

ICSE Chemistry Model paper 8

Answers to this Paper must be written on the paper provided separately.

You will not be allowed to write during the first 15 minutes.

This time is to be spent in reading the Question Paper.

The time given at the head of this paper is the time allowed for writing the answers.

Section I is compulsory, Attempt any four questions from Section II.

The intended marks for questions or parts of questions are given in brackets []

Section I (40 Marks)

Attempt all questions from this Section.

Question 1

- a. Name the gas /vapours evolved when the following salts are treated with sulphuric acid (dilute / concentrated) [5]
- (i) sodium carbonate
 - (ii) sodium sulphite
 - (iii) sodium nitrate
 - (iv) sodium sulphide
 - (v) sodium chloride
- b. State one observation for each of the following reactions. [5]
- (i) Hydrogen chloride gas is passed through silver nitrate solution
 - (ii) Manganese dioxide is heated with concentrated hydrochloric acid
 - (iii) Concentrated sulphuric acid is added to cane sugar
 - (iv) Copper sulphate solution is electrolysed using copper electrodes
 - (v) Ethylene is passed through a solution of bromine in carbon tetra chloride.
- c. (i) Give an equation to show how methane is prepared using sodium acetate and soda lime. [5]
- (ii) Write the general formula of alkynes.
 - (iii) Draw the structural formula of n-propane.
 - (iv) Give the IUPAC name of the following two organic compounds
(a) $\text{CH}_3\text{-CH=CH-CH}_3$ (b) $\text{CH}_3\text{-CH}_2\text{-CH}_3$
- d. Write balanced equations for the following [5]
- (i) Preparation of lead nitrate from lead (II) oxide.
 - (ii) Reaction of copper with dilute nitric acid.
 - (iii) Reaction of copper nitrate with sodium carbonate solution.
 - (iv) Action of heat on potassium nitrate.
 - (v) Ammonia is passed over heated copper (II) oxide.
- e. (i) The atomic numbers of three elements A , B , and C are 2, 6 and 10 respectively.
- a. Which two elements belong to the same group?
 - b. Which two elements belong to the same period?

- (ii) a. Element 'M' belongs to the II period and II group. Identify the element.
- b. State (i) the symbol of the ion of 'M'
(ii) the formula of the nitrate of 'M'. [5]
- f. (i) A hydrocarbon contains 17.2% hydrogen. If its vapor density is 29, calculate its molecular formula. N [C =12, H = 1]
(ii) Define atomicity of a gas. [5]
- g. (i) Using barium chloride solution, how will you distinguish between sodium nitrate and sodium sulphate?
(ii) a. Write the formula of the acid formed when SO₂ dissolves in water.
b. Name the chemical process involved in bleaching of colouring matter by SO₂.
c. Give a balanced equation for the lab preparation of ammonia. [5]
- h. Copy and complete the following statements.
(i) Across a period, the electropositive nature _____ (increases/ decreases)
(ii) Electronaffinity value of inert gases is _____ (0, 1, -1)
(iii) Ionization potential of elements _____ (increases/ decreases) across a period.
(iv) Group I A elements are strong _____ (oxidizing /reducing agents)
(v) Halogens are present in group _____ of the periodic table. [5]

SECTION II (40 Marks)
Answer any four questions

Question 2

- a. (i) Define a salt.
(ii) What kind of salt is Na K SO₄
- b. Give two balanced equations to show how sulphuric acid is obtained from sulphurtrioxide, by the contact process.
- c. A compound of iron, when added to dilute sulphuric acid liberates hydrogen sulphide gas.
(i) Identify the compound.
(ii) Give one chemical test to identify hydrogen sulphide gas.
- d. Burning magnesium continues to burn in a jar of SO₂.
(i) What is the function of SO₂ in this reaction?
(ii) What are the products of the reaction?

e. Give balanced equations for the following.

(i) Lab preparation of SO_2 using a metal.

(ii) Reaction of concentrated sulphuric acid with sulphur. [10]

Question 3.

a. Explain the significance of each of the following substances used in the extraction of aluminium. [3]

(i) Bauxite (ii) Graphite (iii) Cryolite

b. Give balanced equations for [3]

(i) Conversion of aluminium hydroxide into alumina

(ii) Reduction of haematite by CO

(iii) Reaction of zinc with sodium hydroxide

b. Name the following. [4]

(i) A metal oxide (other than Al_2O_3) that can be reduced only electrolytically.

(ii) An alloy of aluminium used in aircraft.

(iii) An alkali, which is a strong electrolyte.

(iv) A covalent compound whose aqueous solution conducts electricity.

Question 4

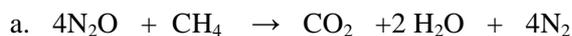
a. What type of bonding exists in each of the following

(i) Oxygen molecule (ii) Zinc chloride (iii) Methane [3]

b. (i) With the help of electron dot diagram, show the formation of ammonium ion from ammonia molecule.

- (ii) What are lone pair of molecules?
- (iii) What kind of bond exists between nitrogen atom and hydrogen ion in the formation of ammonium ion? [4]
- c. An element 'A' has atomic number 20.
- (i) Give an equation to show the formation of ion of 'A'
- (ii) Give the formula of the sulphate of 'A'. [2]
- d. The aqueous solution of a salt forms a dirty green precipitate when added to sodium hydroxide. Identify the cation of the salt. [1]

Question 5



The above reaction takes place only in gaseous state and all the volumes are measured at the same conditions of temperature and pressure. Calculate (i) the volume of dinitrogen oxide needed to form 150cm^3 of steam.

- (ii) The volume of CO_2 formed at the same time. [2]

b. Calculate the percentage composition of iron in $\text{K}_3\text{Fe}(\text{CN})_6$ [K=39, Fe=56, C=12, N=14] [3]

- c. (i) Which acid is used in the lab preparation of hydrogen chloride?
- (ii) Give balanced equation for the reaction of lead (IV) oxide with conc. HCl.
- (iii) What is the role of lead (IV) oxide in the above reaction (c.ii) ? [3]
- d. Calculate the number of gram atoms present in 420 grams of a gas, if the atomic weight of the gas is 30. [2]

Question 6

- a. At room temperature and pressure, 1 mole of sulphur dioxide occupies 24 litres (dm^3). What is the mass of 3 dm^3 of sulphur dioxide at room temperature and pressure? [S=32, O =16] [2]
- b. Give balanced equations to show the reactions that take place at the cathode during the electrolysis of (i) molten lead bromide (ii) acidified water. [3]
- c. Give balanced equations for the lab preparation of (i) ethane (ii) ethyne [2]
- d. (i) Name the aldehyde obtained by the oxidation of methane.
(ii) Give the molecular formula of the acid that is formed by the oxidation of ethane. [2]
- e. Which solid substance is used in the preparation of ethylene by the dehydration of ethanol? [1]

Question 7

- a. Give balanced equations for the following.
- (i) The lab preparation of nitric acid.
- (ii) Conversion of nitrogen dioxide into nitric acid.
- (iii) Reaction of ammonium hydroxide with zinc chloride solution. [3]
- b. What do you observe when-
- (i) Nitric acid is heated with copper turnings?
- (ii) Excess of ammonium hydroxide is added to copper (II) sulphate solution? [2]
- c. 15.15 grams of lead sulphate is precipitated when sodium sulphate solution is added to excess of lead nitrate solution.
- $$\text{Na}_2\text{SO}_4 + \text{Pb}(\text{NO}_3)_2 \rightarrow \text{PbSO}_4 + 2 \text{NaNO}_3$$
- [Na=23, S=32, O=16, Pb=207, N=14]
- Calculate i) The mass of sodium sulphate that is needed for the reaction.
ii) The mass of sodium nitrate formed during the reaction. [4]
- d. Calculate the number of molecules present in 22.4 litres of carbon dioxide. [1]