

**KUMAR CLASSES**

INSPIRE · INNOVATE · EXCEL

ICSE Class 10 · Chemistry (Science Paper – 2)

Sample Question Paper — Set 1 | Session 2026

Time : 2 Hours**Reading time : 15 min****Max. Marks : 80**

Name : Roll No. : Date :

General Instructions

1. Answers to this paper must be written on the paper provided separately.
2. **Section A is compulsory.** Attempt **any four** questions from **Section B**.
3. The intended marks for questions are given in brackets [].
4. Atomic masses: H=1, C=12, N=14, O=16, Na=23, Mg=24, S=32, Cl=35.5, Ca=40, Zn=65.

SECTION A — 40 Marks*(Attempt **all** questions from this Section)***Question 1.****[15]***Choose the correct answers to the questions from the given options.***(i) The element with the largest atomic size in Period 3 is:**

(a) Na

(b) Cl

(c) Ar

(d) Si

(ii) Across a period, from left to right, the ionisation energy generally:

(a) decreases

(b) increases

(c) stays constant

(d) becomes zero

(iii) A covalent bond is formed by:

(a) transfer of electrons

(b) sharing of electrons

(c) loss of electrons

(d) gain of electrons

(iv) Which of the following is an electrovalent compound?(a) CH₄

(b) NaCl

(c) HCl

(d) H₂O

(v) The salt which is acidic in nature is:

(a) NaCl

(b) Na_2CO_3

(c) NH_4Cl

(d) CH_3COONa

(vi) A solution turns red litmus blue. Its pH is likely:

(a) 3

(b) 5

(c) 7

(d) 10

(vii) The number of particles in one mole of a substance is:

(a) 6.02×10^{23}

(b) 3.01×10^{23}

(c) 22400

(d) 12

(viii) The volume occupied by 0.5 mole of a gas at STP is:

(a) 22.4 L

(b) 11.2 L

(c) 5.6 L

(d) 44.8 L

(ix) The vapour density of a gas is 22. Its molecular mass is:

(a) 11

(b) 22

(c) 44

(d) 88

(x) An element X has the configuration 2, 8, 7. It belongs to:

(a) Group 1

(b) Group 17

(c) Group 18

(d) Group 2

(xi) Which element has the strongest metallic character?

(a) Li

(b) Na

(c) K

(d) Cs

(xii) The bond present in a molecule of nitrogen (N_2) is:

(a) single covalent

(b) double covalent

(c) triple covalent

(d) ionic

(xiii) A base which is soluble in water is called:

(a) an acid

(b) an alkali

(c) a salt

(d) an oxide

(xiv) The gas evolved when dilute sulphuric acid reacts with zinc is:

(a) O_2

(b) CO_2

(c) H_2

(d) Cl_2

(xv) The percentage of oxygen in water (H_2O) is:

(a) 11.1%

(b) 88.9%

(c) 50%

(d) 16%

Question 2.

[25]

(i) The table below shows a part of the Periodic Table (the letters are **not** the actual symbols). Study it and answer the questions that follow. **[5]**

Group →	I	II	III	IV	V	VI	VII	0
Period 2	A						B	C
Period 3	D	E					F	G

- Which element is a noble gas?
- Which element has the largest atomic size?
- Which element is the most electronegative?
- Which element forms an ion carrying a 2+ charge?
- Name the type of bond formed between D and F.

(ii) Name the following: **[5]**

- The property of self-linking of carbon atoms.
- A metal whose oxide is amphoteric.
- A salt in which the hydrogen of the acid is only partly replaced by a metal.
- The number of moles of a gas that occupy 11.2 L at STP.
- The bond formed by sharing two pairs of electrons.

(iii) Match Column A with Column B: **[5]**

Column A	Column B
1. NaCl	(P) weak alkali
2. NH_4OH	(Q) covalent compound
3. Increases across a period	(R) electrovalent compound
4. Cl^-	(S) an anion
5. CH_4	(T) electron affinity / non-metallic character

(iv) Fill in the blanks: **[5]**

- Across a period the metallic character _____.
- A water-soluble base is called an _____.
- The vapour density of a gas is _____ its

molecular mass. 4. In forming MgCl_2 , a magnesium atom _____ two electrons. 5. A solution of pH less than 7 is _____ in nature.

(v) [5] 1. Balance: $\text{Zn} + \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$. 2. Write the equation for the action of heat on calcium carbonate. 3. Calculate the percentage of nitrogen in NH_4NO_3 . 4. Find the number of molecules in 5.6 L of CO_2 at STP. 5. Draw the electron-dot (Lewis) structure of hydrogen chloride (HCl).

SECTION B – 40 Marks

(Attempt **any four** questions from this Section)

Question 3. [Periodic Table]

[10]

- (a) Define: (i) ionisation energy (ii) electron affinity. [2]
- (b) Arrange in **increasing** order of atomic size and give a reason: Na, Mg, Al, Si. [3]
- (c) State, with a reason, the trend in metallic character on moving **down** a group. [2]
- (d) An element Z has atomic number 17. (i) Give its group and period. (ii) Is it a metal or non-metal? (iii) Write the formula of its compound with sodium. [3]

Question 4. [Chemical Bonding]

[10]

- (a) Draw the electron-dot structures of: (i) water (H_2O) (ii) carbon tetrachloride (CCl_4). [4]
- (b) Give **two** differences between electrovalent and covalent compounds. [3]
- (c) Why do covalent compounds usually have low melting points? [1]
- (d) Explain the formation of magnesium chloride (MgCl_2) by transfer of electrons. (Mg = 2,8,2 ; Cl = 2,8,7) [2]

Question 5. [Acids, Bases and Salts]

[10]

- (a) Define, with one example each: (i) an acid salt (ii) a normal salt. [3]
- (b) State what you observe when: (i) blue litmus is dipped in dilute HCl (ii) dilute HCl is added to zinc granules. [2]
- (c) Distinguish between an acid and an alkali on the basis of pH. [2]
- (d) Name a suitable method to prepare: (i) an insoluble salt (ii) a soluble salt of a reactive metal. [3]

Question 6. [Mole Concept and Stoichiometry]

[10]

(a) Define: (i) a mole (ii) vapour density. [2]

(b) Calculate the percentage of oxygen in water (H_2O). [2]

(c) 25 g of calcium carbonate is strongly heated: $CaCO_3 \rightarrow CaO + CO_2$. Calculate (i) the mass of CO_2 (ii) the volume of CO_2 at STP. [3]

(d) A compound contains 40% carbon, 6.7% hydrogen and 53.3% oxygen. Determine its empirical formula. [3]

Question 7. [Mixed]

[10]

(a) State the change (increase / decrease) **across a period** for: (i) electronegativity (ii) atomic size. [2]

(b) Name the type of bond (ionic / covalent) in: (i) KCl (ii) NH_3 . [2]

(c) Give one word: (i) a base soluble in water (ii) a salt of a strong acid and a weak base. [2]

(d) Calculate the number of moles in 8 g of oxygen gas (O_2). [2]

(e) Balance: $Al + O_2 \rightarrow Al_2O_3$. [2]

ANSWER KEY & MARKING SCHEME – Set 1

Question 1 (MCQ)

(i) a (ii) b (iii) b (iv) b (v) c (vi) d (vii) a (viii) b (ix) c (x) b (xi) d (xii) c
(xiii) b (xiv) c (xv) b

Question 2

(i) 1. C 2. D 3. B 4. E 5. ionic (electrovalent) bond.

(ii) 1. catenation 2. aluminium (or zinc) 3. acid salt 4. 0.5 mole 5. double covalent bond.

(iii) 1 → R, 2 → P, 3 → T, 4 → S, 5 → Q.

(iv) 1. decreases 2. alkali 3. half of 4. loses 5. acidic.

(v) 1. $\text{Zn} + 2\text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$ 2. $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$ 3. 35% 4. 1.505×10^{23} molecules (0.25 mol) 5. H-Cl with one shared pair, three lone pairs on Cl.

Section B (key points)

3. (b) $\text{Si} < \text{Al} < \text{Mg} < \text{Na}$ (size decreases across a period as nuclear charge rises). (c) increases down a group (atomic size increases, electrons lost easily). (d) Group 17, Period 3; non-metal; NaZ (i.e. NaCl-type).

4. (b) ionic: high m.p., conduct in molten/aqueous state, solids; covalent: low m.p., generally non-conductors, often liquids/gases. (c) weak intermolecular forces. (d) Mg loses $2e^-$ to two Cl atoms → $\text{Mg}^{2+} + 2\text{Cl}^-$.

5. (a) acid salt e.g. NaHSO_4 ; normal salt e.g. NaCl . (b) blue litmus → red; H_2 gas with effervescence. (c) acid pH < 7, alkali pH > 7. (d) (i) precipitation / double decomposition (ii) action of dilute acid on the metal.

6. (b) 88.9% (c) 11 g CO_2 ; 5.6 L at STP (d) CH_2O .

7. (a) electronegativity increases, atomic size decreases. (b) KCl ionic, NH_3 covalent. (c) alkali; acidic salt (e.g. NH_4Cl). (d) 0.25 mol. (e) $4\text{Al} + 3\text{O}_2 \rightarrow 2\text{Al}_2\text{O}_3$.