PRE- BOARD II 2025-26
CLASS-X
CHEMISTRY

Maximum Marks: 80
Time allowed: Two hours
Answer to this Paper must be written on the paper provided separately.
*You will **not** be allowed to write during 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 A** is compulsory. Attempt any four questions from **Section B.
The intended marks for questions or parts of questions are given in brackets [ ].

SECTION A (40 Marks)

*(Attempt **all** questions from this Section.)*

Question 1

Choose the correct answers to the questions from the given options. [15]
(Do not copy the questions, write the correct answers only.)

(i) With the reference to the variation of properties in the Periodic Table, which of the following is generally true?
(a) Atomic size increases from left to right across a period.
(b) Ionization potential increases from left to right across a period.
(c) Electron affinity increases going down a group.
(d) Electronegativity increases going down a group.

(ii) A hydrocarbon which is a greenhouse gas is:
(a) Acetylene (b) Ethylene
(c) Ethane (d) Methane

(iii) The aim of the fountain experiment is to prove that:
(a) HCl turns blue litmus red (b) HCl is denser than air
(c) HCl is highly soluble in water (d) HCl fumes in moist air

(iv) The gas formed,when calcium bisulphate reacts with dilute HNO_3
(a) Sulphur trioxide (b) Hydrogen
(c) Sulphur dioxide (d) Hydrogen sulphide

(v) Product obtained when excess of chlorine reacts with ammonia gas:
(a) NCl_3 and HCl (b) NH_4Cl and N_2
(c) HCl and H_2 (d) NH_4Cl and NCl_3

(vi) Assertion (A) : If the electron affinity value is high, the anions are formed easily.
Reason (R) : Ionic bonding is favoured by high electron affinity.
(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

(vii) The metallic hydroxide which forms a deep inky blue solution with excess ammonium hydroxide solution is:
(a) $Fe(OH)_2$ (b) $Cu(OH)_2$ (c) $Ca(OH)_2$ (d) $Fe(OH)_3$

(viii) 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

(ix) The gas law which relates the volume of a gas to the number of molecules of the gas is :

(a) Avogadro's Law (b) Boyle's Law

(c) Gay-Lussac's Law (d) Charles' Law

(x) Catalyst used in Haber's process:

(a) Fe (b) Cr (c) Pt (d) Coke

(xi) Assertion (A) : An electrolyte can be acid, base or salt.
Reason (R) : An electrolyte is a substance which can conduct electricity in aqueous or molten state.

(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

(xii) A gas cylinder of capacity of 20 dm^3 is filled with gas X the mass of which is 10 g. When the same cylinder is filled with hydrogen gas at the same temperature and pressure the mass of the hydrogen is 2 g, hence the relative molecular mass of the gas is:

(a) 5 (b) 10 (c) 15 (d) 20

(xiii) When a metal atom becomes an ion :

(a) it loses electrons and is oxidized (b) it gains electrons and is reduced

(c) it gains electrons and is oxidized (d) it loses electrons and is reduced

(xiv) The IUPAC name of dimethyl ether is

(a) ethoxy methane (b) methoxy methane

(c) methoxy ethane (d) ethoxy ethane

(xv) The observation seen when fused lead bromide is electrolysed is:

(a) A silver grey deposited at anode and a reddish brown deposited at cathode.

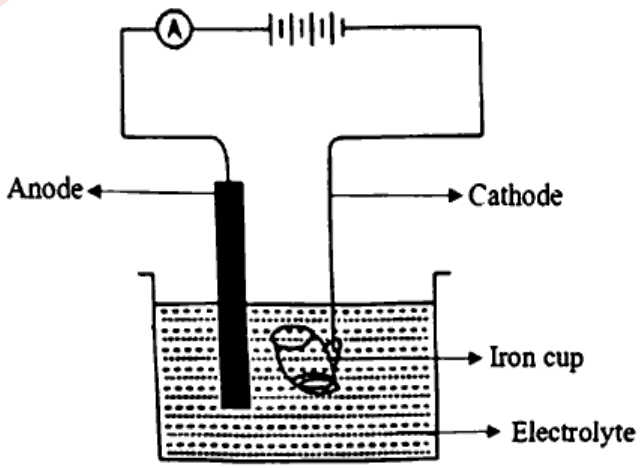
(b) A silver grey deposited at cathode and a reddish brown deposited at anode.

(c) A silver grey deposit at cathode and reddish brown fumes at anode.

(d) Silver grey fumes at anode and reddish brown fumes at anode.

Question 2

(i) The following sketch represents the electroplating of an Iron cup with Nickel metal. Study the diagram and answer the following questions : [5]



(a) During electroplating the iron cup is placed at the cathode. Why?

(b) Name the ion that must be present in the electrolyte.

(c) State one condition that is necessary to ensure that the deposit is smooth, firm and even.

(d) Write the reaction taking place at the cathode.
(e) What change would you observe at the anode ?

(ii) Match the following Column A with Column B. [5]

	Column A		Column B
(a)	Calcium Chloride	1.	Ostwald's process
(b)	Test for SO_2	2.	Electrovalent compound
(c)	Nitric acid	3.	Acetic acid
(d)	Weak acid	4.	Ripening of green fruits
(e)	Ethyne	5.	Acidified $K_2Cr_2O_7$

(iii) Complete the following sentences by choosing the correct answer from the brackets: [5]

(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) Non-polar covalent compounds are _____ *[good/ bad]* conductors of heat and electricity.
(c) Dry hydrogen chloride gas can be collected by _____ *[downward/upward]* displacement of air.
(d) 22.4 L of any gas at S.T.P is equal to the _____ *[100g/1g]* molecular weight of gas.
(e) The electrode where the current enters the electrolyte is called the _____ *[cathode/anode]*.

(iv) Identify the following: [5]

(a) The tendency of an atom in a molecule to attract the shared pair of electrons.
(b) A bond formed by a shared pair of electrons, each bonding atom contributing one electron to the pair.
(c) A salt formed by incomplete neutralisation of an acid by a base.
(d) The acid formed when sulphur reacts with concentrated nitric acid.
(e) The catalyst used in the conversion of ethyne to ethane.

(v) (a) Draw the structural formula of following organic compounds: [3]
1. 2,3-dimethyl pentanol
2. 2-bromo-3-chloro butanoic acid
3. But-2-yne

(b) Give the IUPAC name of the following organic compounds: [2]
1. Acetic acid
2. Ethylene

SECTION B (40 Marks)

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

Question 3

(i) Sohan added NaOH solution dropwise to a test tube containing a salt solution. A dirty green precipitate formed which turned brown on standing. When the same test was repeated with NH_4OH, a light green precipitate was observed that did not dissolve.

(a) Name the metal ion present in the salt solution.
(b) Explain the colour change observed on standing. [2]

(ii) Fill in the blanks by choosing the correct answer from the bracket : [2]

(a) In a period, increase in electron affinity increases _____ *[oxidation/reduction]*.
(b) In covalent compounds, the bond is formed due to _____ *[sharing/transfer]* of electrons.

(iii) Give balanced equations for each of the following: [3]
(a) Reaction of chlorine with ethene in an inert solvent.
(b) Action of alcoholic KOH on bromoethane.
(c) preparation of ethane from sodium propionate.

(iv) Complete the table given below which refers to the Laboratory preparation of Ammonia gas : [3]

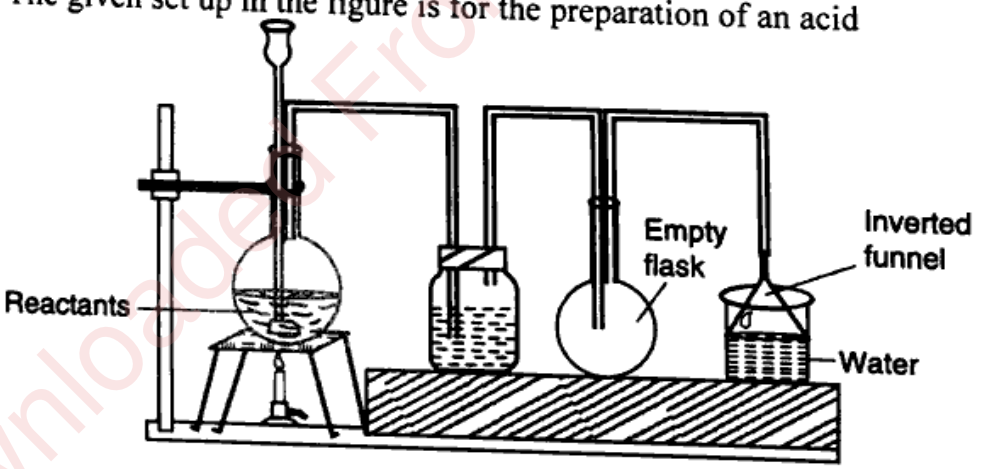
Laboratory Preparation	Reactant used	Products formed	Drying agent	Method of collection
Ammonia gas	(a)	Calcium chloride + water+ ammonia	(b)	(c) .....

Question 4

(i) The following questions relate to the extraction of aluminium by electrolysis: [2]
(a) Name the other aluminium containing compound added to alumina.
(b) Give a balanced equation for the reaction that takes place at the cathode.

(ii) (a) Why is pure acetic acid known as glacial acetic acid ?
(b) Give a chemical equation for the reaction between ethyl alcohol and acetic acid. [2]

(iii) The given set up in the figure is for the preparation of an acid



(a) Name the acid prepared by this method.
(b) Why an empty flask is used?
(c) What is the role of inverted funnel in the arrangement? [3]

(iv) Naman has solution X, Y and Z that has pH 2, 7 and 13 respectively. [3]
Which solution.
(a) will liberate sulphur dioxide gas when heated with sodium sulphite
(b) will liberate ammonia gas when reacted with ammonium chloride
(c) will not have any effect on litmus paper?

Question 5

(i) Name the alloys for the given composition: [2]
(a) Magnesium and aluminium
(b) Iron + nickel+ chromium+ carbon

(ii) Define : [2]
(a) Catenation
(b) ores

(iii) Identify the reactants P,Q and R in the following reactions: [3]
(a) Copper + P → Copper + water
(b) Iron pyrite + Q → Iron oxide + Sulphur dioxide
(c) Sodium chloride +R → Sodium nitrate + Silver chloride

(iv) The atomic number of an element Z is 16. State [3]
(a) the period to which it belongs.
(b) the number of valence electron(s) in the element.
(c) whether the element is a metal or a non-metal.

Question 6

(i) State giving reasons if: [2]
(a) zinc and aluminium metals can be distinguished by heating the metal powders separately in two different test tubes with concentrated sodium hydroxide solution.
(b) calcium nitrate and lead nitrate can be distinguished by adding ammonium hydroxide solution to the salt solution.

(ii) Draw the electron dot diagram of Hydronium ion. [2]

(iii) From the equation : [3]
$C + 2\,H_2SO_4 \rightarrow CO_2 + 2\,H_2O + 2\,SO_2$
Calculate:
(a) The mass of carbon oxidized by 49 g of sulphuric acid (C = 12; relative molecular mass of sulphuric acid = 98).
(b) The volume of sulphur dioxide measured at STP liberated at the same time. (Volume occupied by 1 mole of a gas at STP is 22.4 dm^3)

(iv) Give reasons: [3]
(a) Why powdered coke is sprinkled over the electrolytic mixture surface in Hall-Heroult's process?
(b) Cryolite is added in Hall-Heroult's process.
(c) Why carbon reduction method can not be used for reducing the oxides of highly reactive metals?

Question 7

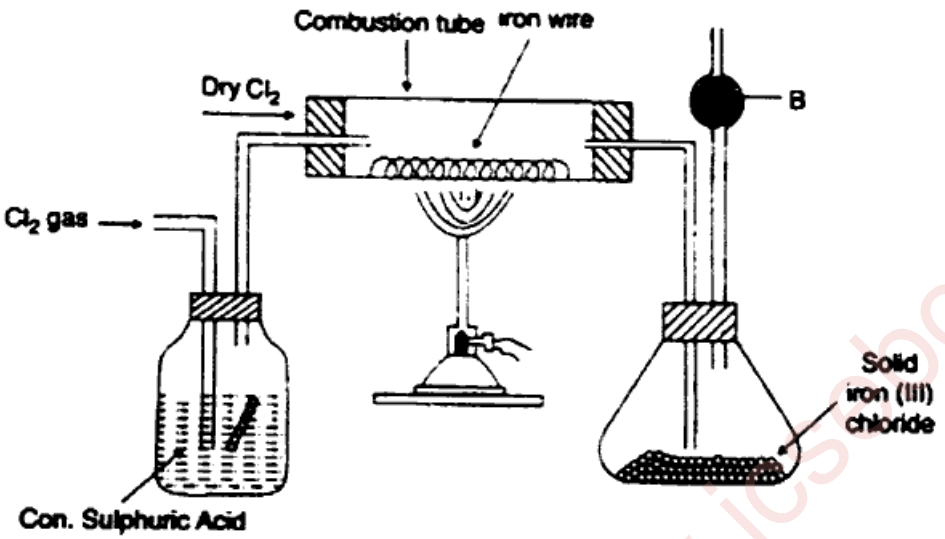
(i) Completed the table: [2]

Name of process	Inputs	Equation	Output
	Ammonia + air		Nitric acid

(ii) By drawing an electron dot diagram, show the lone pair effect leading to the formation of — ammonium ion from ammonia gas and hydrogen ion. [2]

(iii) A compound contains 4.07% hydrogen, 24.27% carbon and 71.65% chlorine. Its molar mass is 98.96 g. What are its empirical and molecular formulas?
(Atomic mass : H= 1, C=12 and Cl =35.5) [3]

(iv) The diagram given below is to prepare Iron [III] chloride in the laboratory. [3]



(a) What is substance B?
(b) Why is iron[III] chloride to be stored in a closed container?
(c) Write the equation for the reaction between iron and chlorine.

Question 8

(i) In the manufacture of sulphuric acid by the Contact process, give the equations for the conversion of sulphur trioxide to sulphuric acid. [2]

(ii) Write a balanced chemical equation for each of the following: [2]
(a) Action of heat on aluminium hydroxide.
(b) Reduction of copper (II) oxide by hydrogen.

(iii) On adding dilute ammonia solution to a colourless solution of a salt, a white gelatinous precipitate appears. This precipitate however dissolves on addition of excess of ammonia solution. [3]
(a) From the following list, identify which metal salt solution was used above?
Na, Al, Zn, Pb, Fe
(b) What is the formula of the white gelatinous precipitate obtained?
(c) Give the balanced equation(s) when sulphate of this metal reacts with ammonia solution in excess.

(iv) M is a metal and its oxide has the formula M_2O. This oxide when dissolved in water forms the corresponding hydroxide which is a good conductor of electricity. In the above context, answer the following : [3]
(a) State the number of electrons in the outermost shell of M ?
(b) Name the group to which M belongs.
(c) which element has more electronegativity, M or O?