



CHEMISTRY | SAMPLE PAPER

**ICSE
CLASS – 10**

Maximum Marks: 80

Duration: 2.0 Hrs.

General Instructions:

1. Answers to this paper must be written on the paper provided separately.
2. You will not be allowed to write during first 15 minutes.
3. This time is to be spent in reading the question paper.
4. The time given at the head of this Paper is the time allowed for writing the answers.
5. Section A is compulsory. Attempt any four questions from Section B.
6. The intended marks for questions or parts of questions are given in brackets [].

Section – A

1. Choose the correct answers to the questions from the given options. (Do not copy the question, write the correct answers only.) [15 Marks]
- (i) Hydrogen gas is not obtained when zinc reacts with: [1]
(A) Steam (B) Concentrated H_2SO_4 solution
(C) Hot NaOH Solution (D) Dilute HCl solution
- (ii) The element with highest electronegativity in the periodic table belongs to: [1]
(A) Period 2, Group 17 (B) Period 3, Group 17
(C) Period 7, Group 2 (D) Period 3, Group 12
- (iii) The acid present in rancid butter is: [1]
(A) Acetic acid (B) Methanoic acid
(C) Butyric acid (D) Tannic acid
- (iv) Which of these compounds cannot exhibit chain isomerism? [1]
(A) Propane (B) Butane
(C) Pentane (D) Hexane
- (v) How many moles of methane, on complete combustion, will produce 179.2 L CO_2 gas at STP? [1]
(A) 12 (B) 4 (C) 8 (D) 2

- (vi) How many C–H bonds are present in a molecule of Pent-1-en-4-yne? [1]
 (A) 8 (B) 6 (C) 12 (D) 10
- (vii) 10L of O₂ gas is reacted with 30L of CO gas at STP. The volumes of each gas present at the end of the reaction are: [1]
 (A) CO(10L), CO₂(20L) (B) O₂(10L), CO₂(30L)
 (C) CO(20L), CO₂(10L) (D) O₂(10L), CO₂(20L)
- (viii) The correct decreasing order of ionic radius of K⁺, Cl[–], S^{2–} and Ca²⁺ is: [1]
 (A) Ca²⁺ > K⁺ > Cl[–] > S^{2–} (B) S^{2–} > Cl[–] > K⁺ > Ca²⁺
 (C) S^{2–} > Cl[–] > Ca²⁺ > K⁺ (D) K⁺ > Ca²⁺ > S^{2–} > Cl[–]
- (ix) Amongst the following, select the species having both ionic and covalent bond: [1]
 (A) CH₄ (B) KCl (C) SO₂ (D) NaOH
- (x) Which of the following does not follow octet rule? [1]
 (A) NH₃ (B) H₂O (C) BF₃ (D) CO₂
- (xi) During the electrolytic refining of copper: [1]
 (A) Pure copper is made the cathode
 (B) Impure copper is made the cathode
 (C) H₂SO₄ is used as electrolytic solution
 (D) Insoluble impurities get collected below as cathode mud
- (xii) Which of these is not an alkaline earth metal? [1]
 (A) Beryllium (B) Barium (C) Strontium (D) Cesium
- (xiii) Which of these is not an ore of Aluminum? [1]
 (A) Malachite (B) Bauxite
 (C) Corundum (D) Cryolite
- (xiv) The ratio of concentrated hydrochloric acid and concentrated nitric acid in aqua-regia is: [1]
 (A) 1 : 2 (B) 1 : 3 (C) 3 : 1 (D) 2 : 1
- (xv) What will be the product formed by the reaction of sodium butanoate with soda lime (CaO + NaOH) on strong heating? [1]
 (A) Ethene (B) Methane (C) Butane (D) Propane

2. Question 2

- i. (a) Name a process carried out for the commercial production of sulphuric acid. [5]
 (b) Give balanced chemical equations for the steps involved in the process.
 (c) State two uses of sulphuric acid.

- ii.** Complete the following sentences by choosing the correct answer from the brackets: [5]
- (a) Phenolphthalein is _____ in acidic medium. (Pink/Colourless)
 - (b) Ferric sulphate forms a _____ precipitate on reaction with ammonium hydroxide. (Brown/green)
 - (c) The element which is not considered a transition element despite being present in d-block is _____. (Cadmium/Chromium)
 - (d) _____ is used to reduce the acidity of soil. (Ca(OH)_2 / NaOH)
 - (e) Caustic potash is _____ in nature. (Ionic/Covalent)
- iii.** State the terms for the following: [5]
- (a) The valence electron pair of an atom that does not participate in bond formation.
 - (b) The reactant that gets entirely consumed when a reaction goes to completion.
 - (c) A substance that conducts electricity, either in molten state, or in aqueous solution due to presence of ions.
 - (d) Identify the following:
An essential constituent of Amalgam
 - (e) Identify the following:
Gangue + _____ $\longrightarrow$ Slag
- iv.**
- (a) 'x' grams of Calcium carbonate on decomposition gave 14 grams of solid residue. Find 'x'.
 - (b) Draw the structural diagram for the following compounds: [5]
 1. Acetone
 2. Ethyl ethanoate
 3. But-2-ene
- v.** Given the equations for the following conversions: [5]
- $$\text{NH}_3 \xrightarrow{\text{A}} \text{NH}_4\text{Cl} \xrightarrow{\text{B}} \text{NaCl}$$
- $$\text{ZnS} \xrightarrow{\text{C}} \text{ZnO} \xrightarrow{\text{D}} \text{Zn} \xrightarrow{\text{E}} \text{ZnSO}_4$$

(SECTION – B)

Attempt any 4 Questions

- 3. Question 3** [10]
- (i) State a relevant reason for the following: [2]
 - (a) Hydrogen chloride gas cannot be dried over quick lime.
 - (b) Ammonia gas is not collected over water.
 - (ii) Identify the alloy in each case from the given composition: [2]
 - (a) aluminium, magnesium, manganese, copper
 - (b) iron, nickel, chromium, carbon
 - (iii) Solve the following numerical problem. [3]

Ethane burns in oxygen according to the chemical equation:

$$2\text{C}_2\text{H}_6 + 7\text{O}_2 \rightarrow 4\text{CO}_2 + 6\text{H}_2\text{O}$$

If 80 ml of ethane is burnt in 300 ml of oxygen, find the composition of the resultant gaseous mixture when measured at room temperature.

- (iv) The following question are pertaining to the laboratory preparation of Ammonia gas from Magnesium nitride: [3]

- (a) Write a balanced chemical equation for its preparation.
 (b) Why is this method seldom used?
 (c) How do you identify the gas formed?

4. Question 4 [10]

- (i) Define the following terms: [2]

- (a) Molar volume
 (b) Normal salt

- (ii) Draw the electron dot structure of: [2]

- (a) Methane molecule
 (b) Nitrogen molecule
 [Atomic number: N = 7, C = 6, H = 1]

- (iii) Complete and balance the following equation: [3]

- (a) $\text{Al}_2\text{O}_3 + \text{NaOH} \rightarrow$
 (b) $\text{C}_2\text{H}_5\text{COONa} + \text{NaOH} \xrightarrow[\text{CaO}]{\Delta}$
 (c) $\text{C}_2\text{H}_4\text{Br}_2 + \text{alcoholic KOH} \xrightarrow{\Delta}$

- (iv) Choose the organic compound from the list given below to answer the following questions: [3]

Ethene Ethanoic acid Ethanol Methanal

- (a) The compound which does **not** have double bond in its structure.
 (b) The compound which in its pure form turns into an ice like solid on cooling.
 (c) The compound which is used for artificial ripening of fruits.

5. Questions 5 [10]

- (i) Define/State: [2]
 (a) Electronegativity
 (b) Gay-Lussac's Law of combining volumes

- (ii) The Empirical formula of an organic compound is CHCl_2 . [2]

If its relative molecular mass is 168, what is its molecular formula?

[At. Wt. C = 12, H = 1, Cl = 35.5]

- (iii) Choose the substances given in the box below to answer the following questions: [3]

Iron	Magnesium sulphite	Zinc	Sodium sulphide
Lead	Ferric chloride	Copper	Ferrous sulphate

- (a) The metal that will not produce hydrogen gas when reacted with dilute acids.
 (b) The compound that will produce sulphur dioxide gas when reacted with dilute HCl.
 (c) The solution of this compound produces dirty green precipitate with NaOH.

- (iv) State one relevant observation for each of the following: [3]
- (a) To the copper nitrate solution, initially few drops of sodium hydroxide solution is added and then added in excess.
- (b) Burning of magnesium ribbon in air.
- (c) Dry ammonia gas is passed over heated PbO.

6. Question 6 [10]

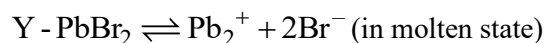
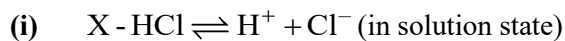
- (i) Name the main metal extracted from the following ores: [2]
- (a) Cassiterite
- (b) Limonite
- (ii) Differentiate between the following pairs based on the criteria given: [2]
- (a) Sulphuric acid and Nitric acid (using barium chloride solution)
- (b) Unsaturated and Saturated hydrocarbons (type of bond present)
- (iii) Calcium carbonate reacts with dilute hydrochloric acid as given below: [3]
- $$\text{CaCO}_3 + 2\text{HCl} \rightarrow \text{CaCl}_2 + \text{H}_2\text{O} + \text{CO}_2$$
- (a) What is the mass of 5 moles of calcium carbonate?
- (b) How many moles of HCl will react with 5 moles of calcium carbonate?
- (c) What is the volume of carbon dioxide liberated at S.T.P. at the same time?
- (iv) Identify the gas evolved in each of the following reactions: [3]
- (a) Methane undergoes complete combustion.
- (b) Copper carbonate is heated.
- (c) MnO_2 reacts with concentrated HCl.

7. Question 7 [10]

- (i) Arrange the following according to the instructions given in brackets: [2]
- (a) C_2H_2 , C_3H_6 , CH_4 , C_2H_4 (In the increasing order of the molecular weight)
- (b) Cu^{2+} , Na^+ , Zn^{2+} , Ag^+ (The order of Preferential discharge at the cathode)
- (ii) Differentiate between the following pairs based on the criteria given in the brackets: [2]
- (a) Cane sugar and hydrated copper sulphate [using concentrated H_2SO_4]
- (b) Sulphuric acid and hydrochloric acid [type of salts formed]
- (iii) Convert the following reactions into a balanced chemical equation: [3]
- (a) Ammonia to nitric oxide using oxygen and platinum catalyst.
- (b) Sodium hydroxide to sodium sulphate using sulphuric acid.
- (c) Ferrous sulphide to hydrogen sulphide using hydrochloric acid.
- (iv) Choose the answer from the list which fits in the description: [3]
- [CCl_4 , PbO , NaCl , CuO , NH_4Cl]
- (a) A compound which undergoes thermal dissociation.
- (b) An amphoteric oxide.
- (c) A compound which is a non-electrolyte.

8. Question 8

[10]



From the above reactions X or Y, identify the reaction which exhibits:

[2]

(a) electrolytic dissociation

(b) ionisation

(ii) Give reasons for the following:

[2]

(a) Inert gases do not form ions.

(b) Covalent compounds have a low melting and boiling point.

(iii) Arrange the following as per the instructions given in the brackets:

[3]

(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) Boron, Lithium, Beryllium (increasing order of ionisation potential)

(iv) Identify the following:

[3]

(a) An element in period 1 which can be placed in both group 1 and group 17 of the periodic Table.

(b) The element having electronic configuration 2, 8, 6.

(c) The element having highest electron gain enthalpy