

CBSE CLASS X
Science (o86)**QUESTION PAPER***From previous CBSE Board Exam questions***Code: SOPF86****Questions: 93****Maximum Marks: 147****Generated: 2026-06-15 12:52****SELECTIONS USED**

Source	Previous-year board
Subject	Science
Lessons	Chemical Reactions and Equations
Year	2022-2026
Questions selected	93

Composition — Types: 44 MCQ · 25 Short · 17 Very short · 6 Assertion–reason · 2 Long

Q1. § Chapter Introduction § 1.1.1 Writing a Chemical Equation § 1.2 TYPES OF CHEMICAL REACTIONS**[3]**

With the help of an appropriate example, justify that some of the chemical reactions are determined by

- (a) Change in temperature,
- (b) Evolution of a gas, and
- (c) Change in colour

Give chemical equation for the reaction involved in each case.

Previously asked in: 2023 31/6/1 Q30

♦ Chemical Reactions and Equations

Indicators of Chemical Reactions – Change in Colour

Indicators of Chemical Reactions – Change in Temperature

Indicators of Chemical Reactions – Evolution of Gas

Q2. § Chapter Introduction**[2]**

A student performs the following experiment in his school laboratory.

List two observations to justify that in this experiment a chemical change has taken place.

Previously asked in: 2025 31/1/1 Q21

♦ Chemical Reactions and Equations

Observations indicating a chemical change (chemical reaction)

Q3. § 1.2 TYPES OF CHEMICAL REACTIONS**[1]**

In which one of the following situations a chemical reaction does not occur?

- (a) Milk is left open at room temperature during summer
- (b) Grapes get fermented
- (c) An iron nail is left exposed to humid atmosphere
- (d) Melting of glaciers

Previously asked in: 2025 31/4/1 Q1

♦ Chemical Reactions and Equations

Identification of situations where chemical reactions occur or do not occur

Q4. § 1.2.5 Oxidation and Reduction**[1]**

To a small amount of copper oxide in a beaker, when we add dilute hydrochloric acid slowly with stirring, the change in the colour of the solution is due to the formation of :

- (A) Copper(II) oxide, which is black in colour.
- (B) Copper(I) chloride, which is blue in colour.
- (C) Copper(II) chloride, which is blue-green in colour.
- (D) Copper(I) oxide, which is black in colour.

Previously asked in: 2026 31/3/1 Q18

♦ Chemical Reactions and Equations

Reaction of metal oxides with acids

Q5. § 1.1 CHEMICAL EQUATIONS**[1]**

Select from the following a statement which is not true about burning of magnesium ribbon in air :

- (A) It burns with a dazzling white flame.
- (B) A white powder is formed on burning.
- (C) It is an endothermic reaction.
- (D) It is an example of a combination reaction.

Previously asked in: 2025 31/6/1 Q3

♦ Chemical Reactions and Equations

Burning of Magnesium Ribbon – Observations and Characteristics

Q6. § 1.1 CHEMICAL EQUATIONS § 1.1.1 Writing a Chemical Equation**[1]**

Electrolysis of water is a decomposition reaction. The mass ratio (MH : MO) of hydrogen and oxygen gases liberated at the electrodes during electrolysis of water is :

- (A) 8 : 1
- (B) 2 : 1
- (C) 1 : 2
- (D) 1 : 8

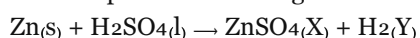
Previously asked in: 2025 31/1/1 Q1

♦ Chemical Reactions and Equations

Electrolysis of water – mass ratio of hydrogen and oxygen liberated

Q7. § 1.1 CHEMICAL EQUATIONS**[1]**

Select the appropriate state symbols of the products given as X and Y in the following chemical equation by choosing the correct option from table given below :



- (a) (X) (s), (Y) (l)
- (b) (X) (aq), (Y) (g)
- (c) (X) (aq), (Y) (s)
- (d) (X) (g), (Y) (aq)

Previously asked in: 2023 31/6/1 Q3

♦ Chemical Reactions and Equations

State symbols in chemical equations

Q8. § 1.1.1 Writing a Chemical Equation § 1.1.2 Balanced Chemical Equations**[1]**

In order to balance the following chemical equation, the values of the coefficients x and y respectively are :



- (a) 2, 4
- (b) 2, 2
- (c) 2, 3
- (d) 4, 2

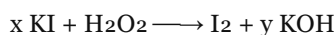
Previously asked in: 2023 31/2/1 Q3

♦ Chemical Reactions and Equations

Balancing chemical equations by finding stoichiometric coefficients

Q9. § 1.2.4 Double Displacement Reaction**[1]**

In the following equation



x and y respectively are :

- (A) 2, 2
- (B) 1, 2
- (C) 2, 1
- (D) 1, 1

Previously asked in: 2026 31/3/1 Q19

♦ Chemical Reactions and Equations

Balancing chemical equations

Q10. § 1.1 CHEMICAL EQUATIONS § 1.1.1 Writing a Chemical Equation § 1.1.2 Balanced Chemical Equations**[3]**

Write balanced chemical equation for the reactions that occur when

- (a) steam is passed over red hot iron.
- (b) natural gas is burnt in air.
- (c) glucose reacts with oxygen in the cells of our body and provides energy.

Previously asked in: 2025 31/6/1 Q27

♦ Chemical Reactions and Equations

Balanced chemical equations for combustion reactions (natural gas, glucose)

Balanced chemical equations for reactions involving steam and iron

Q11. § 1.1.1 Writing a Chemical Equation § 1.1.2 Balanced Chemical Equations § 1.2.5 Oxidation and Reduction**[2]**

(A) 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.

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

♦ Chemical Reactions and Equations

Balancing chemical equations

Reaction of metal oxides with acids

Q12. § 1.1.2 Balanced Chemical Equations**[1]**

Answer the following : Balance the following chemical reaction : $\text{Pb(NO}_3)_2 + \text{KI} \rightarrow \text{PbI}_2 + \text{KNO}_3$

Previously asked in: 2026 31/1/1 Q26 (b)

♦ Chemical Reactions and Equations

Balancing chemical equations

Q13. § 1.1.1 Writing a Chemical Equation § 1.1.2 Balanced Chemical Equations**[1]**

The correct balanced chemical equation showing exothermic reaction in which natural gas burns in air is :

- (A) $\text{CH}_4 + \text{O}_2 \longrightarrow \text{CO}_2 + 2\text{H}_2\text{O}$
(B) $\text{CH}_4 + 2\text{O}_2 \longrightarrow 2\text{CO}_2 + 2\text{H}_2\text{O} + \text{Energy}$
(C) $\text{CH}_4 + 2\text{O}_2 \longrightarrow \text{CO}_2 + 2\text{H}_2\text{O}$
(D) $\text{CH}_4 + 2\text{O}_2 \longrightarrow \text{CO}_2 + 2\text{H}_2\text{O} + \text{Energy}$

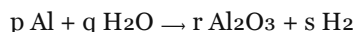
Previously asked in: 2025 31/2/1 Q1

♦ Chemical Reactions and Equations

Combustion reactions and balancing chemical equations

Q14. § 1.1.1 Writing a Chemical Equation § 1.1.2 Balanced Chemical Equations**[1]**

Consider the following chemical equation :



To balance this chemical equation, the values of 'p', 'q', 'r' and 's' must be respectively :

- (A) 3, 2, 2, 1
(B) 2, 3, 3, 1
(C) 2, 3, 1, 3
(D) 3, 1, 2, 2

Previously asked in: 2025 31/3/1 Q1

♦ Chemical Reactions and Equations

Balancing chemical equations

Q15. § 1.1.2 Balanced Chemical Equations**[1]**

Consider the following Chemical equation : $a \text{ Al}_2\text{O}_3 + b \text{ HCl} \longrightarrow c \text{ AlCl}_3 + d \text{ H}_2\text{O}$. In order to balance this chemical equation, the values of a, b, c and d must be

- A 1, 6, 2 and 3
B 1, 6, 3 and 2
C 2, 6, 2 and 3
D 2, 6, 3 and 2

Previously asked in: 2024 31/3/1 Q5

♦ Chemical Reactions and Equations

Balancing chemical equations

Q16. § 1.1.1 Writing a Chemical Equation § 1.1.2 Balanced Chemical Equations**[1]**

In order to balance the above chemical equation, the values of x, y and z respectively are :

- (a) 6, 2, 2
(b) 4, 1, 2
(c) 4, 2, 1
(d) 2, 2, 1

Previously asked in: 2023 31/1/1 Q3

♦ Chemical Reactions and Equations

Balancing chemical equations

Q17. § 1.1.2 Balanced Chemical Equations

[1]

To balance the following chemical equation, the values of the coefficients x, y and z must be respectively :



- (A) 4, 2, 2
(B) 4, 4, 2
(C) 2, 2, 4
(D) 2, 4, 2

Previously asked in: 2024 31/5/1 Q1

♦ Chemical Reactions and Equations

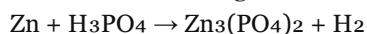
Balancing chemical equations by finding stoichiometric coefficients

Q18. § 1.1.1 Writing a Chemical Equation § 1.1.2 Balanced Chemical Equations

[3]

Why do we balance a chemical equation? Name and state the law that suggests the balancing of a chemical equation?

Balance the following chemical equation :



Previously asked in: 2025 31/4/1 Q27(A)

♦ Chemical Reactions and Equations

Balancing chemical equations

Law of Conservation of Mass

Need for balancing a chemical equation

Q19. § 1.1 CHEMICAL EQUATIONS § 1.1.2 Balanced Chemical Equations § 1.2 TYPES OF CHEMICAL REACTIONS

[1]

Which one of the following reactions is different from the remaining three ?

- A $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{NaNO}_3$
B $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2$
C $\text{KNO}_3 + \text{H}_2\text{SO}_4 \rightarrow \text{KHSO}_4 + \text{HNO}_3$
D $\text{ZnCl}_2 + \text{H}_2\text{S} \rightarrow \text{ZnS} + 2\text{HCl}$

Previously asked in: 2024 31/3/1 Q7

♦ Chemical Reactions and Equations

Types of Chemical Reactions

Q20. § 1.1 CHEMICAL EQUATIONS

[1]

The main observations while performing the experiment of burning magnesium ribbon in air are :

- (i) Magnesium ribbon burns with a dazzling white flame.
(ii) A white powder is formed.
(iii) Magnesium ribbon vapourises.
(iv) Aqueous solution of the white powder turns blue litmus to red.

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

Previously asked in: 2025 31/5/1 Q1

♦ Chemical Reactions and Equations

Burning of magnesium ribbon in air – observations and products

Combination reaction

Q21. § 1.1.1 Writing a Chemical Equation § 1.1.2 Balanced Chemical Equations

[1]

The balanced chemical equation showing reaction between quicklime and water is :

- (a) $2 \text{CaO} + \text{H}_2\text{O} \rightarrow 2 \text{CaOH} + \text{H}_2 + \text{Heat}$
(b) $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2 + \text{H}_2 + \text{Heat}$
(c) $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2 + \text{Heat}$
(d) $2 \text{CaO} + 3 \text{H}_2\text{O} \rightarrow 2 \text{Ca}(\text{OH})_3 + \text{O}_2 + \text{Heat}$

Previously asked in: 2023 31/5/1 Q2

♦ Chemical Reactions and Equations

Reaction of quicklime (CaO) with water – balanced chemical equation

Q22. § 1.2.1 Combination Reaction

[1]

Identify the product 'X' obtained in the following chemical reaction : $\text{CaCO}_3 \xrightarrow{\Delta} \text{'X'} + \text{CO}_2$

- A Quick lime
- B Gypsum
- C Lime Stone
- D Plaster of Paris

Previously asked in: 2024 31/3/1 Q1

♦ Chemical Reactions and Equations

Thermal decomposition reaction of CaCO_3 to CaO and CO_2 **Q23.** § 1.2.2 Decomposition Reaction § 1.2.3 Displacement Reaction

[1]

When ferrous sulphate crystals are heated in a test tube, we observe that :

- (A) A colourless gas with no smell is evolved.
- (B) A brown gas is evolved.
- (C) The green colour of the salt fades and a gas with the smell of burning sulphur is evolved.
- (D) The green colour of the salt fades and no gas is evolved.

Previously asked in: 2026 31/2/1 Q19

♦ Chemical Reactions and Equations

Thermal decomposition of ferrous sulphate

Q24. § 1.2.2 Decomposition Reaction § 1.2.3 Displacement Reaction § 1.2.5 Oxidation and Reduction

Answer the following : Why do copper sulphate crystals turn white on heating ?

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

♦ Chemical Reactions and Equations

Decomposition reaction – loss of water of crystallisation on heating

Q25. § 1.2.2 Decomposition Reaction § 1.2.4 Double Displacement Reaction

[2]

What is observed when hydrated ferrous sulphate crystals are heated in a dry boiling tube ? Give balanced chemical equation(s) of the reaction(s) that occur(s).

Previously asked in: 2025 31/3/1 Q21(b)

♦ Chemical Reactions and Equations

Thermal decomposition of hydrated ferrous sulphate ($\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$)**Q26.** § 1.2.2 Decomposition Reaction

[1]

The emission of brown fumes in the given experimental set-up is due to

- (a) thermal decomposition of lead nitrate which produces brown fumes of nitrogen dioxide.
- (b) thermal decomposition of lead nitrate which produces brown fumes of lead oxide.
- (c) oxidation of lead nitrate forming lead oxide and nitrogen dioxide.
- (d) oxidation of lead nitrate forming lead oxide and oxygen.

Previously asked in: 2023 31/1/1 Q2

♦ Chemical Reactions and Equations

Formation of nitrogen dioxide (brown fumes) as a product of chemical reaction

Q27. § 1.2.3 Displacement Reaction

[1]

The colour of the solution observed after about 1 hour of placing iron nails in copper sulphate solution is

- (A) Blue
- (B) Pale green
- (C) Yellow
- (D) Reddish brown

Previously asked in: 2025 31/6/1 Q5

♦ Chemical Reactions and Equations

Displacement Reactions – colour change in copper sulphate solution with iron

Q28. § 1.1.1 Writing a Chemical Equation § 1.1.2 Balanced Chemical Equations § 1.2.4 Double Displacement Reaction [3]

Define a precipitation reaction. Give its example and also express the reaction that occurs in the form of a balanced chemical equation.

Previously asked in: 2025 31/4/1 Q27(B)

♦ Chemical Reactions and Equations Precipitation Reaction

Q29. § 1.2 TYPES OF CHEMICAL REACTIONS § 1.2.1 Combination Reaction § 1.2.4 Double Displacement Reaction [2]

Answer the following:

- (a) What is observed when aqueous solutions of potassium iodide and lead nitrate are mixed together? Name the type of reaction and write the chemical equation for the reaction that occurs. [2]

Previously asked in: 2023 31/2/1 Q21

♦ Chemical Reactions and Equations Double Displacement / Precipitation Reaction

Q30. § 1.2 TYPES OF CHEMICAL REACTIONS § 1.2.1 Combination Reaction § 1.2.4 Double Displacement Reaction [2]

(a) What is observed when aqueous solutions of potassium iodide and lead nitrate are mixed together? Name the type of reaction and write the chemical equation for the reaction that occurs.

Previously asked in: 2023 31/2/1 Q21 (a)

♦ Chemical Reactions and Equations Double Displacement / Precipitation Reaction

Q31. § 1.2.1 Combination Reaction § 1.2.4 Double Displacement Reaction [1]

When aqueous solutions of potassium iodide and lead nitrate are mixed, an insoluble substance separates out. The chemical equation for the reaction involved is :

- (a) $\text{KI} + \text{PbNO}_3 \rightarrow \text{PbI} + \text{KNO}_3$
(b) $2\text{KI} + \text{Pb}(\text{NO}_3)_2 \rightarrow \text{PbI}_2 + 2\text{KNO}_3$
(c) $\text{KI} + \text{Pb}(\text{NO}_3)_2 \rightarrow \text{PbI} + \text{KNO}_3$
(d) $\text{KI} + \text{PbNO}_3 \rightarrow \text{PbI}_2 + \text{KNO}_3$

Previously asked in: 2023 31/4/1 Q2

♦ Chemical Reactions and Equations Double displacement and precipitation reactions

Q32. § 1.2.1 Combination Reaction § 1.2.4 Double Displacement Reaction [1]

(i) $\text{AgNO}_3 + \text{NaCl} \rightarrow \text{NaNO}_3 + \text{AgCl}$

(ii) $\text{K}_2\text{SO}_4 + \text{BaCl}_2 \rightarrow \text{BaSO}_4 + 2\text{KCl}$

Which of the following options clearly describes both the reactions?

- A (i) is double displacement, (ii) is displacement reaction.
B Both, (i) and (ii) are displacement reactions and precipitation reactions.
C Both, (i) and (ii) are double displacement reactions and precipitation reactions.
D (i) is displacement, (ii) is double displacement reaction.

Previously asked in: 2026 31/1/1 Q17

♦ Chemical Reactions and Equations Double displacement and precipitation reactions

Q33. § 1.2.4 Double Displacement Reaction [3]

Define a double displacement reaction. Write the chemical equation of a double displacement reaction which is also a (i) Neutralization reaction and (ii) Precipitation reaction. Give justification for your answer.

Previously asked in: 2023 31/5/1 Q27

♦ Chemical Reactions and Equations Double Displacement Reaction – Definition and Examples

Neutralization Reaction as Double Displacement Precipitation Reaction as Double Displacement

Q34. § 1.1.1 Writing a Chemical Equation § 1.1.2 Balanced Chemical Equations § 1.2.4 Double Displacement Reaction [2]

"No precipitation reaction can occur without exchange of ions between the two reactants." Justify this statement giving a balanced chemical equation for the reaction.

Previously asked in: 2024 31/2/1 Q21(a)

♦ Chemical Reactions and Equations

Precipitation Reaction and Double Displacement Reaction

Q35. § 1.2.5 Oxidation and Reduction [2]

Answer either (a) or (b):

- (a) Copper powder is taken in a china dish and heated over a burner. Name the product formed and state its colour. Write the chemical equation for the reaction involved. [2]

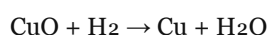
Previously asked in: 2024 31/5/1 Q21

♦ Chemical Reactions and Equations

Oxidation of copper – reaction with oxygen

Q36. § 1.2.5 Oxidation and Reduction [2]

Define oxidation. Identify and name the substance oxidised in the following reaction :



Previously asked in: 2025 31/4/1 Q21

♦ Chemical Reactions and Equations

Definition of Oxidation

Identifying the Oxidised Substance in a Redox Reaction

Q37. § 1.3 HAVE YOU OBSERVED THE EFFECTS OF OXIDATION REACTIONS IN EVERYDAY LIFE? [3]

With the help of an activity, explain the conditions under which iron articles get rusted.

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

♦ Chemical Reactions and Equations

Conditions for Rusting of Iron (Activity-based explanation)

Q38. [1]

Account for the following : Bags of oil and fat containing food items are flushed with nitrogen gas.

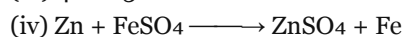
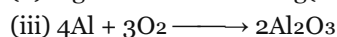
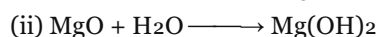
Previously asked in: 2026 31/4/1 Q26 (c)

♦ Chemical Reactions and Equations

Oxidation and Rancidity in Food

Q39. § 1.1 CHEMICAL EQUATIONS § 1.2.1 Combination Reaction [1]

Which of the following are combination reactions ?



(A) (i) and (iii)

(B) (iii) and (iv)

(C) (ii) and (iv)

(D) (ii) and (iii)

Previously asked in: 2026 31/2/1 Q17

♦ Chemical Reactions and Equations

Combination Reactions

Q40. § 1.1.2 Balanced Chemical Equations § 1.2.2 Decomposition Reaction § 1.2.4 Double Displacement Reaction**[2]**

Write balanced chemical equation for the reaction that occurs when :

- (i) blue coloured copper sulphate crystals are heated and
- (ii) Sodium hydrogen carbonate is heated during cooking.

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

♦ Chemical Reactions and Equations

Decomposition of copper sulphate crystals on heating

Decomposition of sodium hydrogen carbonate on heating

Thermal decomposition reactions – writing balanced chemical equations

Q41. § 1.2.5 Oxidation and Reduction**[3]**

Seema took a small amount of copper powder in a china dish and heated it. What changes will she observe on heating ? When H_2 gas is passed over this heated substance, what visible changes will be seen in it ? Give the chemical equations of the reactions involved, along with the names and colours of the products in each case.

Previously asked in: 2026 31/2/1 Q27

♦ Chemical Reactions and Equations

Oxidation and reduction reactions (redox reactions)

Oxidation of copper and reduction by hydrogen gas

Q42. § 1.1 CHEMICAL EQUATIONS § 1.1.2 Balanced Chemical Equations**[3]**

Answer the following:

- (a) Identify the reducing agent in the following reactions : (i) $4NH_3 + 5O_2 \rightarrow 4NO + 6H_2O$ (ii) $H_2O + F_2 \rightarrow HF + HOF$ (iii) $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$ (iv) $2H_2 + O_2 \rightarrow 2H_2O$
- (b) Define a redox reaction in terms of gain or loss of oxygen.

Previously asked in: 2023 31/1/1 Q27

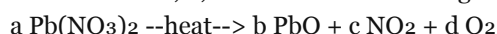
♦ Chemical Reactions and Equations

Identifying reducing agents in chemical reactions

Redox reactions – definition in terms of gain or loss of oxygen

Q43. § 1.1.1 Writing a Chemical Equation § 1.1.2 Balanced Chemical Equations**[1]**

The values of a, b, c and d in the following balanced chemical equation are respectively :



- A 1, 1, 2, 1
- B 1, 1, 1, 2
- C 2, 2, 1, 4
- D 2, 2, 4, 1

Previously asked in: 2025 31/5/1 Q5

♦ Chemical Reactions and Equations

Balancing chemical equations

Thermal decomposition reactions

Q44. § 1.2.3 Displacement Reaction § 1.3 HAVE YOU OBSERVED THE EFFECTS OF OXIDATION REACTIONS IN EVERYDAY LIFE?**[1]**

Assertion (A) : Silver chloride turns grey in sunlight.

Reason (R) : Decomposition of silver chloride into silver and chlorine takes place by sunlight.

- 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.

Previously asked in: 2025 31/5/1 Q17

♦ Chemical Reactions and Equations

Photochemical Decomposition Reaction (Silver Chloride in Sunlight)

Q45. § 1.2.2 Decomposition Reaction**[2]**

A crystalline substance of green colour 'X' emits gases of characteristic odour when heated over a flame. It first loses water and changes colour. On further heating, it decomposes and produces a solid compound Y.

- (a) Identify 'X' and 'Y'.
(b) State the change in colour observed when 'X' is heated.

Previously asked in: 2025 31/5/1 Q21

♦ Chemical Reactions and Equations

Decomposition reactions (thermal)

Thermal decomposition of hydrated salts – Copper sulphate / Ferrous sulphate

Q46. § Chapter Introduction § 1.2 TYPES OF CHEMICAL REACTIONS § 1.2.1 Combination Reaction**[1]**

Which of the following is an example of endothermic process ?

- (a) Formation of slaked lime
(b) Decomposition of vegetable matter into compost
(c) Dissolution of ammonium chloride in water
(d) Digestion of food in our body

Previously asked in: 2023 31/2/1 Q1

♦ Chemical Reactions and Equations

Endothermic and Exothermic Reactions

Q47. § 1.2.2 Decomposition Reaction**[3]**

2 g of green coloured crystals of ferrous sulphate are heated in a dry boiling tube. Name the type of chemical reaction taking place. Write the balanced chemical equation for the reaction. Is this an exothermic or an endothermic reaction ?

Previously asked in: 2026 31/3/1 Q26

♦ Chemical Reactions and Equations

Decomposition reactions – endothermic vs exothermic

Thermal decomposition of ferrous sulphate

Q48. § 1.2.3 Displacement Reaction**[1]**

In the following experimental setup of electrolysis of water, if P and Q are the gases collected in the test tubes enclosing the electrodes R and S, then select the option/options in which the matching is correct :

- (i) P – Oxygen gas , R – Anode
(ii) P – Hydrogen gas , R – Cathode
(iii) Q – Hydrogen gas , S – Cathode
(iv) Q – Oxygen gas , S – Anode
- (A) (i) and (ii)
(B) (iii) and (iv)
(C) (i) and (iii)
(D) (ii) and (iv)

Previously asked in: 2025 31/6/1 Q1

♦ Chemical Reactions and Equations

Decomposition Reaction

Electrolysis of Water

Q49. § 1.2 TYPES OF CHEMICAL REACTIONS § 1.3 HAVE YOU OBSERVED THE EFFECTS OF OXIDATION REACTIONS IN EVERYDAY LIFE? [3]

Silver chloride kept in a china dish turns grey in sunlight.

- (a) Write the colour of silver chloride when it was kept in the china dish.
- (b) Name the type of chemical reaction taking place and write the chemical equation for the reaction.
- (c) State one use of the reaction. Name one more chemical which can be used for the same purpose.

Previously asked in: 2023 31/2/1 Q27

♦ Chemical Reactions and Equations

Applications of Decomposition Reactions (Black and White Photography)

Decomposition Reactions

Photodecomposition (Photolytic Decomposition) Reaction

Q50. § 1.2 TYPES OF CHEMICAL REACTIONS

[1]

Assertion (A) : Decomposition reactions are generally endothermic reactions.

Reason (R) : Decomposition of organic matter into compost is an exothermic process.

- (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, but 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 31/1/1 Q17

♦ Chemical Reactions and Equations

Decomposition Reactions – Endothermic Nature

Exothermic and Endothermic Reactions

Q51. § 1.1 CHEMICAL EQUATIONS

[1]

A metal ribbon 'X' burns in oxygen with a dazzling white flame forming a white ash 'Y'. The correct description of X, Y and the type of reaction is :

- (a) X = Ca ; Y = CaO ; Type of reaction = Decomposition
- (b) X = Mg ; Y = MgO ; Type of reaction = Combination
- (c) X = Al ; Y = Al₂O₃ ; Type of reaction = Thermal decomposition
- (d) X = Zn ; Y = ZnO ; Type of reaction = Endothermic

Previously asked in: 2023 31/4/1 Q3

♦ Chemical Reactions and Equations

Burning of Magnesium Ribbon – Observations and Characteristics

Reaction of Magnesium with Oxygen – Combustion and Product Identification

Types of chemical reactions – combination and oxidation

Q52. § 1.2.1 Combination Reaction

[1]

Assertion (A) : Reaction of Quicklime with water is an exothermic reaction.

Reason (R) : Quicklime reacts vigorously with water releasing a large amount of heat.

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

Previously asked in: 2023 31/4/1 Q17

♦ Chemical Reactions and Equations

Exothermic Reactions – Quicklime reacting with water

Q53. § 1.2 TYPES OF CHEMICAL REACTIONS § 1.2.1 Combination Reaction § 1.2.2 Decomposition Reaction**[1]**

Select from the following a decomposition reaction in which source of energy for decomposition is light :

- (a) $2\text{FeSO}_4 \rightarrow \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3$
- (b) $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$
- (c) $2\text{AgBr} \rightarrow 2\text{Ag} + \text{Br}_2$
- (d) $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$

Previously asked in: 2024 31/1/1 Q2

♦ Chemical Reactions and Equations

Photolytic Decomposition Reaction

Q54. § 1.2.2 Decomposition Reaction**[1]**

The gases evolved on heating lead (II) nitrate crystals are :

- A NO and O_2
- B N_2 and NO_2
- C NO_2 and H_2
- D NO_2 and O_2

Previously asked in: 2026 31/1/1 Q19

♦ Chemical Reactions and Equations

Thermal decomposition reactions

Q55. § 1.1 CHEMICAL EQUATIONS § 1.2.1 Combination Reaction § 1.2.4 Double Displacement Reaction**[3]**

Answer the following:

- (i) While electrolysis of water before passing the current some drops of an acid are added. Why ? Name the gases liberated at cathode and anode. Write the relationship between the volume of gas collected at anode and the volume of gas collected at cathode.
- (ii) What is observed when silver chloride is exposed to sunlight ? Give the type of reaction involved.

Previously asked in: 2023 31/4/1 Q27

♦ Chemical Reactions and Equations

Electrolysis of water – role of acid, gases at cathode and anode, volume relationship

Photochemical decomposition – decomposition of silver chloride in sunlight

Q56. § 1.1 CHEMICAL EQUATIONS § 1.2 TYPES OF CHEMICAL REACTIONS § 1.2.2 Decomposition Reaction**[1]**

Answer the following : Give one example each of electrolytic decomposition and decomposition by sunlight.

Previously asked in: 2026 31/1/1 Q26 (c)

♦ Chemical Reactions and Equations

Decomposition reactions (electrolytic and photolytic/by sunlight)

Q57. § 1.2.1 Combination Reaction**[2]**

Name the type of chemical reaction in which calcium oxide reacts with water. Justify your answer by giving balanced chemical equation for the chemical reaction.

Previously asked in: 2024 31/1/1 Q21

♦ Chemical Reactions and Equations

Balanced Chemical Equations

Combination Reaction – CaO reacting with water

Exothermic Reactions

Q58. § 1.1 CHEMICAL EQUATIONS § 1.1.1 Writing a Chemical Equation § 1.2.4 Double Displacement Reaction**[3]**

Write one chemical equation each for the chemical reaction in which the following have taken place : Mention colour change/temperature change (rise/fall)/compound precipitated along with equation.

- (i) Change in colour
- (ii) Change in temperature
- (iii) Formation of precipitate

Previously asked in: 2024 31/1/1 Q27

♦ Chemical Reactions and Equations

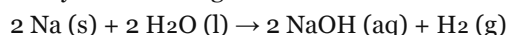
Colour change in chemical reactions

Formation of precipitate in chemical reactions

Temperature change (exothermic/endothermic) in chemical reactions

Q59. § 1.1.2 Balanced Chemical Equations § 1.2.1 Combination Reaction § 1.2.4 Double Displacement Reaction**[1]**

Study the following chemical reaction :



The reducing agent in this reaction is :

- (a) Na
- (b) H₂O
- (c) NaOH
- (d) H₂

Previously asked in: 2023 31/5/1 Q3

♦ Chemical Reactions and Equations

Oxidation and Reduction – Identifying Reducing Agent in a Redox Reaction

Q60. § 1.2 TYPES OF CHEMICAL REACTIONS**[3]**

Answer the following:

- (a) (i) Define the term decomposition reaction. Write one chemical equation each for decomposition reaction where energy is supplied in the form of heat, light or electricity. (ii) Decomposition of vegetable matter into compost is considered an exothermic reaction. Why ? [3]

Previously asked in: 2025 31/2/1 Q27

♦ Chemical Reactions and Equations

Decomposition Reactions (thermal, photolytic, electrolytic)

Exothermic and Endothermic Reactions

Q61. § 1.2.1 Combination Reaction**[1]**

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

- (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.

Previously asked in: 2024 31/2/1 Q1

♦ Chemical Reactions and Equations

Combination Reactions

Exothermic Reactions

Q62. § 1.2.1 Combination Reaction

[1]

Select from the following a process in which a combination reaction is involved :

- (A) Black and White photography
- (B) Burning of coal
- (C) Burning of methane
- (D) Digestion of food

Previously asked in: 2024 31/2/1 Q3

♦ Chemical Reactions and Equations

Combination Reactions

Q63. § Chapter Introduction § 1.1 CHEMICAL EQUATIONS § 1.2 TYPES OF CHEMICAL REACTIONS

[2]

List the possible sources of energy required in decomposition reactions. Illustrate any one with a suitable example.

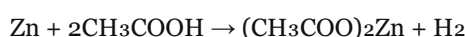
Previously asked in: 2025 31/3/1 Q21(a)

♦ Chemical Reactions and Equations

Decomposition Reactions – Sources of Energy (Thermal, Light, Electrical)

Q64. § 1.1.2 Balanced Chemical Equations

[1]



The above reaction is a :

- A Decomposition reaction
- B Displacement reaction
- C Double displacement reaction
- D Combination reaction

Previously asked in: 2024 31/4/1 Q1

♦ Chemical Reactions and Equations

Types of Chemical Reactions – Displacement Reaction

Q65. § 1.1 CHEMICAL EQUATIONS

[2]

When magnesium ribbon is burnt in air, an ash of white colour is produced. Write chemical equation for the reaction giving the chemical name of the ash produced. State the type of chemical reaction giving justification for your answer.

Previously asked in: 2024 31/3/1 Q21

♦ Chemical Reactions and Equations

Combustion reaction of magnesium in air

Types of chemical reactions – combination and oxidation

Writing and balancing chemical equations

Q66. § 1.2.1 Combination Reaction

[1]

Assertion (A) : Reaction of quick lime with water is an exothermic reaction.

Reason (R) : A large amount of heat is evolved on the reaction of quick lime and water.

- (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.

Previously asked in: 2026 31/5/1 Q24

♦ Chemical Reactions and Equations

Exothermic Reactions

Q67. § 1.1.2 Balanced Chemical Equations § 1.2.2 Decomposition Reaction § 1.2.3 Displacement Reaction**[3]**

What happens when

(i) lead (II) nitrate is heated ?

(ii) iron (II) sulphate is heated ?

(iii) silver chloride is exposed to sunlight ?

Write balanced chemical equations of the reactions involved in support of your answer.

Previously asked in: 2026 31/5/1 Q26

♦ Chemical Reactions and Equations

Balanced chemical equations for decomposition reactions

Decomposition reactions (thermal and photolytic decomposition)

Q68.**[1]**

The volume ratio of hydrogen and oxygen gases liberated during electrolysis of water is

(A) 1 : 1

(B) 2 : 1

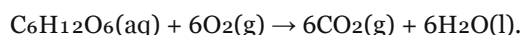
(C) 4 : 1

(D) 1 : 2

Previously asked in: 2026 31/4/1 Q17; 2026 31/5/1 Q17 – 2×

♦ Chemical Reactions and Equations

Electrolysis of Water (Decomposition Reaction)

Q69. § 1.1 CHEMICAL EQUATIONS § 1.2.1 Combination Reaction § 1.2.4 Double Displacement Reaction**[1]**

The above reaction is an example of

(A) Displacement Reaction

(B) Endothermic Reaction

(C) Exothermic Reaction

(D) Neutralisation Reaction

Previously asked in: 2026 31/4/1 Q18

♦ Chemical Reactions and Equations

Exothermic Reaction

Oxidation / Combustion Reaction

Q70. § Chapter Introduction § 1.2 TYPES OF CHEMICAL REACTIONS**[5]**

What is a chemical reaction ? Describe one activity each to show that a chemical change has occurred in which (i) change of colour, and (ii) change in temperature has taken place.

Previously asked in: 2024 31/4/1 Q34 (a)

♦ Chemical Reactions and Equations

Definition of a Chemical Reaction

Indicators of a Chemical Change – Change in Temperature

Indicators of a Chemical Change – Change of Colour

Q71. § 1.2.3 Displacement Reaction § 1.3 HAVE YOU OBSERVED THE EFFECTS OF OXIDATION REACTIONS IN EVERYDAY LIFE?**[1]**

Account for the following : White silver chloride turns grey when exposed to sunlight.

Previously asked in: 2026 31/4/1 Q26 (a)

♦ Chemical Reactions and Equations

Decomposition Reaction (Photolysis of Silver Chloride)

Q72. § 1.2.2 Decomposition Reaction**[1]**

Account for the following : Lead (II) nitrate on heating releases brown fumes.

Previously asked in: 2026 31/4/1 Q26 (b)

♦ Chemical Reactions and Equations

Thermal Decomposition Reaction

Q73. § 1.1 CHEMICAL EQUATIONS § 1.2.3 Displacement Reaction § 1.2.5 Oxidation and Reduction**[3]**

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

- (i) Which method will be used to convert each of them to their respective metal oxides ? (a) Carbonate ore (b) Sulphide ore
- (ii) Write a chemical reaction to illustrate the use of aluminium for joining cracked railway tracks.
- (iii) During extraction of metals, electrolytic refining is used to obtain pure metals. Which material will be used as anode and cathode for the refining of copper metal by this process ?

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

♦ Chemical Reactions and Equations

Thermal Decomposition Reaction

Q74. § 1.2 TYPES OF CHEMICAL REACTIONS § 1.2.1 Combination Reaction**[5]**

- (i) Define a decomposition reaction. How can we say that (I) electrolysis of water, and (II) blackening of silver bromide when exposed to sunlight, are decomposition reactions ? Mention the type of energy involved in each case.
- (ii) The type of reactions in which (I) calcium oxide is formed, and (II) calcium hydroxide is formed are opposite reactions to each other. Justify this statement with the help of chemical equations.

Previously asked in: 2024 31/4/1 Q34 (b)

♦ Chemical Reactions and Equations

Combination vs Decomposition reactions – CaO and Ca(OH)₂ as opposite reactions

Decomposition Reactions – definition and types (thermal, electrolytic, photolytic)

Electrolysis of water as an electrolytic decomposition reaction

Photolytic decomposition – blackening of silver bromide in sunlight

Q75. § 1.2.3 Displacement Reaction**[1]**

Assertion (A) : The colour of aqueous solution of copper sulphate turns colourless when a piece of lead is added to it.

Reason (R) : Lead is more reactive than copper, and hence displaces copper from its salt solution.

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

Previously asked in: 2023 31/1/1 Q17

♦ Chemical Reactions and Equations

Assertion-Reason: Colour Change in Displacement Reactions

Displacement Reactions and Reactivity Series

Q76. § 1.1 CHEMICAL EQUATIONS § 1.2 TYPES OF CHEMICAL REACTIONS § 1.2.3 Displacement Reaction**[3]**

Study the experimental set-up shown in the diagram and write chemical equation for the chemical reaction involved. Name and define the type of reaction. List two other metals which can be used in place of iron to show the same type of reaction with copper sulphate solution.

Previously asked in: 2024 31/5/1 Q27

♦ Chemical Reactions and Equations

Chemical Equation for Iron and Copper Sulphate Reaction

Displacement Reaction

Reactivity Series and Metal Displacement

Q77. § 1.2 TYPES OF CHEMICAL REACTIONS § 1.2.4 Double Displacement Reaction**[1]**

Which of the following is an example of a displacement reaction ?

- (A) The combustion of natural gas
- (B) The reaction of a reactive metal with dilute acid
- (C) The electrolysis of water
- (D) The reaction of quick lime with water

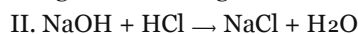
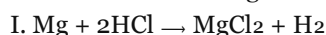
Previously asked in: 2026 31/3/1 Q17

♦ Chemical Reactions and Equations

Displacement Reactions

Q78. § 1.1 CHEMICAL EQUATIONS § 1.1.1 Writing a Chemical Equation § 1.2.4 Double Displacement Reaction**[1]**

Consider the following chemical equation I and II



The correct statement about these equations is –

- (a) 'I' is a displacement reaction and 'II' is a decomposition reaction.
- (b) 'I' is a displacement reaction and 'II' is double displacement reaction.
- (c) Both 'I' and 'II' are displacement reactions.
- (d) Both 'I' and 'II' are double-displacement reactions.

Previously asked in: 2023 31/6/1 Q12

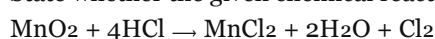
♦ Chemical Reactions and Equations

Displacement Reactions

Double displacement and precipitation reactions

Q79. § 1.1 CHEMICAL EQUATIONS § 1.1.1 Writing a Chemical Equation § 1.1.2 Balanced Chemical Equations**[2]**

State whether the given chemical reaction is a redox reaction or not. Justify your answer.



Previously asked in: 2023 31/6/1 Q21

♦ Chemical Reactions and Equations

Redox Reactions (Oxidation and Reduction)

Q80. § 1.1 CHEMICAL EQUATIONS § 1.1.2 Balanced Chemical Equations § 1.2.4 Double Displacement Reaction**[1]**

The reaction given above is a redox reaction because in this case :

- (a) MnO_2 is oxidised and HCl is reduced.
- (b) HCl is oxidised.
- (c) MnO_2 is reduced.
- (d) MnO_2 is reduced and HCl is oxidised.

Previously asked in: 2024 31/1/1 Q7

♦ Chemical Reactions and Equations

Redox Reactions – Simultaneous Oxidation and Reduction

Q81. § 1.1.2 Balanced Chemical Equations**[1]**

Answer the following : Name the substance oxidised and reduced in the following reaction : $\text{ZnO} + \text{C} \rightarrow \text{Zn} + \text{CO}$

Previously asked in: 2026 31/1/1 Q26 (a)

♦ Chemical Reactions and Equations

Oxidation and reduction (redox reactions)

Q82. § 1.2 TYPES OF CHEMICAL REACTIONS § 1.2.3 Displacement Reaction § 1.3 HAVE YOU OBSERVED THE EFFECTS OF OXIDATION REACTIONS IN EVERYDAY LIFE?**[1]**

Answer the following: In common practice silver is recovered from silver nitrate solution by the use of copper metal. Name the type of reaction that takes place in this process and give the chemical equation of the reaction involved.

Previously asked in: 2025 31/2/1 Q21 (a)

♦ Chemical Reactions and Equations

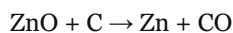
Chemical Equation Writing

Displacement Reaction

Q83. § 1.1.2 Balanced Chemical Equations

[1]

Assertion (A) : In the following reaction



ZnO undergoes reduction.

Reason (R) : Carbon is a reducing agent that reduces ZnO to Zn.

- (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.

Previously asked in: 2023 31/5/1 Q17

♦ Chemical Reactions and Equations

Oxidation and Reduction – Identifying Reducing Agent in a Redox Reaction

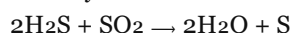
Oxidation and reduction (redox reactions)

Reduction of Metal Oxides with Carbon (Coke)

Q84. § 1.1.2 Balanced Chemical Equations § 1.2.1 Combination Reaction § 1.2.4 Double Displacement Reaction

[1]

Identify the correct statement about the following reaction :



- (A) H₂S is oxidising agent and SO₂ is reducing agent.
(B) H₂S is reduced to sulphur.
(C) SO₂ is oxidising agent and H₂S is reducing agent.
(D) SO₂ is oxidised to sulphur.

Previously asked in: 2024 31/2/1 Q6

♦ Chemical Reactions and Equations

Redox Reactions – Oxidation and Reduction

Types of Chemical Reactions

Q85. § 1.2.3 Displacement Reaction

Answer the following : Identify the type of chemical reaction that takes place when a solution of copper sulphate reacts with iron.

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

♦ Chemical Reactions and Equations

Displacement Reaction

Q86. § 1.2 TYPES OF CHEMICAL REACTIONS § 1.2.3 Displacement Reaction § 1.2.4 Double Displacement Reaction

[2]

Giving one example of each, differentiate between a displacement reaction and a double displacement reaction.

Previously asked in: 2024 31/2/1 Q21(b)

♦ Chemical Reactions and Equations

Displacement Reaction

Double Displacement Reaction

Types of Chemical Reactions

Q87. § 1.1 CHEMICAL EQUATIONS § 1.2 TYPES OF CHEMICAL REACTIONS § 1.2.1 Combination Reaction

[1]

Which of the following is a redox reaction, but not a combination reaction ?

- (A) $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$
(B) $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
(C) $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$
(D) $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$

Previously asked in: 2024 31/5/1 Q2

♦ Chemical Reactions and Equations

Redox Reactions (Oxidation and Reduction)

Types of Chemical Reactions

Q88. § 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) Al₂O₃
- (C) Na₂O
- (D) K₂O

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

Q89. § 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

Q90. § 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

Q91. § 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

Q92. § 3.2 CHEMICAL PROPERTIES OF METALS § 3.3 HOW DO METALS AND NON-METALS REACT? § 3.4 OCCURRENCE OF METALS [1]

When 2 mL of sodium hydroxide solution is added to few pieces of granulated zinc in a test tube and then warmed, the reaction that occurs can be written in the form of a balanced chemical equation as :

- (a) $\text{NaOH} + \text{Zn} \rightarrow \text{NaZnO}_2 + \text{H}_2\text{O}$
- (b) $2\text{NaOH} + \text{Zn} \rightarrow \text{Na}_2\text{ZnO}_2 + \text{H}_2$
- (c) $2\text{NaOH} + \text{Zn} \rightarrow \text{NaZnO}_2 + \text{H}_2$
- (d) $2\text{NaOH} + \text{Zn} \rightarrow \text{Na}_2\text{ZnO}_2 + \text{H}_2\text{O}$

Previously asked in: 2024 31/1/1 Q1

♦ **Metals and Non-metals** Amphoteric oxides of metals (ZnO , Al_2O_3)

Reaction of zinc with sodium hydroxide – balanced chemical equation

Q93. § 3.1 PHYSICAL PROPERTIES § 3.2 CHEMICAL PROPERTIES OF METALS § 3.5 CORROSION [2]

A light green coloured solution of sulphate salt of metal 'P' is taken in a beaker, a rod of another metal 'Q' is put in this solution as shown the following figures :

Identify the metals 'P' and 'Q' and write its chemical equation for the reaction that occurs. State the conclusion of this reaction in terms of reactivity series of metals.

Previously asked in: 2025 31/6/1 Q21

♦ **Metals and Non-metals** Chemical Equation for Iron and Copper Sulphate Reaction

Displacement Reactions – colour change in copper sulphate solution with iron

Indicators of Chemical Reactions – Change in Colour

Reactivity Series and Displacement Reactions of Metals

Q94. § 3.5 CORROSION [1]

A student notices that her silver jewellery turned dull and had a grey-black coating over it after wearing for a few months. What results in the change in colour of the silver metal ?

- (A) The polish over the jewellery was removed after wearing for a few months.
- (B) The jewellery comes in contact with air, moisture and acids and corrodes.
- (C) Dust particles over the jewellery change its colour.
- (D) Its colour changes due to rusting.

Previously asked in: 2026 31/2/1 Q23

♦ **Metals and Non-metals** Corrosion of metals (tarnishing of silver) Tarnishing of Silver

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