

CBSE CLASS X
Science (086)**QUESTION PAPER***From previous CBSE Board Exam questions***Code: IR1A5N****Questions: 86****Maximum Marks: 164****Generated: 2026-06-15 13:05****SELECTIONS USED**

Source	Previous-year board
Subject	Science
Lessons	Acids, Bases and Salts
Year	2022-2026
Questions selected	86

Composition — Types: 43 MCQ · 21 Short · 11 Very short · 6 Long · 4 source_based · 3 Case-based · 2 Assertion–reason

Q1. § 5.2.4 Nutrition in Human Beings § 5.3 RESPIRATION**[1]**

The pH of the gastric juices released during digestion is :

- (A) Less than 7
- (B) More than 7
- (C) Equal to 7
- (D) Equal to 0

Previously asked in: 2026 31/2/1 Q21

♦ Life Processes

Gastric glands and secretions in the stomach

Role of Hydrochloric Acid in digestion

pH of gastric juice

Q2. § Introduction § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON?**[1]**

Acid present in tomato is :

- (a) Methanoic acid
- (b) Acetic acid
- (c) Lactic acid
- (d) Oxalic acid

Previously asked in: 2023 31/4/1 Q4

♦ Acids, Bases and Salts

Naturally occurring acids in common substances

Q3. § Introduction § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES**[1]**

The natural sources of oxalic acid, lactic acid and methanoic acid respectively are :

- A tomato, curd, ant-sting
- B tomato, orange, nettle-sting
- C orange, milk, ant-sting
- D orange, sour milk, nettle-sting

Previously asked in: 2026 31/1/1 Q22

♦ Acids, Bases and Salts

Natural sources of common acids

Q4. § Introduction § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES

[1]

Juice of tamarind turns blue litmus to red. It is because of the presence of an acid called :

- (A) methanoic acid
- (B) acetic acid
- (C) tartaric acid
- (D) oxalic acid

Previously asked in: 2024 31/2/1 Q2

♦ Acids, Bases and Salts

Natural acids and their sources (tartaric acid in tamarind)

Q5. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? § 2.4 MORE ABOUT SALTS [1]

A common feature observed in the crystals of washing soda, copper sulphate, gypsum and ferrous sulphate is that all

- A exhibit basic nature
- B exhibit acidic nature
- C have fixed number of molecules of water of crystallisation in one formula unit of these salts.
- D are coloured

Previously asked in: 2025 31/5/1 Q3

♦ Acids, Bases and Salts

Water of crystallisation

Q6. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.4 MORE ABOUT SALTS [1]

Consider the following compounds :

FeSO_4 ; CuSO_4 ; CaSO_4 ; Na_2CO_3

The compound having maximum number of water of crystallisation in its crystalline form in one molecule is :

- (a) FeSO_4
- (b) CuSO_4
- (c) CaSO_4
- (d) Na_2CO_3

Previously asked in: 2024 31/1/1 Q5

♦ Acids, Bases and Salts

Water of crystallisation

Q7. § 2.4 MORE ABOUT SALTS [1]

The oxide which can react with HCl as well as KOH to give corresponding salt and water is

- (A) CuO
- (B) Al_2O_3
- (C) Na_2O
- (D) K_2O

Previously asked in: 2024 31/2/1 Q4

♦ Acids, Bases and Salts

Amphoteric oxides – reaction with acids and bases

Reaction of metal oxides with acids

Q8. § Introduction § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES [1]

Juice of tamarind turns blue litmus to red. It is because of the presence of a chemical compound called

- (A) Acetic acid
- (B) Methanoic acid
- (C) Oxalic acid
- (D) Tartaric acid

Previously asked in: 2025 31/6/1 Q6

♦ Acids, Bases and Salts

Acidic nature of substances and litmus test

Q9. § Introduction § 2.3 HOW STRONG ARE ACID OR BASE SOLUTIONS?

[3]

Answer the following:

- (a) Suggest one remedial measure each to counteract the change in pH in human beings in following cases : (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 ?

Previously asked in: 2023 31/1/1 Q28

♦ Acids, Bases and Salts Importance of pH in everyday life pH of milk and curd

Q10. § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON?

[1]

In which case/cases will the bulb glow considering that all other connections of electric circuit are complete and working ?

- (A) Case (i) only
(B) Case (ii) only
(C) Cases (ii) and (iii)
(D) Case (iii) only

Previously asked in: 2026 31/3/1 Q22

♦ Acids, Bases and Salts Electrical conductivity test using electrolytic solution to detect presence of ions

Q11. § 2.3 HOW STRONG ARE ACID OR BASE SOLUTIONS?

[1]

The following table shows the pH values of four solutions A, B, C and D on a pH scale :

1	2	3	4	5	6	7	8	9	10	11	12	13	14
			D			B					C		A

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

Previously asked in: 2025 31/1/1 Q3

♦ Acids, Bases and Salts pH scale and nature of solutions (acidic, basic, neutral)

Q12. § Introduction

[4]

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

Answer the questions based on the following case:

- (a) For the solutions provided, which group is/are likely to have pH value (i) less than 7, 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. [2]

Previously asked in: 2023 31/2/1 Q37

♦ Acids, Bases and Salts Methods of determining pH of a solution Reaction of acids with metal oxides/tarnished metals
pH scale and classification of solutions as acidic, basic and neutral

Q13. § 2.3 HOW STRONG ARE ACID OR BASE SOLUTIONS?**[1]**

The body of human beings works within the pH range of :

- (A) 6.1 to 6.8
- (B) 6.5 to 7.3
- (C) 7.0 to 7.8
- (D) 7.5 to 8.1

Previously asked in: 2025 31/2/1 Q3

♦ Acids, Bases and Salts

pH range of the human body

Q14. § Introduction § 2.3 HOW STRONG ARE ACID OR BASE SOLUTIONS?

Answer the following : Sometimes the pH of our mouth gets lower than 5.5. Why ?

Previously asked in: 2023 31/5/1 Q28 (a)

♦ Acids, Bases and Salts

pH in everyday life – tooth decay and mouth pH

Q15. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.3 HOW STRONG ARE ACID OR BASE SOLUTIONS?**[1]**

The table below has information regarding pH and the nature (acidic/basic) of four different solutions. Which one of the options in the table is correct ?

- (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

Previously asked in: 2023 31/1/1 Q4

♦ Acids, Bases and Salts

pH scale and nature of solutions (acidic/basic/neutral)

Q16. § 2.4 MORE ABOUT SALTS**[1]**

The salt present in tooth enamel is :

- (A) Calcium phosphate
- (B) Magnesium phosphate
- (C) Sodium phosphate
- (D) Aluminium phosphate

Previously asked in: 2024 31/5/1 Q3

♦ Acids, Bases and Salts

Salt present in tooth enamel (Calcium hydroxyapatite)

Q17. § 2.4 MORE ABOUT SALTS**[1]**

An aqueous solution of sodium chloride is prepared in distilled water. The pH of this solution is :

- (A) 6
- (B) 8
- (C) 7
- (D) 3

Previously asked in: 2024 31/5/1 Q4

♦ Acids, Bases and Salts

pH of salt solutions – neutral salts (NaCl)

Q18. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.4 MORE ABOUT SALTS**[1]**

You have three aqueous solutions A, B and C as given below :

A - Potassium nitrate

B - Ammonium chloride

C - Sodium carbonate

The ascending order of the pH of these solutions is :

(A) $A < B < C$

(B) $B < C < A$

(C) $C < A < B$

(D) $B < A < C$

Previously asked in: 2025 31/6/1 Q2

♦ Acids, Bases and Salts

pH of salt solutions (hydrolysis – acidic, basic, and neutral salts)

Q19. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES**[2]**

Two solutions M and N give Red and Blue colour respectively with a universal indicator.

(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.

Previously asked in: 2023 31/5/1 Q21 (b)

♦ Acids, Bases and Salts

Hydrogen ion concentration in acidic and basic solutions

Neutralisation reaction and nature of salt formed

Universal Indicator and pH scale

Q20. § 2.4 MORE ABOUT SALTS**[1]**

Which of the given option represents a family of salts ?

(A) NaCl, Na₂SO₄, CaSO₄

(B) K₂SO₄, Na₂SO₄, CaSO₄

(C) NaNO₃, CaCO₃, Na₂CO₃

(D) MgSO₄, CuSO₄, MgCl₂

Previously asked in: 2025 31/3/1 Q2

♦ Acids, Bases and Salts

Family of Salts

Q21. § 2.4 MORE ABOUT SALTS**[3]**

Common salt is an important raw material for various chemicals of daily use. State in brief the method of preparation of

(i) Sodium hydroxide, and (ii) Sodium hydrogen carbonate from common salt. Write balanced chemical equations of the reactions that occur.

Previously asked in: 2025 31/3/1 Q28(a)

♦ Acids, Bases and Salts

Chemicals from Common Salt – Sodium Hydrogen Carbonate (Solvay/Ammonia process)

Chemicals from Common Salt – Sodium Hydroxide (Chlor-alkali process)

Q22. § 2.4 MORE ABOUT SALTS**[4]**

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.

Read the source and answer the sub-parts that follow.

- (a) Identify the acid and base from which Sodium chloride is formed. [1]
- (b) Find the cation and the anion present in Calcium sulphate. [1]
- (c) "Sodium chloride and washing soda both belong to the same family of salts." Justify this statement. [2]

Previously asked in: 2024 31/2/1 Q37

♦ Acids, Bases and Salts

Cations and anions in salts

Family of Salts

Formation of salts from acids and bases

Q23. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? **[1]**

A chemical compound used in glass, soap and paper industries is

- A Washing Soda
- B Baking Soda
- C Bleaching Powder
- D Common Salt

Previously asked in: 2024 31/3/1 Q3

♦ Acids, Bases and Salts

Uses of Sodium Carbonate (Washing Soda)

Q24. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES**[1]**

An aqueous solution of a salt turns blue litmus to red. The salt could be the one obtained by the reaction of :

- A HNO_3 and NaOH
- B H_2SO_4 and KOH
- C CH_3COOH and NaOH
- D HCl and NH_4OH

Previously asked in: 2024 31/4/1 Q2

♦ Acids, Bases and Salts

Acidic Salts and pH of Salt Solutions

Salts of Strong Acid and Weak Base

Q25. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.3 HOW STRONG ARE ACID OR BASE SOLUTIONS? § 2.4 MORE ABOUT SALTS **[5]**

Answer the following:

- (i) Five solutions A, B, C, D and E when tested with pH paper showed pH as 4, 1, 13, 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.

Previously asked in: 2024 31/3/1 Q34(a)

♦ Acids, Bases and Salts

Acidic salts and basic salts – names, formulas, parent acid and parent base

pH scale and classification of solutions (strongly acidic, strongly alkaline, weakly acidic, neutral, weakly alkaline)

Q26. § Introduction § Group Activity

[1]

Select washing soda from the following :

- (a) NaHCO_3
- (b) $\text{Na}_2\text{CO}_3 \cdot 5\text{H}_2\text{O}$
- (c) $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$
- (d) NaOH

Previously asked in: 2023 31/1/1 Q6

♦ Acids, Bases and Salts

Washing Soda (Sodium Carbonate - $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$) - Identification and Common Salt Derivatives**Q27.** § 2.4 MORE ABOUT SALTS

[3]

Attempt either option (A) or (B). Option (B):

- (i) Write all the reactions involved in the extraction of Zn from ZnS. [2]
- (ii) Hydrogen gas is not evolved when most of the metals react with nitric acid. Give reason. [1]

Previously asked in: 2026 31/4/1 Q27 (B)

♦ Acids, Bases and Salts

Sodium Carbonate and Sodium Hydrogencarbonate

Q28. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? § 2.4 MORE ABOUT SALTS

[5]

Attempt either option (A) or (B). Option (B):

- (i) How would you name the following : I. $\text{CH}_3 - \text{CH}_2 - \text{C} \equiv \text{O} \mid \text{H}$ II. $\text{CH}_3 - \text{C} \equiv \text{CH}$ [2]
- (ii) When ethanol reacts with ethanoic acid in the presence of conc. H_2SO_4 , a substance with sweet smell is produced. Answer the following : I. State the class of compounds to which the sweet smelling compounds belong. II. Write the chemical equation for the reaction. [2]
- (iii) Why soaps do not produce foam with hard water ? [1]

Previously asked in: 2026 31/4/1 Q29 (B)

♦ Acids, Bases and Salts

Sodium Carbonate and Sodium Hydrogencarbonate

Q29. § 2.4 MORE ABOUT SALTS

[4]

Common salt is a very important chemical compound for our daily life. It's chemical name is sodium chloride and it is used as a raw material in the manufacture of caustic soda, washing soda, baking soda etc. It is also used in the preservation of pickles, butter, meat etc.

Read the source and answer the questions that follow.

- (i) Name the acid and the base from which common salt can be obtained. [1]
- (ii) State the nature (acidic/basic/neutral) of sodium chloride. Give reason for the justification for your answer. [1]
- (iii) What happens when electric current is passed through an aqueous solution of sodium chloride (called brine)? Name the products obtained along with the corresponding places in the electrolytic cell where each of these products is obtained. [2]

Previously asked in: 2025 31/4/1 Q37

♦ Acids, Bases and Salts

Common Salt (Sodium Chloride) – source acid and base

Electrolysis of brine – chlor-alkali process

Nature of salts – acidic, basic, or neutral

Q30. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES

[1]

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 option.

- (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

Previously asked in: 2023 31/6/1 Q2

♦ Acids, Bases and Salts

Nature of Salt Solutions (Acidic, Basic, Neutral)

pH and Universal Indicator

Q31. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES

[1]

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

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

Previously asked in: 2023 31/6/1 Q4

♦ Acids, Bases and Salts

pH and indicator behaviour of salt solutions (hydrolysis of salts)

Q32. § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON?

[1]

In the given experimental set-up, if the experiment is carried out separately with each of the following solutions the cases in which the bulb will glow is/are :

- (a) (i) only
 - (b) (ii) only
 - (c) (i) and (ii)
 - (d) (ii), (iii) and (iv)
- (i) Dilute hydrochloric acid
(ii) Dilute sulphuric acid
(iii) Glucose solution
(iv) Alcohol

Previously asked in: 2023 31/2/1 Q2

♦ Acids, Bases and Salts

Electrical conductivity of acids, bases, and salts in solution

Q33. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE [1]
IN COMMON? § Group Activity

The water of crystallization is present in

- (i) Bleaching Powder
- (ii) Plaster of Paris
- (iii) Washing Soda
- (iv) Baking Soda

- (A) (ii) and (iv)
- (B) (ii) and (iii)
- (C) (i) and (iii)
- (D) (i) and (iv)

Previously asked in: 2025 31/6/1 Q7

♦ Acids, Bases and Salts Water of Crystallization

Q34. § 2.4 MORE ABOUT SALTS [3]

Write chemical equations to show what happens when an acid reacts with a

- (i) metal
- (ii) base and
- (iii) carbonate

Write the name of the main product formed in each case.

Previously asked in: 2025 31/6/1 Q28(b)

♦ Acids, Bases and Salts Reaction of acids with bases (neutralisation reaction) Reaction of acids with carbonates
Reaction of acids with metals

Q35. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE [1]
IN COMMON?

Sodium hydroxide is termed an alkali while Ferric hydroxide is not because :

- (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.

Previously asked in: 2023 31/4/1 Q5

♦ Acids, Bases and Salts Distinction between alkalis and bases – solubility in water

Q36. § 2.4 MORE ABOUT SALTS [1]

The name of the salt used to remove permanent hardness of water is :

- (a) Sodium hydrogen carbonate (NaHCO_3)
- (b) Sodium chloride (NaCl)
- (c) Sodium carbonate decahydrate ($\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$)
- (d) Calcium sulphate hemihydrate ($\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$)

Previously asked in: 2023 31/4/1 Q6

♦ Acids, Bases and Salts Hardness of Water – Removal of Permanent Hardness using Washing Soda (Sodium Carbonate)

Q37. § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? § 2.4 MORE ABOUT SALTS § Group Activity [2]

(B) 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.

Previously asked in: 2023 31/4/1 Q21 (B)

♦ Acids, Bases and Salts

Electrolysis of brine (chlor-alkali process) – manufacture of caustic soda, chlorine and hydrogen

Q38. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.4 MORE ABOUT SALTS [1]

Answer the following : Categorise the following based on their nature : ZnO, Na₂O, CO₂

Previously asked in: 2026 31/1/1 Q25 (b)

♦ Acids, Bases and Salts

Classification of oxides (amphoteric, basic, acidic)

Q39. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES [1]

The warning sign shown in the given figure must invariably be displayed/pasted on the containers which contain hydroxide of :

- (A) Aluminium
- (B) Calcium
- (C) Sodium
- (D) Magnesium

Previously asked in: 2025 31/2/1 Q2

♦ Acids, Bases and Salts

Corrosive nature of strong bases (alkalis) and warning signs on containers

Q40. § 2.4 MORE ABOUT SALTS

Answer the following: Name the salt formed when sulphuric acid is added to sodium hydroxide and write its pH.

Previously asked in: 2023 31/4/1 Q28 (ii)

♦ Acids, Bases and Salts

Neutralisation reaction – acid + base forming salt

pH of salt solution (sodium sulphate – neutral salt, pH = 7)

Q41. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON?

Answer the following: Dry HCl gas does not change the colour of dry blue litmus paper. Why ?

Previously asked in: 2023 31/4/1 Q28 (iii)

♦ Acids, Bases and Salts

Role of water in ionisation of acids (HCl does not ionise without water, hence no H⁺ ions to change litmus colour)

Q42. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? [3]

Explain chlor-alkali process with chemical equation. Name the products formed at anode and cathode.

Previously asked in: 2026 31/1/1 Q27(a)

♦ Acids, Bases and Salts

Chlor-alkali process (electrolysis of brine)

Q43. § Introduction § 2.3 HOW STRONG ARE ACID OR BASE SOLUTIONS?**[3]**

Answer the following :

- (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. [1]
- (ii) How do we differentiate between a strong acid and a weak base in terms of ion-formation in aqueous solutions ? [1]
- (iii) The acid rain can make the survival of aquatic animals difficult. How ? [1]

Previously asked in: 2024 31/1/1 Q28

♦ Acids, Bases and Salts

Acid rain – effects on aquatic life

Strong acid vs weak base – ion formation in aqueous solutions

pH scale and taste of acidic/basic solutions

Q44. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? § 2.4 MORE ABOUT SALTS **[1]**

Hydronium ions are formed by the reaction between :

- (a) Sodium hydroxide and water
(b) Calcium chloride and water
(c) Hydrogen chloride gas and water
(d) Ethanol and water

Previously asked in: 2023 31/5/1 Q6

♦ Acids, Bases and Salts

Formation of Hydronium Ions

Q45. § 2.3 HOW STRONG ARE ACID OR BASE SOLUTIONS?**[4]**

Acid-base indicators can be used to distinguish between an acid and a base. Universal indicator, a mixture of several indicators, shows different colours at different concentrations of acids and bases, thereby indicating their pH on the pH scale of 0 – 14. The pH of a solution is measured by pH paper, which is a paper impregnated with a universal indicator.

Read the case carefully and answer the questions that follow.

- (a) Solution P is a strong acid while solution Q is a strong base. On the pH scale, where would you place the solutions P and Q ? [1]
- (b) A solution has a pH of 7. Name a compound you would use to (i) increase its pH, and (ii) decrease its pH. [1]
- (c) (i) When the pH of a solution is decreased from 4 to 2, what effect does it produce on its hydronium ion concentration ? State the colour change shown by the pH paper. [2]

Previously asked in: 2025 31/2/1 Q37

♦ Acids, Bases and Salts

Acid-base indicators

Hydronium ion concentration and pH relationship

Universal indicator and pH paper

pH scale and pH of acids and bases

Q46. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? **[2]**

Answer the following :

- (a) Write the formula of the ions which (i) acids, and (ii) bases generate in water solutions. [1]
- (b) Dry HCl gas does not change the colour of dry litmus paper. Why ? [1]

Previously asked in: 2025 31/3/1 Q22

♦ Acids, Bases and Salts

Ions generated by acids and bases in water ($\text{H}^+/\text{H}_3\text{O}^+$ and OH^- ions)

Role of water in ionisation of acids – dry HCl and litmus paper

Q47. § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON?**[3]**

Design an experimental set-up to demonstrate that "Alcohol and glucose contain hydrogen but are not categorised as acids". Also give the reason to justify this fact.

Previously asked in: 2025 31/3/1 Q28(b)

♦ **Acids, Bases and Salts**Acids require ionizable hydrogen ions (H^+) – distinguishing acids from non-acids containing hydrogen

Electrical conductivity test using electrolytic solution to detect presence of ions

Q48. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § Group Activity**[1]**

Select a pair of natural indicator from the following :

- A Litmus and methyl orange
- B Turmeric and Litmus
- C Phenolphthalein and methyl orange
- D Methyl orange and Turmeric

Previously asked in: 2024 31/3/1 Q2

♦ **Acids, Bases and Salts**

Natural Indicators of Acids and Bases

Q49. § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON?**[1]**

Four solutions, namely glucose, alcohol, hydrochloric acid and sulphuric acid filled in four separate beakers are connected one by one in an electric circuit with a bulb. The solutions in which the bulb will glow when current is passed are :

- A Glucose and alcohol
- B Alcohol and hydrochloric acid
- C Glucose and sulphuric acid
- D Hydrochloric acid and sulphuric acid

Previously asked in: 2024 31/4/1 Q3

♦ **Acids, Bases and Salts**

Electrolytes and Non-electrolytes – Conductivity of Acids, Bases and Salts in Solution

Q50. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.4 MORE ABOUT SALTS**[1]**

Study the following table and select the correct option :

- (A) NaCl, HCl, NaOH, Basic
- (B) Na_2CO_3 , H_2CO_3 , NaOH, Neutral
- (C) Na_2SO_4 , H_2SO_4 , NaOH, Acidic
- (D) CH_3COONa , CH_3COOH , NaOH, Basic

Previously asked in: 2026 31/5/1 Q20

♦ **Acids, Bases and Salts**

Nature of salts – acidic, basic, or neutral

Neutralisation reaction and nature of salt formed

pH of salt solutions (hydrolysis – acidic, basic, and neutral salts)

Q51. § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON?**[1]**

Four solutions, namely fructose, ethanol, hydrochloric acid and sodium hydroxide filled in four separate beakers are connected one by one in an electric circuit with a bulb. The solutions in which the bulb will glow when current is passed are :

- (A) ethanol and hydrochloric acid
- (B) fructose and ethanol
- (C) fructose and sodium hydroxide
- (D) hydrochloric acid and sodium hydroxide

Previously asked in: 2026 31/5/1 Q22

♦ **Acids, Bases and Salts**

Electrolytes vs Non-electrolytes

Electrolytic conductivity of acids, bases, and salts

Q52. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES

[1]

An aqueous solution turns red litmus blue. Excess addition of which of the following solution would reverse the change ?

- (A) Sodium hydroxide
- (B) Hydrochloric acid
- (C) Baking soda
- (D) Slaked lime

Previously asked in: 2026 31/4/1 Q19

◆ Acids, Bases and Salts

Acids, Bases and Indicators (Litmus Test, Neutralisation)

Q53. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? [1]

In the experimental setup given below, it is observed that on passing the gas produced in the reaction in the solution 'X' the solution 'X' first turns milky and then colourless. The option that justifies the above stated observation is that 'X' is aqueous calcium hydroxide and

- (a) it turns milky due to carbon dioxide gas liberated in the reaction and after sometime it becomes colourless due to formation of calcium carbonate.
- (b) it turns milky due to formation of calcium carbonate and on passing excess of carbon dioxide it becomes colourless due to formation of calcium hydrogen carbonate which is soluble in water.
- (c) it turns milky due to passing of carbon dioxide through it. It turns colourless as on further passing carbon dioxide, sodium hydrogen carbonate is formed which is soluble in water.
- (d) the carbon dioxide liberated during the reaction turns lime water milky due to formation of calcium hydrogen carbonate and after some time it turns colourless due to formation of calcium carbonate which is soluble in water.

Previously asked in: 2023 31/1/1 Q1

◆ Acids, Bases and Salts

CO₂ gas turning lime water milky then colourless (excess CO₂ forming soluble calcium bicarbonate)Reaction of Ca(OH)₂ solution with CO₂ – lime water test

Reaction of acids with carbonates

Q54. § 2.3 HOW STRONG ARE ACID OR BASE SOLUTIONS?

[4]

The pH plays an important role in our daily life. Strength of acids and bases depends on the number of H⁺ ions and OH⁻ ions produced by these respectively. pH scale helps in predicting the strength of acids and bases by measuring hydrogen ion concentration in a solution.

The pH plays an important role in our daily life. Strength of acids and bases depends on the number of H⁺ ions and OH⁻ ions produced by these respectively. pH scale helps in predicting the strength of acids and bases by measuring hydrogen ion concentration in a solution.

Answer the following :

- (a) What type of indicator is used to predict how strong an acid or base is ? [1]
- (b) Three solutions A, B and C showed pH as 3, 5 and 7. Which solution has the highest concentration of H⁺ ions ? [1]
- (c) What are strong acids and weak acids ? [2]

Previously asked in: 2026 31/4/1 Q28

◆ Acids, Bases and Salts

Acids, Bases and Indicators (Litmus Test, Neutralisation)

pH Scale and its Importance in Everyday Life

Q55. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? § 2.4 MORE ABOUT SALTS **[5]**

Attempt either option (A) or (B). Option (A):

- (i) Carbon cannot form C^{4+} cation and C^{4-} anion. Explain. [2]
- (ii) Define homologous series of carbon compounds. Why are the melting and boiling points of C_4H_{10} higher than C_3H_8 or C_2H_6 ? [2]
- (iii) What happens when ethanol is heated with acidified potassium dichromate ? [1]

Previously asked in: 2026 31/4/1 Q29 (A)

♦ Acids, Bases and Salts

Acids, Bases and Indicators (Litmus Test, Neutralisation)

Q56. § 2.4 MORE ABOUT SALTS

[2]

Answer the following:

- (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.

Previously asked in: 2023 31/1/1 Q21(a)

♦ Acids, Bases and Salts

Baking soda vs. baking powder – difference in chemical composition

Plaster of Paris – preparation from gypsum, chemical formula, and property of hardening

Q57. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? § 2.4 MORE ABOUT SALTS **[4]**

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.

Read the following passage and answer the questions that follow :

- (a) Write the names of the gases 'X' and 'Y'. [1]
- (b) Write the balanced chemical equation for the formation of substance 'Z'. [1]
- (c) Answer (i) or (ii): [2]

Previously asked in: 2026 31/2/1 Q28

♦ Acids, Bases and Salts

Chlor-alkali process and uses of its products

Electrolysis of brine (aqueous NaCl solution)

Q58. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON?

Give reasons for the following : The path of a beam of light passing through a colloidal solution is visible.

Previously asked in: 2023 31/1/1 Q31 (c)

♦ Acids, Bases and Salts

Tyndall Effect in Colloidal Solutions

Q59. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? § 2.4 MORE ABOUT SALTS **[5]**

When the acid present in tamarind is mixed with a base, a mixture is produced. When the base is mixed into kneaded flour and heated, cakes become soft and spongy. The base is prepared with common salt and is also used for faster cooking.

- Write the common name and chemical formula of X, Y and Z, and also the chemical formula of Y. [2]
- How is Y prepared and how does it help in making cakes soft and spongy? Illustrate the reaction with suitable chemical equation. [2]
- Write the name and chemical formula of a mild base other than Y that is used as an antacid. [1]

Previously asked in: 2024 31/5/1 Q34 (b)

♦ **Acids, Bases and Salts**

Mild bases used as antacids – Magnesium Hydroxide $\text{Mg}(\text{OH})_2$

Preparation and uses of Baking Soda (NaHCO_3)

Salts and their common names – Baking Soda (NaHCO_3), Washing Soda (Na_2CO_3), Common Salt (NaCl)

Q60. § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? **[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.

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

Previously asked in: 2023 31/6/1 Q17

♦ **Acids, Bases and Salts**

Dilution of acids – exothermic nature and safe practice (add acid to water)

Q61. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? **[3]**

Give reasons :

- For dilution of an acid, acid is added into water and not water into acid. [1]
- Dry HCl gas does not turn blue litmus red whereas dilute hydrochloric acid does. [1]
- Blue colour of Copper(II) sulphate crystals turns white on heating. [1]

Previously asked in: 2026 31/3/1 Q27 (a)

♦ **Acids, Bases and Salts**

Dilution of acids – acid added to water (not water to acid)

Role of water ($\text{H}^+/\text{H}_3\text{O}^+$ ions) in acidic behaviour – dry HCl vs dilute HCl

Water of crystallisation – copper sulphate crystals turning white on heating

Q62. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? **[3]**

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.

- Write the chemical name and formula of 'X'.
- Write chemical equations for the chemical reactions involved in the above statements.

Previously asked in: 2023 31/6/1 Q28(a)

♦ **Acids, Bases and Salts**

CO_2 turning lime water milky (reaction with $\text{Ca}(\text{OH})_2$)

Salts used as building materials – Calcium Carbonate (CaCO_3) and its reaction with dilute HCl

Q63. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.4 MORE ABOUT SALTS**[1]**

Consider the following reactions :

- (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 is formed.
- (B) Neutral salts are formed.
- (C) Hydrogen gas is formed.
- (D) Acidic salts are formed.

Previously asked in: 2025 31/1/1 Q4

♦ Acids, Bases and Salts

Neutralisation reactions involving acids, bases and salts

Q64. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? § 2.4 MORE ABOUT SALTS **[1]**

When Sodium bicarbonate reacts with dilute hydrochloric acid, the gas evolved is :

- (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.

Previously asked in: 2023 31/4/1 Q1

♦ Acids, Bases and Salts

Reaction of sodium bicarbonate with dilute hydrochloric acid

Q65. § 2.4 MORE ABOUT SALTS**[4]**

Seawater contains many salts dissolved in it. Common salt is separated from these salts. Deposits of solid salt are also found in several parts of the world. These large crystals are often brown due to impurities. This is called rock salt and is mined like coal. The common salt is an important raw material for chemicals of daily use.

Read the passage carefully and answer the questions that follow.

- (a) Write balanced chemical equations to show the products formed during electrolysis of brine. [1]
- (b) List two uses of any one product obtained during electrolysis of brine. [1]
- (c) Answer the following : [2]

Previously asked in: 2025 31/1/1 Q37

♦ Acids, Bases and Salts

Chlor-alkali process – uses of products (NaOH, Cl₂, H₂)

Common salt as a raw material and its sources (rock salt, seawater)

Electrolysis of brine – products and chemical equations

Q66. § Introduction § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? § Group Activity

Answer the following: Suggest a safe procedure of diluting a strong concentrated acid.

Previously asked in: 2023 31/4/1 Q28 (i)

♦ Acids, Bases and Salts

Dilution of Strong Concentrated Acids – Safe Procedure

Q67. § Introduction § 2.3 HOW STRONG ARE ACID OR BASE SOLUTIONS?

[1]

Fresh milk has a pH of 6. To delay its curdling, a chemical substance is added to it, which is :

- (a) Sodium carbonate
- (b) Baking powder
- (c) Sodium hydroxide (Caustic soda)
- (d) Baking soda (Sodium hydrogen carbonate)

Previously asked in: 2023 31/5/1 Q4

♦ Acids, Bases and Salts pH of milk and use of bases to delay curdling

Q68.

[2]

When X is heated at 373 K, it loses water molecules and gets converted to Y. Y is used to keep things dry.

- (i) Identify X and Y.
- (ii) How can X be reobtained from Y ?

Previously asked in: 2023 31/5/1 Q21 (a)

♦ Acids, Bases and Salts Plaster of Paris and Gypsum – interconversion and uses

Q69. § 2.4 MORE ABOUT SALTS

[3]

Answer the following:

- (a) Give the chemical name and formula of Plaster of Paris.
- (b) Write the chemical equation of its preparation.
- (c) Give any two uses of it.

Previously asked in: 2026 31/5/1 Q27 ((A))

♦ Acids, Bases and Salts Plaster of Paris – chemical name, formula, preparation, and uses

Q70. § Introduction § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON?

[3]

Answer the following:

- (a) Name the acid present in ant's sting.
- (b) Give reason : (i) While diluting an acid, it is recommended that the acid should be added to water. (ii) Baking soda is used as an antacid.

Previously asked in: 2026 31/5/1 Q27 ((B))

♦ Acids, Bases and Salts Acid present in ant's sting (Methanoic/Formic acid) Baking soda (NaHCO_3) as an antacid
Dilution of acids – adding acid to water

Q71.

[1]

In order to prepare dry hydrogen chloride gas in humid atmosphere the gas produced is passed through a guard tube (drying tube) which contains :

- (a) Calcium chloride
- (b) Calcium oxide
- (c) Calcium hydroxide
- (d) Calcium carbonate

Previously asked in: 2025 31/4/1 Q2

♦ Acids, Bases and Salts Preparation and drying of hydrogen chloride (HCl) gas

Q72. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE [2]
IN COMMON? § 2.4 MORE ABOUT SALTS

Answer the following:

- (a) 1 gram of solid sodium chloride was taken in a clean and dry test tube and concentrated sulphuric acid was added to it. (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]

Previously asked in: 2024 31/4/1 Q21

♦ Acids, Bases and Salts Acidic nature of HCl gas – dry vs wet litmus paper test

Reaction of NaCl with concentrated H₂SO₄ – evolution of HCl gas

Q73. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.4 MORE ABOUT SALTS [3]

Write the common name and the chemical name of the compound CaSO₄·½H₂O. Write the method of its preparation. Give chemical equation for the reaction, when water reacts with CaSO₄·½H₂O.

Previously asked in: 2024 31/4/1 Q27

♦ Acids, Bases and Salts Plaster of Paris – common name, chemical name, preparation, and reaction with water

Q74. § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? [1]

How will you protect yourself from the heat generated while diluting a concentrated acid?

- (A) By adding acid to water with constant stirring.
- (B) By adding water to acid with constant stirring.
- (C) By adding water to acid followed by base.
- (D) By adding base to acid with constant stirring.

Previously asked in: 2026 31/4/1 Q23

♦ Acids, Bases and Salts Dilution of Acids and Bases (Exothermic Process)

Q75. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE [1]
IN COMMON?

Assertion (A) : Concentrated nitric acid is diluted by adding water slowly to acid with constant stirring.

Reason (R) : Concentrated nitric acid is easily soluble in water.

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

Previously asked in: 2025 31/4/1 Q18

♦ Acids, Bases and Salts Dilution of concentrated acids – adding acid to water

Q76. § Introduction § 2.4 MORE ABOUT SALTS [1]

Baking powder is a mixture of :

- (A) Sodium carbonate + Acetic acid
- (B) Sodium carbonate + Tartaric acid
- (C) Sodium hydrogen carbonate + Tartaric acid
- (D) Sodium hydrogen carbonate + Acetic acid

Previously asked in: 2026 31/2/1 Q22

♦ Acids, Bases and Salts Baking Powder and Baking Soda

Q77. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? § 2.4 MORE ABOUT SALTS **[5]**

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. [1]
- (ii) What colour change will be observed during heating ? [1]
- (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. [2]
- (iv) State how is Plaster of Paris obtained from gypsum. Write two uses of Plaster of Paris. [1]

Previously asked in: 2024 31/5/1 Q34 (a)

♦ **Acids, Bases and Salts** Colour change of ferrous sulphate on heating Plaster of Paris — preparation from gypsum and uses
Water of crystallisation

Q78. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.4 MORE ABOUT SALTS § Group Activity **[3]**

Write chemical formula of washing soda. How is it obtained from baking soda? List two uses of washing soda.

Previously asked in: 2025 31/5/1 Q27

♦ **Acids, Bases and Salts** Uses of Washing Soda Washing Soda – Chemical Formula and Preparation from Baking Soda

Q79. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.4 MORE ABOUT SALTS **[3]**

Write the preparation of the following compounds with balanced chemical equation :

- (i) NaOH by chlor-alkali process [1]
- (ii) Baking Soda [1]
- (iii) Plaster of Paris [1]

Previously asked in: 2026 31/3/1 Q27 (b)

♦ **Acids, Bases and Salts** Chlor-alkali process – preparation of NaOH Preparation of Baking Soda (NaHCO_3)
Preparation of Plaster of Paris ($\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$)

Q80. § Introduction § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? § 2.4 MORE ABOUT SALTS **[3]**

State the chemical property in each case on which the following uses of baking soda are based upon :

- (i) as an anti-acids
- (ii) as a constituent in making baking powder
- (iii) in soda-acid fire-extinguishers

Previously asked in: 2025 31/6/1 Q28(a)

♦ **Acids, Bases and Salts** Baking Powder – Release of CO_2 on Heating Baking Soda (NaHCO_3) – Chemical Properties and Uses
Baking Soda as Antacid – Reaction with Acid Soda-Acid Fire Extinguisher – Reaction of NaHCO_3 with H_2SO_4 to Produce CO_2

Q81. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.2 WHAT DO ALL ACIDS AND ALL BASES HAVE IN COMMON? § 2.3 HOW STRONG ARE ACID OR BASE SOLUTIONS? **[1]**

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

- A Turmeric
- B Vanilla essence
- C Methyl orange
- D Litmus

Previously asked in: 2026 31/1/1 Q18

♦ **Acids, Bases and Salts** Olfactory (smelling) indicators

Q82. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.4 MORE ABOUT SALTS § Group Activity [3]

Write the preparation of following compounds with balanced chemical equation :

- (i) Baking soda
- (ii) Bleaching powder
- (iii) Plaster of Paris

Previously asked in: 2026 31/1/1 Q27(b)

♦ Acids, Bases and Salts

Preparation of Plaster of Paris

Preparation of bleaching powder

Preparation of sodium hydrogen carbonate (baking soda)

Q83. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § Group Activity [1]

Select a pair of olfactory indicators from the following :

- (a) Clove oil and vanilla essence
- (b) Onion and turmeric
- (c) Clove oil and litmus solution
- (d) Vanilla and methyl orange

Previously asked in: 2023 31/5/1 Q1

♦ Acids, Bases and Salts

Olfactory Indicators

Q84. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.3 HOW STRONG ARE ACID OR BASE SOLUTIONS? § Group Activity [1]

Define the following terms :

- (i) Olfactory indicator
- (ii) Water of crystallization Olfactory indicator

Previously asked in: 2026 31/5/1 Q25 (i)

♦ Acids, Bases and Salts

Olfactory Indicators

Water of Crystallization

Q85. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.3 HOW STRONG ARE ACID OR BASE SOLUTIONS? [1]

Define the following terms :

- (i) Olfactory indicator
- (ii) Water of crystallization Water of crystallization

Previously asked in: 2026 31/5/1 Q25 (ii)

♦ Acids, Bases and Salts

Olfactory Indicators

Water of Crystallization

Q86. § 2.1 UNDERSTANDING THE CHEMICAL PROPERTIES OF ACIDS AND BASES § 2.4 MORE ABOUT SALTS [5]

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.

Previously asked in: 2024 31/3/1 Q34(b)

♦ Acids, Bases and Salts

Bleaching powder (compound Z) – formation and uses

Chlor-alkali process (electrolysis of brine)

Products of chlor-alkali process: hydrogen (cathode) and chlorine (anode)

Q87.

[1]

Answer the following : Write chemical formula of Plaster of Paris. At what temperature gypsum is heated to obtain Plaster of Paris ?

Previously asked in: 2026 31/4/1 Q25 (b)

♦ Acids, Bases and Salts

Plaster of Paris

Q88.

§ Group Activity

[1]

Answer the following : A compound 'A' is used in soda-lime fire-extinguisher and decomposes on heating to form compound 'B'. Compound 'B' is used for removing permanent hardness of water. Identify 'A' and 'B'.

Previously asked in: 2026 31/4/1 Q25 (a)

♦ Acids, Bases and Salts

Sodium Carbonate and Sodium Hydrogencarbonate

Thermal Decomposition Reaction

Q89.

§ 2.4 MORE ABOUT SALTS

[1]

A metal carbonate reacts with a solution X which forms a salt, water and a gas Y. What are X and Y ?

- (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

Previously asked in: 2026 31/2/1 Q18

♦ Acids, Bases and Salts

Reaction of acids with carbonates

Reaction of metal carbonates with acids

Q90.

§ 3.2 CHEMICAL PROPERTIES OF METALS

§ 3.3 HOW DO METALS AND NON-METALS REACT?

[1]

Which gas is evolved when magnesium metal reacts with very dilute HNO_3 ?

- (A) Oxygen
- (B) Nitrogen
- (C) Hydrogen
- (D) Nitrogen Dioxide

Previously asked in: 2026 31/5/1 Q23

♦ Metals and Non-metals

Reaction of metals with dilute nitric acid (evolution of H_2 gas)

Reaction of metals with nitric acid – no hydrogen gas evolution

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