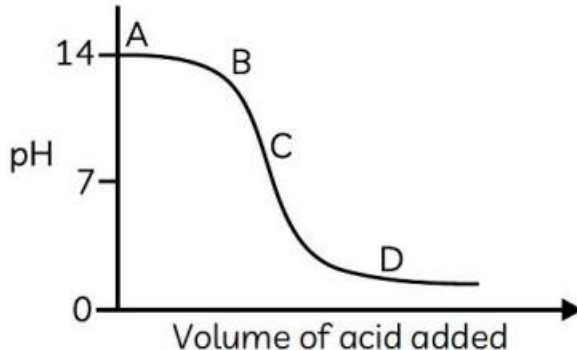


	INDIAN SCHOOL AL WADI AL KABIR	
Class: X	Department: SCIENCE (2026– 27) SUBJECT: CHEMISTRY	Date: 25/07/2026
Worksheet: 02	CHAPTER / UNIT: Acids, Bases and Salts	Note: A4 FILE FORMAT
CLASS & SEC:	NAME OF THE STUDENT:	ROLL NO.

MULTIPLE CHOICE QUESTIONS

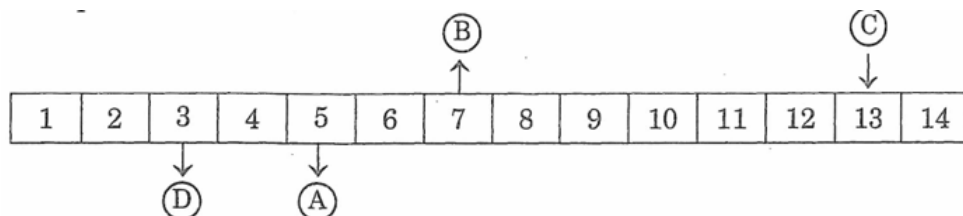
1. The graph given below depicts a neutralisation reaction (acid + alkali $\rightarrow$ salt + water). The pH of a solution changes as we add an excess of acid to an alkali.



- Which letter denotes the area of the graph where both acid and salt are present?
- A
 - B
 - C
 - D
2. A solution of a base with pH 12.1 is given. Which of the following can be done to decrease its pH?
- Add distilled water to it.
 - Add a solution of a different base with pH 8.7.
 - Add a few drops of an acid with an unknown pH.

- (a) Only (I)
- (b) Only (III)
- (c) Only (I) and (II)
- (d) Any of (I), (II) and (III)

3. The following table shows pH values of four solutions A, B, C and D, on a pH scale. (CBSE board question 2025)



The solutions A, B, C and D, respectively, are of a

- (a) Strong acid, weak acid, neutral, strong base
- (b) Weak acid, neutral, weak base, strong base
- (c) Weak acid, neutral, strong base, weak base
- (d) Weak acid, neutral, strong base, strong acid

4. Consider the following reactions: (CBSE board question 2025)

- I. Dilute hydrochloric acid reacts with sodium hydroxide.
- II. Magnesium oxide reacts with dilute hydrochloric acid.
- III. Carbon dioxide reacts with sodium hydroxide.

It is found that in each case:

- (a) Salt and water are formed.
- (b) Neutral salts are formed.
- (c) Hydrogen gas is formed.
- (d) Acidic salts are formed.

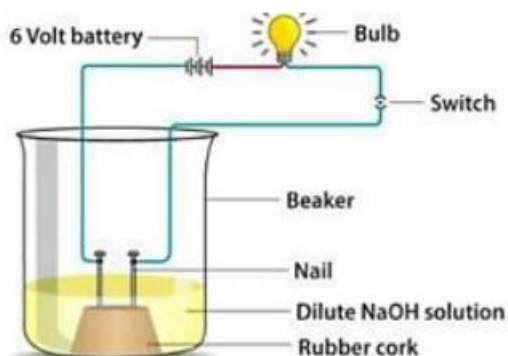
5. Baking powder is a mixture of: (CBSE 2026)

- (a) Sodium carbonate + Acetic acid
- (b) Sodium carbonate + Tartaric acid
- (c) Sodium hydrogen carbonate + Tartaric acid
- (d) Sodium hydrogen carbonate + Acetic acid

6. Which one of the following can be used as an acid-base indicator by a visually impaired (blind) student? (CBSE 2026)

- (a) Turmeric
- (b) Vanilla essence
- (c) Methyl orange
- (d) Litmus

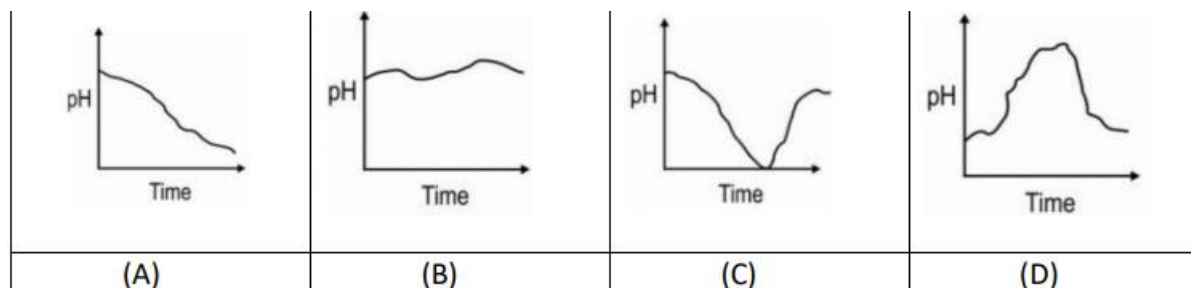
7. In an attempt to demonstrate electrical conductivity through an electrolyte, the following apparatus was set up.



Which among the following statements is (are) correct?

- I. The bulb will not glow because the electrolyte is not acidic.
 - II. The bulb will glow because NaOH is a strong base and furnishes ions for conduction.
 - III. The bulb will not glow because the circuit is incomplete.
 - IV. The bulb will not glow because it depends upon the type of electrolytic solution
- (a) (i) and (iii)
(b) (ii) and (iv)
(c) (ii) only
(d) (iv) only
8. The natural sources of oxalic acid, lactic acid and methanoic acid, respectively, are: (CBSE 2026)
- (a) tomato, curd, ant-sting
 - (b) tomato, orange, nettle-sting
 - (c) orange, milk, ant-sting
 - (d) orange, sour milk, nettle-sting
9. A metal carbonate reacts with a solution X, which forms a salt, water and a gas Y. What are X and Y? (CBSE 2026)
- (a) X – Sodium hydroxide, Y – Carbon dioxide
 - (b) X – Sodium hydroxide, Y – Hydrogen
 - (c) X – Hydrochloric acid, Y – Carbon dioxide
 - (d) X – Hydrochloric acid, Y – Hydrogen
10. The pH of the gastric juices released during digestion is: (CBSE 2026)
- (a) Less than 7
 - (b) More than 7
 - (c) Equal to 7
 - (d) Equal to 0

11. Which of the following graphs shows how the pH of milk changes as it forms curd?



ASSERTION AND REASON QUESTIONS

- (a) Both A and R are true, and R is the correct explanation of A.
 (b) Both A and R are true, and R is not the correct explanation of A.
 (c) A is true, but R is false.
 (d) A is false, but R is true.
12. Assertion: Sodium hydrogencarbonate is used as an ingredient in antacids.
 Reason: NaHCO_3 is a mild, noncorrosive basic salt.
13. Assertion: HCl gas does not change the colour of dry blue litmus paper.
 Reason: Acids always produce hydrogen ions.
14. Assertion: Dilute hydrochloric acid reacts with zinc to produce hydrogen gas.
 Reason: Zinc is less reactive than hydrogen.
15. Assertion: Lime water turns milky when carbon dioxide is passed through it.
 Reason: Calcium carbonate is insoluble in water.

VERY SHORT ANSWER QUESTIONS

16. On adding a few drops of universal indicator to three colourless solutions X, Y and Z taken separately in three test tubes, a student observed the changes in colour as green in X, red in Y and blue in Z.
- (a) Arrange X, Y and Z in increasing order of their pH values.
 (b) Which one of the three, X, Y and Z, will change the colour of phenolphthalein? Why?
17. A calcium compound, which is a yellowish-white powder, is used as a disinfectant and also in the textile industry. Name the compound. Write the equation to represent the formation of this compound.
18. A compound of sodium X is used in the kitchen to make the 'pakoras' crispy. It is also used to neutralise stomach acid.
- (a) Identify the compound X and write its chemical formula.
 (b) What chemical reaction occurs on heating it during the cooking of food?
19. Write one word/term for the following:

- (a) Water-soluble base
- (b) A substance which dissociates on dissolving in water to produce hydrogen ions [H^+ (aq) ions]
- (c) A reaction between an acid and a base to form a salt and water.
- (d) A substance which dissociates on dissolving in water to produce hydroxide ions [OH^- ions]

SHORT ANSWER QUESTIONS

20. A milkman adds a very small amount of baking soda to fresh milk.
- (a) Why does he shift the pH of the fresh milk from 6 to slightly alkaline?
 - (b) Why does this milk take a long time to set as curd?
21. A sulphate salt is a white, soft powder X, which can be moulded into different shapes by making it into dough. When this compound is left open for some time, it becomes a solid mass, Y and cannot be used for moulding purposes. Identify the white powder X and solid mass Y. Give the reaction involved. Write any two uses of X.
22. Give reasons for the following:
- (a) Only one-half of a water molecule is shown in the formula of Plaster of Paris.
 - (b) Sodium hydrogen carbonate is used as an antacid.
 - (c) On strong heating, blue coloured copper sulphate crystals turn white.
23. A water-soluble compound 'X' of sodium, on reacting with dilute H_2SO_4 , released a colourless and odourless gas accompanied by brisk effervescence. When the gas was passed through water, the solution obtained turned the blue litmus paper red. On bubbling the gas through lime water, it initially became milky, and the milkiness disappeared when the gas was passed in excess. Identify the substance 'X' and write the chemical equation for the reactions involved.

LONG ANSWER QUESTIONS

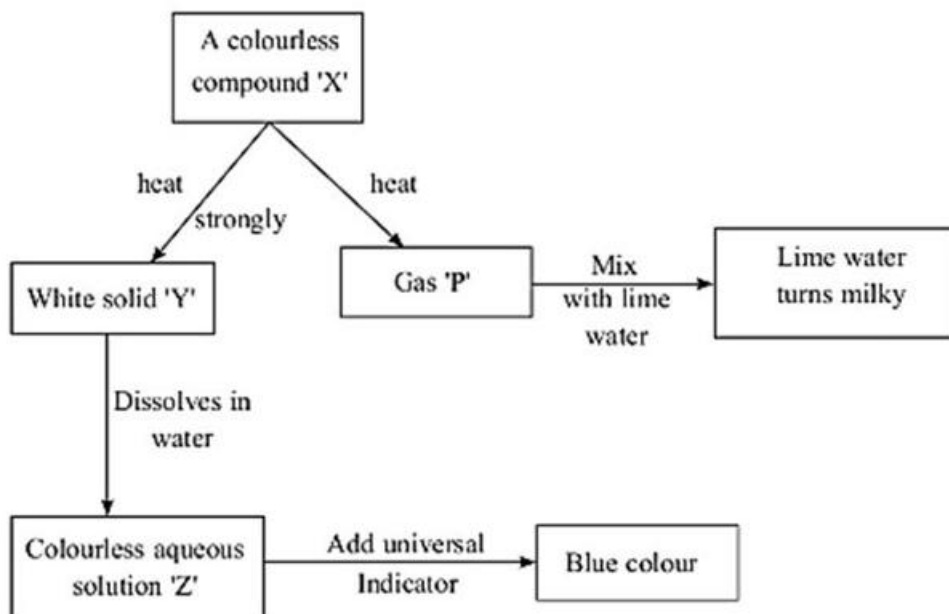
24. The metal sodium reacts with air and water. A student reacted sodium with water and measured the volume of gas at intervals of 30 seconds. The results are shown below:

Time/s	0	30	60	90
Volume/ cm^3	40	40	60	74

- (a) Name the gas liberated in the above reaction. Write the reaction involved.
 - (b) How will you test this gas?
 - (c) What will be the colour of the universal indicator when added to the solution formed? What does it show?
25. (i) What are strong acids and weak acids? Give an example for each.
- (ii) A dry pellet of a common base B, when kept in the open, absorbs moisture and turns sticky. The compound is also formed by the chlor-alkali process. Identify B. What type of reaction occurs when B is treated with dilute hydrochloric acid? Write the chemical equation.

CASE STUDY BASED QUESTIONS

26. Lime is an alkaline substance. The given figure shows some of the properties of a calcium compound X. The letters are not chemical symbols of substances.



Answer the questions that follow:

- Identify X and Y.
 - Identify Z and predict its nature.
 - Write the reaction of 'Y' to get 'Z' and 'Z' to get 'X'
- OR
- Name an acid which can liberate P from X.
 - Name the compound formed when excess carbon dioxide is passed through lime water.

PREVIOUS YEAR BOARD QUESTIONS

27.

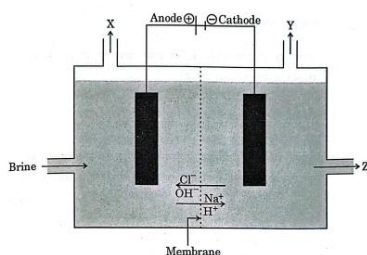
- A mild corrosive basic salt A, used for faster cooking, is strongly heated to produce compound B, which is used for removing permanent hardness of water. Identify A and B, and also write the equation for the reaction that occurs when heated.
- Define water of crystallisation. Give two examples of salts that have water of crystallisation.
(CBSE 2024)

28. Identify the acid and base which form sodium hydrogen carbonate. Write a chemical equation in support of your answer. State whether the compound is acidic, basic or neutral. Also write its pH value.

29. Read the following passage and answer the questions that follow: (CBSE 2026)

In the given diagram, when electricity is passed through an aqueous solution of a common salt, a substance 'Z' is produced, along with the evolution of gases 'X' and 'Y'. When a burning matchstick is

brought near the gas 'Y', it burns with a pop sound, whereas 'X' is used for disinfecting drinking water. When 'X' is passed through slaked lime, an insoluble substance 'A' is produced.



- (a) Write the names of the gases 'X' and 'Y'.
- (b) Write the balanced chemical equation for the formation of substance 'Z'.
- (c) (i) What happens:
 - (I) If a drop of red litmus solution is added to the aqueous solution of substance 'Z'?
 - (II) CO_2 gas is passed through an ammoniacal solution of aqueous NaCl ?

OR

- (c) (ii) Identify the substance 'A' and write the balanced chemical equation of the reaction which takes place in its preparation.
30. Compounds such as alcohol and glucose also contain hydrogen but are not categorised as acids. Describe an activity to prove it. (CBSE 2017)
 31. A compound X, which is prepared from gypsum, has the property of hardening when mixed with a proper quantity of water:
 - (a) Identify the compound X
 - (b) Write the chemical equation for its preparation
 - (c) For what purpose is it used in hospitals? (CBSE 2022-23)
 32. Sara took 2 mL of dilute NaOH solution in a test tube and added two drops of phenolphthalein solution to it. The solution turned pink in colour. She added dilute H_2SO_4 to the above solution dropwise until the solution in the test tube became colourless. 40 drops of dilute H_2SO_4 were used for the change in colour from pink to colourless. When Sara added a drop of NaOH to the solution, the colour changed to back to pink again. Sara now tried the activity with different volumes of NaOH and recorded her observations in the table given below:

S. No.	Volume of dil. NaOH taken (mL)	Drops of dil. H_2SO_4 used
1	2	20
2	3	30
3	4	40

Answer the following questions based on the above information:

- A. If Sara used concentrated H_2SO_4 in place of dilute H_2SO_4 , how many drops would be required for the change in colour to be observed? (a) 40 (b) < 40 (c) > 40 . Justify your answer.
- B. Sara measured 20 drops of dil. H_2SO_4 and found its volume to be 1 mL. If Sara observed a change in colour of NaOH solution by using 3 mL of H_2SO_4 , how many mL of NaOH did she add to the test tube initially?

OR

Sara takes 10 drops of dilute H_2SO_4 in the test tube and adds two drops of phenolphthalein solution to it. Then she adds NaOH dropwise. Sara

observes a change in colour after adding 20 drops of NaOH. What change in colour would she observe and why?

- C. Write a balanced chemical equation for the reaction taking place in the above experiment. Which of the following is true and why? The reaction is a,
- (a) neutralisation and double displacement reaction
 (b) neutralisation and precipitation reaction
 (c) precipitation and double displacement reaction
 (d) neutralisation, double displacement, as well as precipitation reaction. (CBSE 2025-26-Sample paper)

ANSWERS

1.	(d) D
2.	(d) Any of (I), (II) and (III)
3.	(d) Weak acid, neutral, strong base, strong acid
4.	(a) Salt and water are formed.
5.	(c) Sodium hydrogen carbonate + Tartaric acid
6.	(b) Vanilla essence
7.	(c) (ii) only
8.	(a) tomato, curd, ant-sting
9.	(c) X – Hydrochloric acid, Y – Carbon dioxide
10.	(a) Less than 7
11.	(a) A
12.	(a) Both A and R are true, and R is the correct explanation of A.
13.	(b) Both A and R are true, and R is not the correct explanation of A.
14.	(c) A is true, but R is false.
15.	(a) Both A and R are true, and R is the correct explanation of A.
16.	(a) $Y < X < Z$ (b) Z. Phenolphthalein is colourless in acidic and neutral solutions but turns pink in basic solutions. Since Z is basic (blue with universal indicator), it will change phenolphthalein to pink.

17.	Bleaching powder or calcium oxychloride. Bleaching powder is produced by the action of chlorine on dry slaked lime $[\text{Ca}(\text{OH})_2]$ $\text{Ca}(\text{OH})_2 + \text{Cl}_2 \rightarrow \text{CaOCl}_2 + \text{H}_2\text{O}$
18.	(a) The compound X is sodium hydrogen carbonate. Its chemical formula is NaHCO_3 . (b) The following chemical reaction takes place while heating food during cooking: $2\text{NaHCO}_3 \rightarrow 2\text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2$
19.	(i) Alkali. (ii) Acid. (iii) Neutralisation reaction. (iv) Base.
20.	(a) Milk is made slightly alkaline so that it may not become sour easily due to the formation of lactic acid in it. (b) This is because the lactic acid being formed has to first neutralise the alkali present in it.
21.	X: Calcium sulphate hemihydrate (Plaster of Paris, $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$) Y: Gypsum (Calcium sulphate dihydrate, $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O} + \frac{3}{2}\text{H}_2\text{O} \rightarrow \text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ Uses: Making casts for fractured bones Making moulds and decorative items
22.	(a) Only one half of water molecule is shown in the formula of plaster of paris because two formula units of CaSO_4 share one molecule of water. (b) Sodium hydrogen carbonate is used as an antacid because it is alkaline in nature and neutralises excess acid in stomach and provides relief. (c) Blue coloured copper sulphate crystals on strong heating loses molecules of water of crystallisation and changes to anhydrous copper sulphate which is white in colour.
23.	X-Sodium carbonate (Na_2CO_3) 1. Reaction with dilute sulphuric acid: $\text{Na}_2\text{CO}_3(\text{aq}) + \text{H}_2\text{SO}_4(\text{aq}) \rightarrow \text{Na}_2\text{SO}_4(\text{aq}) + \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l})$ 2. CO_2 passed through water $\text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l}) \rightarrow \text{H}_2\text{CO}_3(\text{aq})$ 3. CO_2 passed through limewater

	$\text{Ca(OH)}_2(aq) + \text{CO}_2(g) \rightarrow \text{CaCO}_3(s) + \text{H}_2\text{O}(l)$ 4. Excess CO_2 passed $\text{CaCO}_3(s) + \text{CO}_2(g) + \text{H}_2\text{O}(l) \rightarrow \text{Ca(HCO}_3)_2(aq)$
24.	(a) The gas liberated in this reaction is Hydrogen. The chemical equation for the reaction between sodium metal and water is: $2\text{Na}(s) + 2\text{H}_2\text{O}(l) \rightarrow 2\text{NaOH}(aq) + \text{H}_2(g)$ (b) Collect the gas in a test tube. Bring a burning wooden splinter near the mouth of the test tube. The gas will burn with a characteristic "pop" sound, which confirms the presence of hydrogen. (c) The universal indicator will turn purple or dark blue. This indicates that the solution formed is strongly alkaline
25.	(i) Acids of a particular concentration that give rise to more H^+ ions are said to be strong acids and acids of a particular concentration that give less H^+ ions are said to be weak acids. Example: Strong acid: Hydrochloric acid (or any other example) Weak acid: Acetic acid (or any other example) (ii) B is sodium hydroxide (NaOH) $\text{NaOH} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O}$
26.	(a) X = Calcium carbonate (CaCO_3) Y = Calcium oxide (CaO) (quicklime) (b) Z = Calcium hydroxide (Ca(OH)_2) (formed when CaO reacts with water) Nature: Alkaline (basic) (c) Reactions: - Y to Z: $\text{CaO}(s) + \text{H}_2\text{O}(l) \rightarrow \text{Ca(OH)}_2(aq)$ - Z to X: $\text{Ca(OH)}_2(aq) + \text{CO}_2(g) \rightarrow \text{CaCO}_3(s) + \text{H}_2\text{O}(l)$ OR a. (i) Dilute hydrochloric acid (HCl) (ii) Calcium hydrogen carbonate ($\text{Ca(HCO}_3)_2$)

Prepared by:
Ms Athira C C

Checked by:
HOD Science