



Date: 8th Dec 2025

Marks: 80

Time: 2Hr

Subject : CHEMISTRY-SET D

Class: X

Name: _____ sec: _____ Roll. No. _____

General Instructions:

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 on 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)

Answer All the Questions

Question 1

Choose the correct answers to the following questions from the given options

[15M]

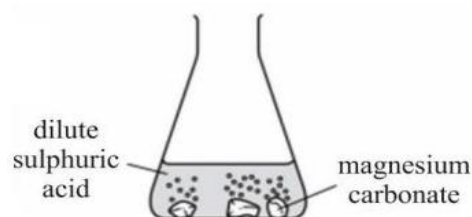
i) The chemical used in Baeyer's process to remove impurities from Bauxite ore is:

- a) Conc. NaOH b) dilute NaOH
c) Aqua regia d) Conc. Sulphuric acid

ii) Dilute sulphuric acid is added to Magnesium carbonate

What is the gas produced?

- a) Sulphur dioxide
b) Carbon dioxide
c) Hydrogen gas
d) Oxygen gas



iii) The reactants used for the preparation of Hydrogen chloride gas in laboratory are:

- a) Conc. H₂SO₄ and KNO₃ b) Conc. HNO₃ and NaCl
c) Conc. H₂SO₄ and NaCl d) dilute H₂SO₄ and NaCl

iv) Which of the following compounds when treated with warm water produces Ammonia gas?

- a) Calcium carbide b) Ammonium nitrate
c) Sodium hydroxide d) Magnesium nitride

v) Dilute nitric acid reacts with Copper metal and produce:

- a) NO + Cu(NO₃)₂ + H₂O
b) NO₂ + Cu(NO₃)₂ + H₂O
c) NO + Cu(NO₃)₂ + H₂
d) N₂ + Cu(NO₃)₂ + H₂O

vi) Assertion: Sulphuric acid forms two types of salts

Reason: Sulphuric acid is a non-volatile acid

- a) Both Assertion and Reason are correct and Reason is the correct explanation for the assertion
b) Both Assertion and Reason are correct and Reason is not the correct explanation for the assertion

- c) Assertion is correct but Reason is incorrect
 d) Both Assertion and Reason are incorrect

vii) An example of Saturated Hydrocarbon

- a) C_2H_4 b) C_2H_2
 c) C_2H_6 d) C_2H_5OH

viii) A gas which turns moist blue litmus to red and then bleaches it:

- a) Carbon dioxide b) Hydrogen gas
 c) Chlorine gas d) Hydrogen chloride gas

ix) Assertion : Ammonia gas is used in the manufacturing of Fertilisers

Reason: Ammonia gas contains Nitrogen

- a) Both Assertion and Reason are correct and Reason is the correct explanation for the assertion
 b) Both Assertion and Reason are correct and Reason is not the correct explanation for the assertion
 c) Assertion is correct but Reason is incorrect
 d) Both Assertion and Reason are incorrect

x) 'X' is an element belongs to group 17. Which of the following statements is correct about 'X'?

- a) It has 7 valence electrons and valency 7
 b) It has 1 valence electron and valency 1
 c) It has 7 valence electrons and valency 1
 d) It has 1 valence electron and valency 0

xi) A polar covalent compound with one lone pair of electrons:

- a) Water b) Ammonia c) HCl d) Methane

xii) A salt formed by the partial neutralization of an acid by a base is called:

- a) Acid salt b) Basic salt c) Normal salt d) Complex salt

xiii) The mass of 44.8 lit of a gas is 92g. Its molar mass will be _____

- a) 22g b) 41g c) 46g d) 92g

xiv) Choose the correct option from the following pertaining to cation analysis

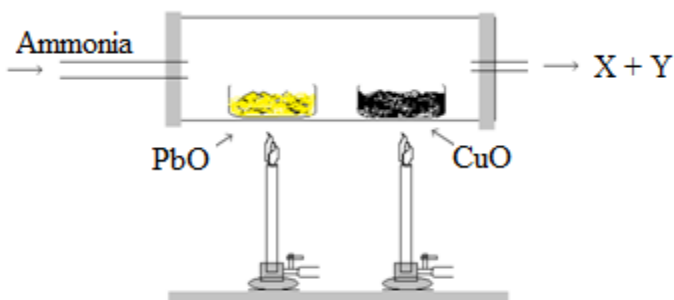
Option	Salt solutions	Add Small amount of Ammonium hydroxide	Add Excess of Ammonium hydroxide
a)	$ZnCl_2$	Gelatinous white ppt	White ppt
b)	$CuSO_4$	Pale blue ppt	Inky blue solution
c)	$FeSO_4$	Reddish brown ppt	Reddish Brown ppt
d)	$FeCl_3$	Dirty green ppt	Dirty green ppt.

xv) In the electrolysis of fused Lead bromide:

- a) Lead metal is deposited on cathode and Bromine gas released at anode
 b) Lead metal is deposited on Anode and Bromine gas released at cathode
 c) Lead metal is deposited on cathode and Oxygen gas released at anode
 d) Lead metal is deposited on cathode and Hydrogen gas released at anode

Question 2

i) In the following diagram Ammonia gas is passed over hot Lead Oxide and Copper oxide and gives out the vapours of X and Y. [5M]



- What property of Ammonia gas is shown in this reaction?
- Write balanced equation for the reaction between Ammonia gas and PbO.
- If the gas 'Y' reacts with Hydrogen gas in presence of Iron produces Ammonia gas, then name the gas 'Y'.
- What will be the colour change in Copper oxide at the end of the reaction ?
- If Hydrogen gas is passed instead of Ammonia gas, then would we get the same residues left? Justify your answer.

ii) Fill in the blanks. 5M

- Ionisation potential increases across the period as the _____ (atomic size/ nuclear pull) increases.
- In the formation of Sodium chloride, Sodium metal atom undergoes _____ (oxidation/ reduction)
- Lead metal is _____ (amphoteric/ acidic/ basic) in nature so reacts with NaOH to produce Hydrogen gas.
- _____ (strong/ weak) electrolyte conducts small amounts of electricity.
- Alkali metals are strong reducing agents because they lose _____ (one/ two) electron/s very easily.

iii) Match the following (Do NOT repeat the answer) [5M]

- | | |
|--|------------------------|
| a) Conc. HCl + MnO ₂ | 1) Black residue |
| b) Conc. HNO ₃ + Cu | 2) Greenish yellow gas |
| c) dil.HCl + AgNO ₃ sol. | 3) Brown colour ppt |
| d) NH ₃ + Nessler's reagent | 4) Reddish brown gas |
| e) Conc. H ₂ SO ₄ + Sugar crystals | 5) White ppt |
| | 6) Dense white fumes |

iv) Select the correct answer from the list of words given in brackets [Hydrochloric acid, Aluminium, Chlorine, Fluorine, Alkanes, Acetic acid, Ammonium chloride] [5M]

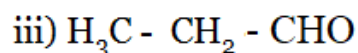
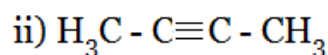
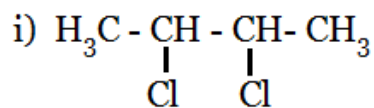
- Hydrocarbons which have general formula C_nH_{2n+2}.
- The most electro-negative element.
- A compound with all three types of bonds.
- An acid used as food preservative.
- A trivalent metal which is amphoteric in nature

v) a) Calculate the number of moles in each of the following cases: [2M]

1) 44.8lit of Carbon dioxide (molar volume= 22.4 lit)

2) 6.4 lit of Oxygen gas (molar mass of Oxygen gas = 32g)

vi) Write the IUPAC names of the following organic compounds [3M]



Section B (40Marks)
Answer any FOUR questions

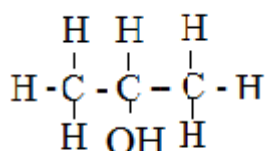
Question 3

i) Draw the structures of the following compounds [2M]

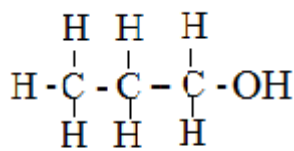
a) Pentanoic acid

b) Ethanol

ii) The following diagrams show two isomers: [3M]



(A)



(B)

a) What type of isomerism is shown by these two compounds?

b) Identify the functional group present in these compounds.

c) Write the molecular formula of these compounds.

iv) Write the IUPAC name of the first member of each of this Homologous series: [2M]

a) Alkane Homologous series

b) Alkyne Homologous series

v) a) Write balanced equations involved in the conversion of PbCO_3 to PbCl_2 [2M]

b) What is the role of Conc. Sulphuric acid in the preparation of HNO_3 from KNO_3 . [1M]

Question 4

i) Which element is more electropositive between Li and K ? Give an appropriate reason. [2M]

ii) A small portion of The Periodic Table is given below. Study the table and answer the questions given.

	Group 1	2	13	14	15	16	17	18
Period 2	A	B		G	L	D		
Period 3	Y	E		J			Q	R

“Do NOT identify the elements”

[4M]

a) Which element has 1 valence electron ?

b) What is the difference between the elements ‘Q’ and ‘R’ in terms of their electronic configuration?

c) Arrange the elements of period 3 (from above table) in the decreasing order of Electro-negativity.

d) A divalent non-metal in this table is _____.

iii) Answer the following questions.

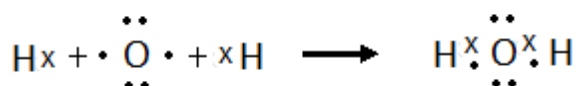
[4M]

- a) Give reason why Helium has highest Ionisation potential
- b) What is the position of Magnesium in the periodic table?
- c) Name the type of bonding in which electrons transfer from metallic atom to non-metallic atom.
- d) 'X' is an element with 4 valence electrons and shows intermediate properties of metals and non-metals. Identify that element 'X'.

Question 5

i) The following diagram is the electron dot representation of a water molecule.

[4M]



- a) What type of bond is shown in this compound ?
- b) How many lone pairs are present on the Oxygen atom?
- c) Give reason why Oxygen is contributing two electrons for covalent bonding.
- d) Draw the electron dot representation of the molecule formed when Hydrogen atom combines with Chlorine atom.

ii) a) Ammonia gas is soluble in water but Methane gas is insoluble in water. Why?

[1M]

b) What kind of particles are present in a non-polar covalent compound?

[1M]

iii) a) Define the term "Basicity of an acid".

[1M]

b) Name the ion responsible for the alkaline nature of a solution.

[1M]

c) An insoluble salt obtained by adding dilute HCl to Silver nitrate solution.

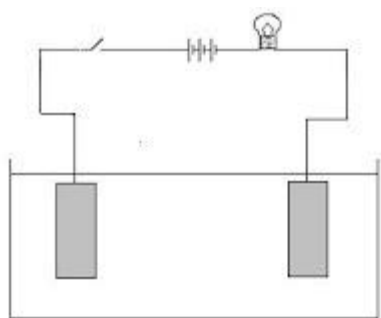
[1M]

d) Name an acid which is Hygroscopic in nature and used as a drying agent.

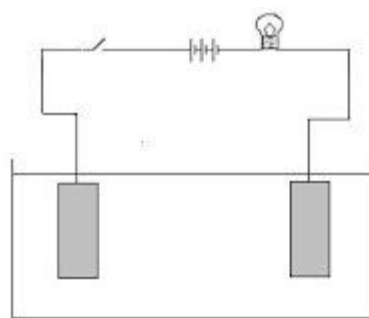
[1M]

Question 6

i) Akash and Adarsh of class 10 are performing electrolysis of different electrolytes. The following is the arrangement of the setup.



A) Akash has taken Copper sulphate solution



B) Adarsh has taken acidified water

a) If the electrodes in both the electrolytic cells are made of Platinum and the switch is turned on, What would be the observation at cathode noted by : 1) Akash 2) Adarsh

[2M]

b) If the platinum electrodes are replaced by Copper plates by Akash, then what would happen at Anode?

[1M]

ii) a) Write balanced equation for the cathode reaction during electroplating an article with Silver.

[1M]

b) Name the electrolyte to be used in the above process (a).

[1M]

c) State any one precaution during electroplating with suitable reason.

[2M]

- iii) Answer the following questions pertaining to **Hall-Heroult's** Process: [3M]
- What is the purpose of this process?
 - Name the component of the electrolyte, which is a compound of a divalent metal.
 - Give reason why Coke powder is sprinkled on the surface of the electrolyte.

Question 7

- i) Write balanced equation: [4M]
- Reaction between dilute Hydrochloric acid and Sodium carbonate
 - Oxidation of Ammonia gas in the absence of catalyst
 - Conc. HNO_3 reacts with Carbon
 - Conversion of Sulphur to Sulphur dioxide using Conc. Sulphuric acid

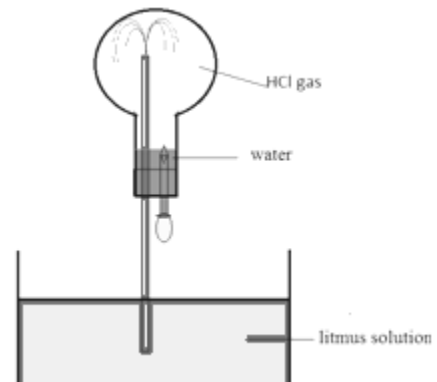
- ii) Calculate the Empirical formula and Molecular Formula of the compound with the following chemical composition: Na- 29.11%, S- 40.50%, O- 30.37%
 At. wt. Na-23, S-32, O-16
 and take $n=1$ [3M]

- iii) A mixture of 40lit of ethane and 150lit of Oxygen gas is ignited in a closed chamber and the resultant contents are cooled to room temperature. Calculate the composition of the final mixture. [3M]

Question 8

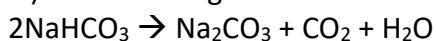
- i) Study the diagram and answer the following questions [3M]

- Name the experiment
- State the purpose of this experiment
- What would be the observation if the HCl gas in Round Bottom Flask is replaced with Ammonia gas? [3M]

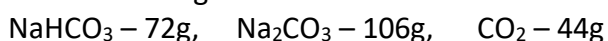


- ii)a) Substance 'X' is a salt. Identify the salt with following information [1M]
 Exp-1: When the salt is treated with an acid, it produces a suffocating gas which decolourises Potassium permanganate solution
 Exp-2: When the salt solution is added with small amount of Ammonium hydroxide, it forms a gelatinous white precipitate
- Write balanced equation for the reaction if the above acid salt reacts with Sulphuric acid. [1M]
 - Name the gas produced in the Exp-2 mentioned above. [1M]

- iii) The following reaction is the thermal decomposition of Sodium bicarbonate [4M]



molar masses given as



If 120g of Sodium bicarbonate is heated, then Calculate:

- the mass of Sodium carbonate produced
- Volume of Carbon dioxide
- Number of moles of Carbon dioxide
- Number of moles of Sodium bicarbonate taken.