

ICSE SEMESTER 2 EXAMINATION

**SAMPLE QUESTION PAPER
CHEMISTRY**

(SCIENCE PAPER 2)

Maximum Marks: 40

Time allowed: One and a half hours

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

You will *NOT* be allowed to write during the first 10 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.

Attempt **all** questions from **Section A** and **any three** questions from **Section B**.

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

Section A

(Attempt **all** questions)

Question 1

Choose the correct answers to the questions from the given options. (Do not copy the question, write the correct answer only.) [10]

- i. The IUPAC name of acetaldehyde is
 - a. ethane.
 - b. ethyne.
 - c. ethanal.
 - d. ethene.
- ii. Which of the following is/are formed when methane reacts with chlorine in the presence of sunlight?
 - a. CH_3Cl
 - b. CH_2Cl_2
 - c. CHCl_3
 - d. All of these.
- iii. Electrolytic reduction is used in the extraction of
 - a. highly electropositive elements.
 - b. highly electronegative elements.
 - c. noble metals.
 - d. transition metals.
- iv. The product(s) formed when concentrated sulphuric acid reacts with carbon is/are
 - a. O_2 .
 - b. H_2 and O_2 .
 - c. SO_2 and CO_2 .
 - d. CO .
- v. Carbon to carbon triple bond is found in
 - a. methanol.
 - b. formic acid.
 - c. ethylene.
 - d. acetylene.
- vi. The gas evolved when dilute sulphuric acid reacts with bleaching powder is
 - a. chlorine.
 - b. carbon dioxide.
 - c. oxygen.
 - d. sulphur dioxide.
- vii. The general formula for alkynes is
 - a. $\text{C}_n\text{H}_{2n+2}$.
 - b. C_nH_{2n} .
 - c. C_nH_n .
 - d. $\text{C}_n\text{H}_{2n-2}$.
- viii. Which of the following hydroxide is insoluble in excess of ammonium hydroxide?
 - a. Zinc hydroxide
 - b. Silver hydroxide
 - c. Lead hydroxide
 - d. None of these.

- ix. A compound that separates out as an impurity on addition of a concentrated solution of alkali to impure bauxite is
- CuO.
 - NaAlO₂.
 - PbO.
 - Fe₂O₃.
- x. The gas evolved when concentrated nitric acid reacts with copper is
- nitric oxide.
 - oxygen.
 - carbon dioxide.
 - nitrogen dioxide.

Section B

(Attempt **any three** questions from this section)

Question 2

- i. Define the following. [2]
- Chain isomerism
 - Ore
- ii. Name the compound formed when [2]
- ethene reacts with bromine.
 - hydrogen chloride gas reacts with calcium at high temperature.
- iii. Draw the structural formula for each of the following organic compounds. [3]
- Ethanal
 - Methanoic acid
 - 1,1-dichloroethane
- iv. Complete and balance the following chemical equations. [3]
- $\text{CH}_4 + \text{O}_2 \longrightarrow$
 - $\text{C}_2\text{H}_2 + \text{Cl}_2 \longrightarrow$
 - $\text{NH}_3 + \text{CuO} \longrightarrow$

Question 3

- i. Identify the anion present in the following compounds. [2]
- Compound A, when heated with concentrated sulphuric acid fumes in moist air and produces dense white fumes with ammonia.
 - A solution of compound D reacts with freshly prepared ferrous sulphate solution and concentrated sulphuric acid which forms a brown ring.
- ii. State the following. [2]
- A drying agent that cannot be used to dry hydrogen chloride gas.
 - Brown gas formed on catalytic oxidation of ammonia.
- iii. State the observation for the following when [3]
- lead dioxide reacts with concentrated HCl.
 - a few crystals of cane sugar are put in a watch glass containing concentrated sulphuric acid.
 - dilute hydrochloric acid reacts with lead nitrate solution and the reaction container is warmed gently.
- iv. Write balanced equation for the following conversions. [3]
- Calcium sulphate from calcium chloride and sulphuric acid.
 - Nitrogen from ammonia.
 - Potassium chloride from potassium carbonate and dilute hydrochloric acid.

Question 4

- i. State the relevant reason for the following. [2]
- Aluminium is extracted from its oxide by electrolysis.
 - Graphite is required in high amounts for the electrolytic process of aluminium oxide.
- ii. Name the following. [2]
- The sulphide ore of zinc.
 - An alloy used in aircraft parts.
- iii. Identify the terms for the following. [3]
- The process used to manufacture ammonia from its elements.
 - The experiment demonstrating the solubility of hydrogen chloride gas in water.
 - The type of bonding in hydrogen chloride.
- iv. Complete the table given below. [3]

Acid	Reactant	Product
a. _____	Copper	Nitric oxide
b. _____	Barium chloride	c. _____

Question 5

- i. Write the balanced chemical equations related to the extraction of aluminium (Baeyer's process). [2]
- Aluminium hydroxide from sodium aluminate.
 - Alumina from aluminium hydroxide.
- ii. Select the correct answer from the brackets to complete the following statements. [2]
- Heating ammonium chloride with sodium hydroxide produces _____ (ammonia / ammonium hydroxide).
 - Ammonia reduces chlorine to _____ (nitrogen trichloride / ammonium chloride) when chlorine is present in excess.
- iii. Name the following organic compounds. [3]
- The compound with 2 carbon atoms whose functional group is alcohol.
 - $$\begin{array}{c} \text{H} \\ | \\ \text{H}-\text{C}-\text{Cl} \\ | \\ \text{H} \end{array}$$
 - The compound formed by complete bromination of ethyne.
- iv. Answer the following questions related to the laboratory preparation of hydrogen chloride gas. [3]
- Which salt is used in the preparation of HCl gas?
 - Why concentrated nitric acid cannot be used in the preparation of HCl gas?
 - Why is it undesirable to increase the temperature beyond 200 °C in the preparation of hydrogen chloride?

Question 6

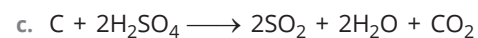
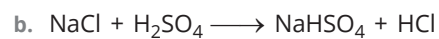
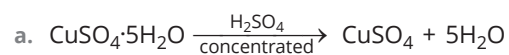
- i. Answer the following questions. [2]
- Give a chemical test to distinguish between dilute nitric acid and dilute hydrochloric acid using silver nitrate solution.
 - Give a chemical test to distinguish between dilute sulphuric acid and dilute hydrochloric acid using barium chloride solution.

- ii. Give one word for the following statements. [2]
- An ore of aluminium from which it is extracted.
 - The process by which ethane is obtained from ethene.

- iii. A, B and C are the chemical properties of sulphuric acid: [3]

- A: Non-volatile acid
B: Oxidizing agent
C: Dehydrating agent

Match the following equations a. to c. to the above chemical properties of sulphuric acid.



- iv. Study and complete the following table. [3]

Molecular formula	Structural formula	Name of the compound
$\text{C}_2\text{H}_4\text{Cl}_2$	a. _____	1,2-dichloroethane
HCHO	b. _____	c. _____