd?
(d) Mention the nature of toothpastes. How do they prevent tooth decay? **[CBSE (CCE)]**

8) (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 compound whose one formula unit is associated with 10 water molecules. How is it prepared? Give equations of related reactions. Give two uses of the compound. **[CBSE (CCE)]**

9) (a) Explain the following chemical properties of acids with the help of balanced chemical equations only.
(i) When an acid reacts with a metal carbonate.
(ii)When an acid reacts with a metal bicarbonate.
(iii) When an acid reacts with a metal oxide.
(b) You are given three solutions A, B and C with pH values 2, 10 and 13 respectively. Write which solution has more hydrogen ion concentration among the three and state the nature 'acidic or basic' of each solution. **[CBSE (CCE)]**

10) (a) A metal compound 'X' reacts with dil. H_2SO_4 to produce effervescence, The gas evolved extinguishes a burning candle. If one of the compound formed is calcium sulphate, then what is 'X' and the gas evolved? Also, write a balanced chemical equation for the reaction which occurred.
(b) (i) Name one antacid. How does it help to relieve indigestion in stomach?
(ii) A farmer treats the soil with quicklime or calcium carbonate. What is the nature of soil? Why does the farmer treat the soil with quicklime? **[CBSE (CCE)]**

11) What are strong and weak acids? In the following list of acids, separate strong acids from weak acids.
Hydrochloric acid, citric acid, acetic acid, nitric acid, formic acid, sulphuric acid. **[CBSE (CCE)]**

Year 2011

Very Short Answer Type Questions [2 Marks]

1) State the chemical name of Plaster of Paris. Write a chemical equation to show the reaction between Plaster of Paris and water. **[CBSE (CCE)]**
2) State in brief the preparation of washing soda from baking soda. Write balanced chemical equation of the reaction involved. **[CBSE (CCE)]**
3) What is the colour of $FeSO_4.7H_2O$ crystals? How does this colour change upon heating? Give balanced chemical equation for the changes. **[CBSE (CCE)]**
4) Classify the following salts into acidic, basic and neutral: Potassium sulphate, ammonium chloride, sodium carbonate, sodium chloride. **[CBSE (CCE)]**
5) A student dropped few pieces of marble in dilute HCl contained in a test tube. The evolved gas was passed through lime water. **[CBSE (CCE)]**
(i) What change would be observed in lime water?
(ii) Write balanced chemical equation for the above change.

Short Answer Type Questions [3 Marks]

1) (a) What is universal indicator? **[CBSE (CCE)]**
(b) Write the chemical equation involved in the preparation of sodium hydroxide. Name the process.

2) A gas 'X' reacts with lime water and forms a compound 'Y' which is used as a bleaching agent in chemical industry. Identify 'X' and 'Y'. Give the chemical equation of the reactions involved. **[CBSE (CCE)]**
3) (i) Name the compound which is obtained from baking soda and is used to remove permanent hardness of water. **[CBSE (CCE)]**
   (ii) Write its chemical formula.
   (iii) What happens when it is recrystallised from its aqueous solution?
4) What is a neutralisation reaction? Give two examples. **[CBSE (CCE)]**
5) What is tooth enamel chemically? State the condition when it starts corroding. What happens when food particles left in the mouth after eating degrade? Why do doctors suggest use of tooth powder/toothpaste to prevent tooth decay?
6) What is Plaster of Paris chemically? How is it prepared? List its two important uses. **[CBSE (CCE)]**
7) What is baking soda chemically called? Give reaction involved in its preparation. Write one of its uses. **[CBSE (CCE)]**
8) (a) What is an alkali? Give an example. **[CBSE (CCE)]**
   (b) Why do HCl, HNO_3, etc. show acidic characters in aqueous solutions while solutions of compounds like alcohol and glucose do not show acidic character?
9) Compounds like alcohols and glucose also contain hydrogen but are not categorised as acids. Discuss an activity to prove it. **[CBSE (CCE)]**

Year 2010

Very Short Answer Type Questions [1 Mark]

1) The pH of a sample of vegetable soup was found to be 6.5. How is this soup likely to taste? **[All India]**
2) Which bases are called alkalies? Give an example of alkalies. **[All India, Foreign]**
3) Write a balanced chemical equation for the reaction between sodium carbonate and hydrochloric acid indicating the physical state of the reactants and the products. **[Foreign]**
4) Write a balanced chemical equation for a neutralisation reaction, mentioning the physical state of the reactants and the products.

Short Answer Type Question [2 Marks]

1) What happens when chlorine is passed over slaked lime at 313K? Write chemical equation of the reaction involved and state two uses of the product obtained. **[Foreign]**

Year 2009

Very Short Answer Type Questions [1 Mark]

1) What effect does an increase in concentration of H^+ (ag.) in a solution have on the pH of solution ? **[All India]**
2) Fresh milk has a pH of 6. When it changes into curd (yogurt) will its pH value increase or decrease ? Why? **[Delhi]**
3) Which gas is generally liberated when a dilute solution of hydrochloric acid reacts with an active metal? **[Foreign]**
4) What would be the colour of red litmus in a solution of sodium carbonate? **[Delhi]**

5) Which gas is evolved when sodium hydrogen carbonate reacts with dilute hydrochloric acid?
6) Curd is not kept in copper and brass utensils. Why? **[All India (C)]**
7) Name the gas usually liberated when a dilute acid reacts with a metal. What happens when a burning candle is brought near this gas? **[All India (C)]**
8) What effect does an increase in concentration of H^+(aq.) in a solution have on the pH of solution?
9) Which one of these has a higher concentration of H^+ ions ? 1 M HCl or 1 M CH_3COOH **[All India]**
10) Why does 1 M HCl solution have a higher concentration of H^+ ions than 1 M CH_3COOH solution? **[All India]**
11) Which gas is generally liberated when a dilute solution of hydrochloric acid reacts with an active metal? **[Foreign]**
12) What is the colour of litmus in a solution of ammonium hydroxide? **[Foreign]**
13) Which gas is revolved when sodium hydrogen carbonate react with dilute hydrochloric acid **[Delhi (C)]**

Very Short Answer Type Questions [2 Marks]

1) What is meant by 'water of crystallisation' of a substance? Describe an activity to show that blue copper sulphate crystals contain water of crystallisation. **[Foreign, Delhi]**
2) (i) Name the products formed when sodium hydrogen carbonate is heated.
(ii) Write the chemical equation for the reaction involved in the above. **[All India]**
3) A compound which is prepared from gypsum has the property of hardening when mixed with a proper quantity of water. Identify the compound. Write the chemical equation for its preparation. For what purpose is it used in hospitals ? **[Delhi]**

Short Answer Type Questions [3 Marks]

1) A compound which is prepared from gypsum has the property of hardening when mixed with proper quantity of water. **[Delhi, All India]**
(i) Identify the compound.
(ii) Write the chemical equation for its preparation.
(iii) Mention one important use of this compound.
2) Name the products formed in each case when **[All India (C)]**
(a) hydrochloric acid reacts with caustic soda.
(b) granulated zinc reacts with caustic soda.
(c) carbon dioxide is passed into lime water.

Year 2008

Short Answer Type Questions [1 Marks]

1) How does the flow of acid rain water into a river make the survival of aquatic life in the river difficult? **[All India]**
2) On adding dilute hydrochloric acid to copper oxide powder, the solution formed is blue green. Predict the new compound formed which imparts a blue-green to the solution. **[Delhi]**
3) How is the pH of a solution of an acid influenced when it is diluted? **[Foreign]**
4) How does the pH of the solution change when a solution of a base is diluted? **[Foreign]**
5) Arrange the following in an increasing order of their pH values.
NaOH solution, Blood, Lemon juice **[Foreign]**

Short Answer Type Questions [2 Marks]

1) Write the chemical formula for washing soda. How may it be obtained from baking soda ? Name an industrial use of washing soda other than washing clothes.
2) Write the chemical formula for bleaching powder. How is bleaching powder prepared ?For what purpose is it used in paper factories? **[All India]**
3) What is the chemical formula for Plaster of Paris? How is it prepared? State the common and the chemical names of the compound formed when Plaster of Paris is mixed with water.
4) A compound 'X' of sodium is commonly used in kitchen for making crispy pakoras. It is used for curing acidity in the stomach. Identify 'X'. What is its chemical formula? State the reaction which takes place when it is heated during cooking. **[Delhi (C)]**
5) What is 'Baking Powder'? How does it make the cake soft and spongy? **[Delhi]**
6) Write the chemical formulae of washing soda and baking soda. Which one of these two is an ingredient of antacids? How does it provide relief in stomach ache? **[Foreign]**

Short Answer Type Questions [3 Marks]

1) (a) Why does an aqueous solution of an acid conduct electricity?
   (b) How does the concentration of hydronium ions [H_3O^+] change when a solution of an acid is diluted?
   (c) Which has a higher pH value, a concentrated or dilute solution of hydrochloric acid?
   (d) What would you observe on adding dilute hydrochloric acid to
   (i) solid sodium carbonate placed in a test tube?
   (ii) zinc metal in a test tube?