

ICSE Class 10 • Chemistry

Important Questions 2027

Most repeated questions from the last few years of board and sample papers, grouped chapter-wise.

Periodic Properties and Variations of Properties

1. Study the table given below (periodic table with letters E, J, Q, L, M, G, D, N, P). Use only the letters given to answer. Do not identify the elements. (a) State the valency of element 'G'. (b) Which element can exhibit catenation? (c) Write the formula of the compound formed between 'M' and 'P'.

questions. Do not identify the elements.

IA	IIA	III A	IVA	VA	VIA	VIIA	0
			E		J		Q
	L			G			
	M	D				P	
	N						

Seen in: Board 2025 · Sample 2023, 2027

2. The electron affinity of an element X is greater than that of element Y. (a) How is the oxidising power of X likely to compare with that of Y? (b) How is the electronegativity of X likely to compare with that of Y? (c) State whether X is likely to be placed to the left or to the right of Y in the periodic table?

Seen in: Sample 2024, 2025, 2026

3. In the reactivity series of metals, Z is a metal above hydrogen and its oxide has the formula ZO. It was found that ZO reacted with water and formed a hydroxide as the product. (a) State the number of valence electrons present in element Z. (b) Name the group which Z belongs to. (c) What will be the formula of the hydroxide of Z?

Seen in: Sample 2025, 2027

4. Assertion (A): The tendency of losing electrons increases down the Group. Reason (R): The most reactive metal is placed at the top of Group 1. (a) Both (A) and (R) are true, and (R) is the correct explanation of (A). (b) Both (A) and (R) are true, and (R) is not the correct explanation of (A). (c) (A) is true but (R) is false. (d) (A) is false but (R) is true.

Seen in: Board 2025 · Sample 2025

5. Complete the following by choosing the correct answers from the bracket: (a) If an element has one electron in the outermost shell, then it is likely to have the _____ [smallest/ largest] atomic size amongst all the elements in the same period. (b) _____ [sulphuric acid/ hydrochloric acid] does not form an acid salt. (c) A _____ [reddish brown/ dirty green] coloured precipitate is formed when ammonium hydroxide is added to a solution of ferrous chloride. (d) Alkynes undergo _____ [addition / substitution] reactions. (e) An _____ [alkaline/acidic] solution will turn methyl orange solution pink or red.

Seen in: Sample 2024, 2025

6. X [2,8,7] and Y [2,8,2] are two elements. Using this information complete the following: (a) _____ is the metallic element. (b) Metal atoms tend to have a maximum of _____ electrons in the outermost shell. (c) _____ is the reducing agent.

Seen in: Sample 2024, 2025

7. Electron Affinity is maximum in: (a) Mg (b) Ar (c) Li (d) Br

Seen in: Board 2023, 2024 · Sample 2023

8. Arrange the following as per the instructions given in the brackets: (a) Carbon, Fluorine, Beryllium (decreasing order of atomic size) (b) Sulphuric acid, Phosphoric acid, Acetic acid (increasing order of number of replaceable H atoms per molecule) (c) Potassium, Lithium, Sodium (increasing order of ionization potential)

Seen in: Board 2023, 2024 · Sample 2023

9. Which element amongst the following has the largest atomic radius? (a) Al (b) S (c) Mg (d) Na

Seen in: Board 2023 · Sample 2026

10. Given below are two sets of elements from two different periods. Name the element with the highest ionisation potential in each of the following sets. (a) Al, Cl, Mg (b) Ne, O, F

Seen in: Board 2024, 2025

Chemical Bonding

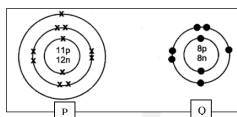
11. A compound commonly used in the laboratory has formula H_2P . H represents hydrogen, P represents a non-metal. Draw a dot and cross structure for the formation of the compound H_2P .

Seen in: Board 2024, 2025, 2026 · Sample 2027

12. Identify the following: (a) A bond formed between two atoms by sharing of a pair of electrons, with both electrons being provided by the same atom. (b) A salt formed by the complete neutralisation of an acid by a base. (c) A reaction in which the hydrogen of an alkane is replaced by a halogen. (d) The energy required to remove an electron from a neutral gaseous atom. (e) A homogenous mixture of two or more metals or a metal and a non-metal in a definite proportion in their molten state.

Seen in: Sample 2024, 2025, 2026

13. The diagram illustrates the structures of two atoms P (11p, 12n) and Q (8p, 8n). What is the formula and mass of one mole of the compound formed when P and Q react together? [At. wt of P is 23 and Q is 16]



Seen in: Board 2024 · Sample 2025, 2027

14. Draw the electron dot diagram of ammonium ion. [Atomic No.: N=7, H=1]

Seen in: Board 2023 · Sample 2025, 2026

15. Identify the ion that contains one lone pair of electrons. (a) OH^{-1} (b) H_3O^{+} (c) NH_4^{+} (d) H^{+}

Seen in: Sample 2026, 2027

16. Assertion (A): Ionic compounds have high melting points. Reason (R): A strong electrostatic force of attraction exists between the oppositely charged ions. (a) (A) is true but (R) is false. (b) (A) is false but (R) is true. (c) Both (A) and (R) are true, and (R) is the correct explanation of (A). (d) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

Seen in: Board 2026 · Sample 2027

17. Draw the electron dot diagram of Hydronium ion.

Seen in: Sample 2023, 2024

18. Match the Column A with Column B: A: (a) Water (b) Alkali metal (c) Halogen (d) Calcium oxide (e) Weak acid. B: 1. Lithium 2. Iodine 3. Covalent compound 4. Acetic acid 5. Ionic compound 6. Sulphuric acid

Seen in: Board 2023, 2024

Study of Acids, Bases and Salts

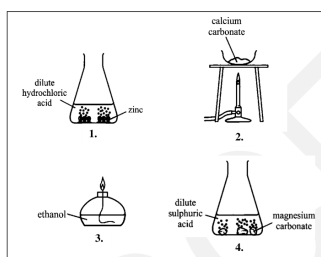
19. Rohit has three solutions X, Y and Z that have pH 2, 7 and 13 respectively. Which solution out of X, Y or Z will: (a) liberate sulphur dioxide gas when heated with sodium sulphite? (b) liberate ammonia gas when reacted with ammonium chloride? (c) not have any effect on litmus paper?

Seen in: Board 2024 · Sample 2024, 2025, 2026, 2027

20. Given below are some chemicals [Lead nitrate, Copper, Hydrochloric acid, Lead oxide, Iron, Sodium carbonate, Copper carbonate, Chlorine]. Using suitable chemicals from the box, write balanced chemical equations for the preparation of the following salts (chemicals may be used more than once): (a) Lead (II) carbonate (b) Copper (II) chloride (c) Iron (II) chloride

Seen in: Board 2026 · Sample 2025, 2026

21. A teacher demonstrated four different reactions: 1. dilute hydrochloric acid + zinc 2. calcium carbonate heated 3. ethanol burning 4. dilute sulphuric acid + magnesium carbonate. Which reactions will produce water? (a) 1 and 2 (b) 1 and 3 (c) 3 and 4 (d) 2 and 3



Seen in: Sample 2026, 2027

22. Write balanced chemical equations for the following conversions (A to C): $\text{ZnSO}_4 \xleftarrow{\text{A}} \text{Zn} \xrightarrow{\text{B}} \text{ZnS}$; $\text{Zn} \xrightarrow{\text{C}} \text{Zn(OH)}_2$.

Seen in: Sample 2026, 2027

23. The basicity of acetic acid is: (a) 1 (b) 2 (c) 3 (d) 4

Seen in: Sample 2023, 2024

24. P, Q, R and S are the different methods of preparation of salts. P - Simple displacement; Q - Neutralisation by titration; R - Precipitation; S - Direct combination. Choose the most appropriate method to prepare the following salts: (a) PbCl_2 (b) FeCl_3 (c) Na_2SO_4

Seen in: Board 2024, 2025

25. The indicator which changes to pink colour in an alkaline solution is: (a) Blue Litmus (b) Methyl Orange (c) Red Litmus (d) Phenolphthalein

Seen in: Board 2023 · Sample 2023

Analytical Chemistry

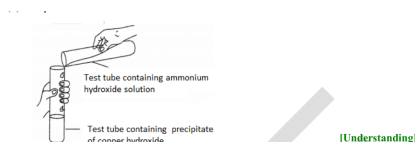
26. State giving reasons if: (a) Zinc metal and aluminium metal can be distinguished by heating the metal powders separately in two different test tubes with concentrated sodium hydroxide solution. (b) Zinc nitrate and lead nitrate can be distinguished by adding ammonium hydroxide solution to the salt solution.

Seen in: Sample 2024, 2025, 2026, 2027

27. A compound P is heated in a test tube with sodium hydroxide solution. A red litmus paper held at the mouth of the test tube turns blue. Which of the following could compound P be? (a) Zinc sulphate (b) Copper sulphate (c) Ferrous sulphate (d) Ammonium sulphate

Seen in: Sample 2024, 2025, 2026

28. A student was asked to perform two experiments. State one observation for each of the Experiments 1 and 2 on mixing the given solutions. (a) Experiment 1: test tube containing solution of zinc sulphate and test tube containing solution of barium chloride. (b) Experiment 2: test tube containing ammonium hydroxide solution and test tube containing precipitate of copper hydroxide.



Seen in: Board 2023 · Sample 2025, 2026

- 29.** Alex was given a solution of an unknown salt Y for analysis. To a part of the solution he added silver nitrate solution and obtained a white precipitate which was soluble in ammonium hydroxide solution. To the remaining solution he added a few drops of sodium hydroxide solution and obtained a pale blue precipitate. Based on the observations, identify: (a) the anion and (b) the cation present in salt Y.

Seen in: Board 2023, 2024, 2026 · Sample 2023

- 30.** Identify from the following metal oxide which can react with an acid as well as an alkali. (a) Silver oxide (b) Calcium oxide (c) Copper(II) oxide (d) Aluminium oxide

Seen in: Board 2024 · Sample 2023, 2026

- 31.** Abhishek was given a salt 'X' for analysis which was white in colour. On strong heating it produced a yellow residue, a colourless gas, and also a reddish-brown gas. The solution of the salt 'X' when tested with excess of ammonium hydroxide produced a chalky white insoluble precipitate. (a) Name the coloured gas evolved when Abhishek heated the salt strongly. (b) Which cation was present in the sample given to Abhishek? (c) Identify the salt given to Abhishek for analysis.

Seen in: Sample 2025, 2026

- 32.** When compound X reacts with dilute hydrochloric acid, it releases a gas that turns moist lead acetate paper black and decolourises acidified potassium permanganate solution. Which of the following is compound X? (a) Sodium nitrate (b) Sodium sulphide (c) Sodium carbonate (d) Sodium sulphite

Seen in: Board 2024 · Sample 2027

- 33.** Identify only the anion present in the following compound: (a) The compound on heating produces a colourless, odourless gas which turns lime water milky and has no effect on acidified potassium dichromate solution. (b) The solution of the compound which on treating with concentrated sulphuric acid and freshly prepared ferrous sulphate solution produces a brown ring.

Seen in: Board 2023, 2024 · Sample 2023

- 34.** Differentiate between the following pairs of compounds using the reagent given in the bracket: (a) Ammonium chloride and Sodium chloride (using an alkali) (b) Zinc Nitrate solution and Calcium Nitrate solution (using excess sodium hydroxide solution)

Seen in: Board 2025 · Sample 2023

- 35.** Name the gas produced during each of the following reactions: (a) When copper is treated with hot, concentrated nitric acid. (b) When ammonia is burnt in an atmosphere of oxygen. (c) When ferrous sulphide reacts with dilute hydrochloric acid.

Seen in: Board 2024, 2025

Mole Concept and Stoichiometry

36. Solid ammonium dichromate decomposes as under: $(\text{NH}_4)_2\text{Cr}_2\text{O}_7 \rightarrow \text{N}_2 + \text{Cr}_2\text{O}_3 + 4\text{H}_2\text{O}$. If 126 g of ammonium dichromate decomposes, calculate: (a) the number of moles of ammonium dichromate that undergoes decomposition. (b) the mass of chromic oxide formed at the same time. (c) the volume of nitrogen gas evolved at STP. [At wt: N=14, Cr=52, O=16, H=1]

Seen in: Board 2024, 2025, 2026 · Sample 2024, 2025, 2026, 2027

37. What volume of carbon dioxide is produced at STP when 5 litres of propane is burnt completely according to: $\text{C}_3\text{H}_8 + 5\text{O}_2 \rightarrow 3\text{CO}_2 + 4\text{H}_2\text{O}$? (a) 10 litres (b) 15 litres (c) 20 litres (d) 25 litres

Seen in: Board 2023, 2024, 2025, 2026 · Sample 2023, 2025

38. The volume occupied by 0.2 moles of a gas at S.T.P. is: (a) 22.4 litres (b) 2.24 litres (c) 44.8 litres (d) 4.48 litres

Seen in: Board 2024 · Sample 2026, 2027

39. 20 grams of a gas $\text{M}_{2\text{P}}$ has lesser number of moles than 20 grams of the gas MP. Justify the above statement using mathematical calculations. [At.wt. M=14, P=16]

Seen in: Sample 2025, 2027

40. A gas cylinder can hold 150 g of hydrogen under certain conditions. If an identical cylinder with the same capacity can hold 450 g of gas 'G' under the same conditions, find: (a) the vapour density of the gas 'G'. (b) the molecular weight of gas 'G'.

Seen in: Board 2025 · Sample 2023, 2024

41. The ratio between the volumes occupied by 22 grams of carbon dioxide and 10 grams of hydrogen gas is: (a) 2.2:1 (b) 1:2.2 (c) 1:10 (d) 10:1

Seen in: Sample 2025, 2026

42. An organic compound X containing carbon and hydrogen only has Vapour Density (V.D.) 14. The molecular formula of X is _____. (At. wt. of C=12, H=1) (a) CH (b) C_{2H_4} (c) C_{2H_2} (d) CH_2

Seen in: Board 2025 · Sample 2027

43. (a) State Avogadro's Law. (b) Define Co-ordinate bond.

Seen in: Board 2024, 2025 · Sample 2023

44. An organic compound 'X' contains carbon, oxygen and hydrogen only. The percentage of carbon and hydrogen are 47.4% and 10.5% respectively. The relative molecular mass of 'X' is 76. Find the empirical formula and the molecular formula of 'X'. [Atomic weight: C=12, O=16, H=1]

Seen in: Board 2025 · Sample 2023

45. The empirical formula of an organic compound is C_{3H4N} . Its molecular weight is 108. Find the amount of carbon in one mole of the compound. Show all the steps involved. (Atomic weights: C-12; H-1; N-14)

Seen in: Board 2023 · Sample 2024

46. The vapour density of CH_3OH is _____. (At. Wt. C=12, H=1, O=16) (a) 32 (b) 18 (c) 16 (d) 34

Seen in: Board 2023 · Sample 2023

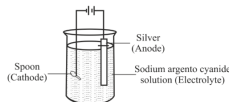
Electrolysis

47. Which statement given below is correct with reference to the flow of electric current? (a) In all aqueous solutions, current is carried by electrons. (b) In all acidic solutions, current is carried by ions. (c) In molten electrolytes, current is carried by electrons. (d) In metal wires, current is carried by ions.

Seen in: Sample 2025, 2026, 2027

48. The diagram given below shows the electroplating of a spoon with silver (Silver anode, Spoon cathode, Sodium argentocyanide solution electrolyte). (a) Write an equation for the reaction that occurs at the cathode. (b) Silver nitrate solution is not preferred as an electrolyte in the above process. Give a reason. (c) Why is alternating current not used in the process? (d) What is the observation at the anode?

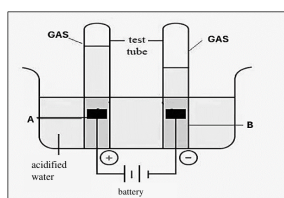
reference to the diagram, answer the following questions:



(a) Write an equation for the reaction that occurs at the cathode

Seen in: Board 2024, 2026 · Sample 2025, 2026

49. The diagram shows the electrolysis of acidulated water (electrode A at positive, electrode B at negative). (a) Write an equation for the reaction that takes place at A. (b) Give a test to confirm the product formed at A. (c) Which gas is liberated at B? (d) Why is water acidified for electrolysis? (e) What is the ratio by volume of the gases liberated at A and B?



Seen in: Board 2025, 2026 · Sample 2027

50. Match Column A with Column B: A: (a) $CuO + C \rightarrow Cu + CO$ (b) $Al^{3+} + 3e^- \rightarrow Al$ (c) $PbBr_2 \rightarrow Pb^{2+} + 2Br^{1-}$ (d) $2O^{2-} - 4e^- \rightarrow O_2$ (e) $HCl \rightarrow H^+ + Cl^{1-}$. B: 1. Oxidation 2. Ionization 3. Reduction 4. Redox 5. Electrolytic dissociation

Seen in: Board 2026 · Sample 2027

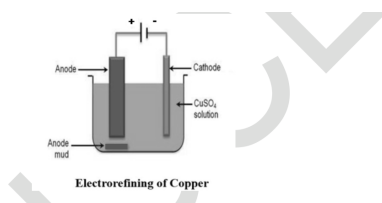
51. An aqueous solution of copper sulphate turns colourless on electrolysis. Which of the following could be the electrodes? P: anode copper, cathode copper; Q: anode platinum, cathode copper; R: anode copper, cathode platinum. (a) only P (b) only Q (c) only R (d) both Q and R

Seen in: Sample 2024, 2025

52. Copper sulphate solution is electrolysed using copper electrodes. (a) Which electrode [cathode or anode] is the oxidizing electrode? Why? (b) Write the equation for the reaction occurring at the above electrode.

Seen in: Sample 2024, 2025

53. In the process of Electrorefining of Copper shown in the diagram, which of the following statements is correct? (a) The anode is made of pure Copper. (b) The cathode is made of impure Copper. (c) Copper is deposited at the anode. (d) Copper ions from the anode move to the cathode and get deposited as pure Copper.



Seen in: Board 2023 · Sample 2026

54. Assertion (A): Dilute Sulphuric acid is a stronger electrolyte than concentrated Sulphuric acid. Reason (R): Dilute Sulphuric acid has a higher concentration of mobile ions. (a) (A) is true but (R) is false. (b) (A) is false but (R) is true. (c) Both (A) and (R) are true and (R) is the correct explanation of (A). (d) Both (A) and (R) are true, but (R) is not the correct explanation of (A).

Seen in: Board 2026 · Sample 2023

55. With respect to the electrolysis of copper (II) sulphate solution using copper electrodes, which statement is correct? (a) Copper metal is deposited at the negative electrode. (b) Oxygen gas is produced at the positive electrode. (c) The positive electrode increases in mass. (d) The negative electrode decreases in mass.

Seen in: Board 2025, 2026

56. Complete the following sentences by choosing the correct option from the brackets: (a) The oxide that dissolves in caustic potash (KOH) is _____. [ZnO / CuO] (b) The reaction that takes place at the anode during the electrolysis of molten lead bromide is _____. [$2\text{Br}^- - 2e^- \rightarrow 2\text{Br}_2$ / $2\text{Br}^- - 2e^- \rightarrow \text{Br}_2$] (c) The volume occupied by 8 grams of oxygen gas at STP is _____ litres. [5.6 / 8.96] (d) _____ does not give hydrogen gas when it reacts with cold and very dilute nitric acid. [Cu / Mn] (e) _____ is a polar covalent compound. [HCl / CCl_4]

Seen in: Board 2025, 2026

57. Which of the following reactions takes place at the anode during the electroplating of an article with silver? (a) $\text{Ag} - 1\text{e}^- \rightarrow \text{Ag}^{1+}$ (b) $\text{Ag} + 1\text{e}^- \rightarrow \text{Ag}^{1-}$ (c) $\text{Ag} - 1\text{e}^- \rightarrow \text{Ag}$ (d) None of the above

Seen in: Board 2023 · Sample 2023

Metallurgy

58. Name the alloy which is made up of: (a) Copper, Zinc and Tin (b) Lead and Tin

Seen in: Board 2023, 2024 · Sample 2023, 2024, 2025

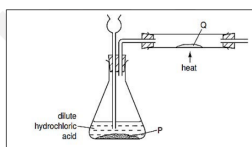
59. Match Column A with Column B. A: (a) Aluminium (b) Sulphuric acid (c) Calcination (d) Calcium Chloride (e) Carbon tetrachloride. B: 1. Covalent compound 2. Carbonate ore 3. Hall Heroult's process 4. Contact Process 5. Electrovalent compound

Seen in: Sample 2024, 2025, 2026

60. The following questions relate to the extraction of Aluminium by electrolysis. (a) Name the other compound which contains aluminium added to alumina. (b) Give a balanced equation for the reaction that takes place at the cathode.

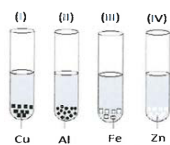
Seen in: Sample 2024, 2025, 2026

61. The diagram shows that P reacts with dilute hydrochloric acid to produce a gas which when passed through substance Q, reduces it. What are substances P and Q? (a) P-copper, Q-lead (II) oxide (b) P-lead, Q-magnesium oxide (c) P-magnesium, Q-calcium oxide (d) P-zinc, Q-copper (II) oxide



Seen in: Board 2025 · Sample 2027

62. A student takes Cu, Al, Fe and Zn strips separately in four test tubes labeled as I, II, III and IV respectively. He adds 10 ml of freshly prepared ferrous sulphate solution to each and observes the colour of the metal residue. He would observe a black residue in the test tubes: (a) (I) and (II) (b) (I) and (III) (c) (II) and (III) (d) (II) and (IV)



Seen in: Sample 2024, 2025

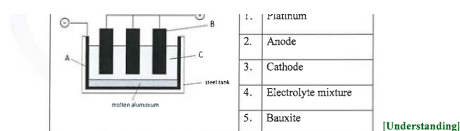
- 63.** Complete the following by choosing the correct answers from the bracket: (a) When dilute sulphuric acid reacts with zinc granules, the gas evolved is _____ (hydrogen / carbon dioxide), which can be tested using a burning splint. (b) A solution of copper(II) sulphate in sodium hydroxide solution forms a _____ (pale blue / green) precipitate. (c) In methane, each hydrogen atom share(s) _____ (one / two) electron(s) with the central carbon atom to complete its valence shell. (d) The electron affinity of element X is greater than that of element Y. The oxidising power of X is likely to be _____ (more / less) than that of element Y. (e) The naturally occurring compound of a metal from which the metal can be extracted is called its _____ (ore / mineral).

Seen in: Board 2024 · Sample 2026

- 64.** Name the main metal present in the following alloys: (a) Duralumin (b) Brass

Seen in: Board 2024 · Sample 2026

- 65.** Given below in column A is a schematic diagram of the electrolytic reduction of alumina. Identify the parts labelled as A, B and C with the correct options from Column B. Column B: 1. Platinum 2. Anode 3. Cathode 4. Electrolyte mixture 5. Bauxite



Seen in: Board 2023 · Sample 2025

- 66.** Bauxite is the principal ore used in the commercial extraction of aluminium. The Bayer's process is used to refine bauxite into pure alumina, with caustic soda playing a crucial role in the initial stage. (a) Explain the reason behind the addition of caustic soda during the Bayer's process. (b) Write a balanced chemical equation representing the reaction between bauxite and caustic soda during the Bayer's process.

Seen in: Board 2025, 2026

- 67.** The ore that can be concentrated by using magnetic separation: (a) Corundum (b) Haematite (c) Calamine (d) Bauxite

Seen in: Board 2023, 2025

Study of Compounds - Hydrogen Chloride

- 68.** Hydrogen chloride gas is prepared in the laboratory by the action of concentrated sulphuric acid on sodium chloride. (a) Give balanced chemical equation for the above reaction. (b) State the method of collection of the gas formed above. (c) What is the property of sulphuric acid that makes it a suitable reagent for the reaction?

Seen in: Board 2024 · Sample 2023

69. In the laboratory preparation, HCl gas is dried by passing through: (a) dilute nitric acid (b) concentrated sulphuric acid (c) dilute sulphuric acid (d) acidified water

Seen in: Board 2023 · Sample 2023

Study of Compounds - Ammonia

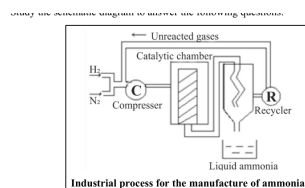
70. Ammonia gas is passed over heated copper (II) oxide in a combustion tube: (a) Name the gas evolved. (b) What will be the colour of the residue that is left in the combustion tube at the end of the reaction?

Seen in: Board 2024, 2025 · Sample 2024, 2025

71. Give one significant observation when: (a) Excess of chlorine gas reacts with ammonia. (b) Zinc nitrate is strongly heated in a test tube.

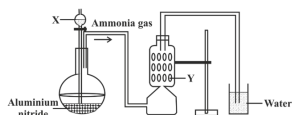
Seen in: Sample 2026, 2027

72. Given below is the industrial process for the manufacture of ammonia gas. Study the schematic diagram: (a) Name the process. (b) Which catalyst is used in the above process? (c) In the above diagrammatic setup, how is ammonia gas separated from the unreacted gases to obtain liquid ammonia? (d) Which two properties of ammonia gas can be demonstrated by the Fountain Experiment?



Seen in: Board 2026 · Sample 2023, 2024

73. A student was instructed to prepare and collect ammonia gas in the laboratory by using aluminium nitride, with the apparatus shown. Study the diagram and answer: (a) Name the substance X added through the thistle funnel. (b) Write a balanced equation for the reaction between Aluminium nitride and substance X. (c) Identify the substance Y. (d) State the function of Y. (e) Why could the student not collect ammonia gas at the end of the experiment?



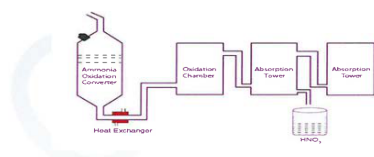
Seen in: Board 2023, 2025 · Sample 2023

Study of Compounds - Nitric Acid

74. Identify the reactant and write the balanced equation for the following: Nitric acid reacts with compound Q to give a salt Calcium nitrate, water and carbon dioxide.

Seen in: Sample 2024, 2025, 2026

75. The diagram given below is a representation of the Industrial preparation of Nitric acid by Ostwald's process. (a) Write the temperature and the catalyst required during the catalytic oxidation of ammonia. (b) Give balanced chemical equation for the reaction occurring during the conversion of nitrogen dioxide to nitric acid.



Seen in: Sample 2024, 2025

76. Anil is a laboratory assistant. He prepared nitric acid but stored it in a transparent container exposed to sunlight. After a few days, brown fumes were observed in the container and the acid turned slightly yellowish in colour. (a) What was the error made by Anil while storing the acid? (b) Why were brown fumes observed in the container? (c) How can the yellowish tinge in the acid be removed?

Seen in: Board 2026 · Sample 2023

Study of Compounds - Sulphuric Acid

77. State the property exhibited by sulphuric acid in each of the following reactions: (a) Sulphur with concentrated sulphuric acid. (b) Conversion of ferrous sulphide to hydrogen sulphide gas using sulphuric acid. (c) Ethanol with concentrated sulphuric acid.

Seen in: Board 2023 · Sample 2024, 2025, 2026

78. The diagram represents the industrial process for the manufacture of concentrated sulphuric acid by the Contact process (sulphur → sulphur dioxide → sulphur trioxide → R → sulphuric acid). What is used in step R to obtain sulphuric acid from sulphur trioxide? (a) vanadium pentoxide (b) water only (c) water followed by concentrated sulphuric acid (d) concentrated sulphuric acid followed by water



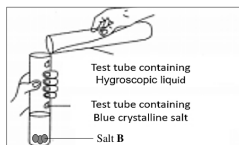
What is used in step R to obtain sulphuric acid from sulphur trioxide?

Seen in: Board 2025, 2026 · Sample 2027

79. A non-metal which reacts with concentrated sulphuric acid to form two gases which turn lime water milky is _____. (a) Sulphur (b) Carbon (c) Oxygen (d) Nitrogen

Seen in: Board 2024, 2025, 2026 · Sample 2023

80. A student was given a crystalline salt 'B' for analysis which was blue in colour. He added a few drops of dense oily hygroscopic liquid to it and observed a colourless neutral gas/vapour being released and the salt turning white. (a) Identify the blue crystalline salt B. (b) Which property of the hygroscopic liquid is demonstrated in this reaction? (c) Write a balanced chemical equation for the above reaction.



Seen in: Sample 2024, 2027

Organic Chemistry

81. (a) Give the IUPAC name of the following organic compounds: 1. $\text{HO-C(=O)-CH}_2\text{-CH}_2\text{-CH}_3$ (a butanoic acid); 2. H-C-C-C-C-H chain with two methyl branches (a dimethylbutane). (b) Draw the structural diagram for the following compounds: 1. diethyl ether 2. isopentane 3. propanone.

Seen in: Board 2023, 2024, 2025, 2026 · Sample 2023, 2024, 2025, 2026, 2027

82. In a round bottom flask, a mixture of ethanol, acetic acid and concentrated sulphuric acid was heated. (a) Name the type of reaction occurring in the above set up. (b) What is the role of sulphuric acid in this reaction? (c) State one observation that takes place during the reaction.

Seen in: Board 2024 · Sample 2026, 2027

83. The structures of five organic compounds, C, D, E, F and G are shown (C: alkene, D: alcohol, E: alkane, F: dibromo compound, G: alkene). State which compound C, D, E, F or G: (a) on halogenation will form F. (b) is an alcohol. (c) is an isomer of 2-methyl propane. (d) is in the same homologous series as ethene.

Seen in: Board 2025 · Sample 2025, 2027

84. Give balanced equations for the following: (a) Laboratory preparation of ethyne from calcium carbide. (b) Conversion of acetic acid to ethyl acetate. (c) Laboratory preparation of nitric acid.

Seen in: Sample 2024, 2025, 2026

85. Give balanced equations for each of the following: (a) Action of warm water on calcium carbide. (b) Oxidation of sulphur with conc. nitric acid. (c) Laboratory preparation of ethane by using sodium propionate and soda lime.

Seen in: Board 2023 · Sample 2023, 2027

86. The structures of four hydrocarbons are shown (2-methylpropane, 2-methylprop-1-ene, but-1-ene, 2-methylprop-1-ene variant). How many isomers of butene are shown in the above structures? (a) 1 (b) 2 (c) 3 (d) 4

Seen in: Sample 2025, 2026

87. Complete the following sentences by choosing the correct option from the brackets: (a) The general formula of an alkyl group is _____ (C_{nH2n+1}/C_{nH2n-1}). (b) The aqueous solution of _____ (zinc chloride/ sodium sulphate) gives white precipitate with barium nitrate. (c) The gas liberated when alkalis are heated with ammonium salts is _____ (N_2/NH_3). (d) The alloy that contains a non-metal as one of its constituents is _____ (bronze/steel). (e) A salt prepared by neutralization in which titration is involved is _____ ($CaCl_2/ NH_4Cl$).

Seen in: Sample 2023, 2027

88. Complete and balance the following equations: (a) $C_{2H4Br2} + KOH$ (alcoholic) $\rightarrow$ (b) NH_3 (excess) + $Cl_2 \rightarrow$ (c) $C_{12}H_{22}O_{11}$ -(conc. H_2SO_4)- $\rightarrow$

Seen in: Board 2024, 2025, 2026

89. _____ is the functional group in methanol. (a) $>C=O$ (b) $-OH$ (c) $-CHO$ (d) $-COOH$

Seen in: Sample 2023, 2024

90. Identify the following terms / compounds: (a) A compound which reacts with water to give acetylene gas. (b) The gas evolved when sodium propanoate is heated with soda lime. (c) A reddish-brown precipitate formed when ferric chloride solution reacts with an alkali. (d) A pair of electrons present in an atom which is not shared with any other atom during bond formation. (e) The relative molecular mass of a substance expressed in grams.

Seen in: Board 2026 · Sample 2023

91. Conversion of Ethanol to Ethene by the action of concentrated sulphuric acid involves: (a) Dehydration (b) Dehydrogenation (c) Dehydrohalogenation (d) Hydrolysis

Seen in: Board 2024 · Sample 2023

92. State the terms for the following: (a) Undistilled alcohol containing a large amount of methanol. (b) A salt formed by the partial replacement of the hydroxyl group of a di-acidic or a tri-acidic base by an acid radical. (c) Organic compounds having the same molecular formula but different structural formula. (d) The tendency of an atom to attract the shared pair of electrons towards itself when combined in a compound. (e) The type of covalent bond in which electrons are shared unequally between the combining atoms.

Seen in: Board 2024, 2025

93. Which formula represents a saturated hydrocarbon? (a) C_{4H8} (b) C_{5H12} (c) C_{4H6} (d) C_{5H10}

Seen in: Board 2023, 2025