PRE BOARD EXAMINATION, 2024-2025
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) The compound that is not an ore of aluminium:
(a) Cryolite (b) Corundum (c) Fluorspar (d) Bauxite

(ii) A chloride which forms a precipitate that is soluble in excess of ammonium hydroxide, is:
(a) Calcium chloride (b) Ferrous chloride
(c) Ferric chloride (d) Copper chloride

(iii) If relative molecular mass of butane (C_4H_{10}) is 58 then its vapour density will be:
(a) 58 (b) 29 (c) 32 (d) 16

(iv) Catalyst used in Ostwald's process:
(a) Fe (b) Cr (c) Pt (d) Coke

(v) The ratio between the volumes occupied by 4.4 g of carbon dioxide and 2 g of hydrogen gas is:
(a) 2.2 : 1 (b) 1 : 2.2 (c) 1 : 10 (d) 10 : 1

(vi) Assertion (A) : Alkali metals do not form dipositive ions.
Reason (R) : After loss of one electron alkali metals achieve stable electronic configuration of noble gases.
(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) Ravi was asked to identify the cation present in the salt solution. He added one of the reagents given below and got a reddish-brown precipitate. The reagent that he used is:
(a) Silver nitrate solution (b) Barium chloride solution
(c) Ammonium hydroxide (d) Calcium chloride solution

(viii) The pH of the soil is tested, and for the better growth of crops, slightly alkaline soil is required. Which ion in the fertilizer will increase the alkalinity of the soil?
(a) Hydronium ion (b) Hydroxyl ion
(c) Hydrogen ion (d) Both Hydroxyl and Hydrogen

(ix) On passing ammonia gas over heated copper oxide for some time, a reddish brown residue is left behind. What property of ammonia is demonstrated here?

(a) Basic property (b) Oxidising property
(c) Reducing property (d) Acidic property

(x) The IUPAC name of formic acid:

(a) Propanoic acid (b) Methanoic acid
(c) Ethanoic acid (d) Butanoic acid

(xi) Assertion (A) : Alkenes and alkynes are unsaturated hydrocarbons.
Reason (R) : They contain single bond, due to which they are unsaturated and tetravalent in nature.

(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) Which product is common in both the cases?
Case -1:Nitre reacts with conc.H_2SO_4.
Case-2: Chile saltpetre reacts with conc. H_2SO_4.

(a) $KHSO_4$ (b) $NaHSO_4$ (c) Both (a) and (b) (d) HNO_3

(xiii) Substance which helps to lower the fusion point of the mixture in Hall Heroult process:

(a) Coke (b) Concentrated sodium hydroxide
(c) Fluorspar (d) Concentrated potassium hydroxide

(xiv) Element 'P' has electronic configuration 2,8,8,1. The number of chlorine atoms present in the chloride of 'P' is :

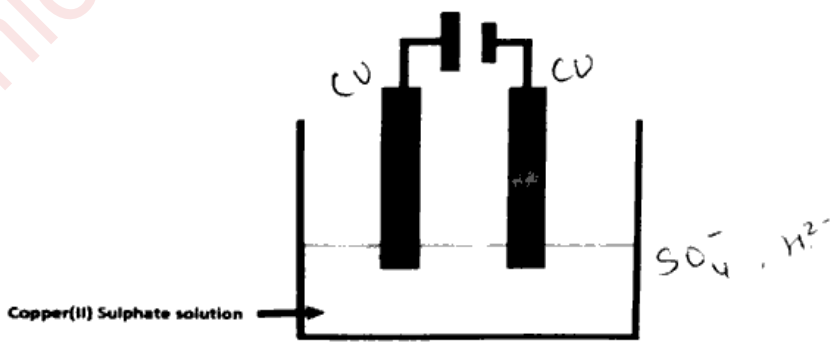
(a) 2 (b) 1 (c) 3 (d) 4

(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) Copper sulphate solution is electrolysed using copper electrodes. [5]



(a) Which electrode to your left or right is known as the oxidizing electrode and why?
(b) Write the equations representing the reaction that occurs.
(c) State two appropriate observations for the above electrolysis reaction.

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

	Column A		Column B
(a)	Calcium Chloride	1.	Contact Process
(b)	Molybdenum	2.	Electrovalent compound
(c)	Calcination	3.	Acetic acid
(d)	Weak acid	4.	Carbonate ore
(e)	Sulphuric acid	5.	Haber's process

(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) Conversion of ethene to ethane is an example of_____ *[hydration/hydrogenation]*.
(c) The indicator which does not change colour on passage of HCl gas is_____ *[methyl orange/ phenolphthalein]*.
(d) Ammonia reacts with excess chlorine to form_____ *[nitrogen/nitrogen trichloride/ammonium chloride]*.
(e) The electrode where the current enters the electrolyte is called the _____ *[cathode/anode]*.

(iv) Identify the following:
(a) The group obtained by removing one hydrogen atom from the parent alkane.
(b) A bond formed by a shared pair of electrons, each bonding atom contributing one electron to the pair.
(c) A homogeneous mixture of two or more metals or a metal and a non-metal in a definite proportion in their molten state.
(d) Tendency of an element to form chains of identical atoms.
(e) Formation of ions from molecules.

(v) (a) Draw the structural formula of following organic compounds: [3]
1. 2-methyl butane
2. propanoic acid
3. pentan-2-ol

(b) Give the IUPAC name of the following organic compounds: [2]
1. Acetaldehyde
2. Acetylene

SECTION B (40 Marks)

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

Question 3

(i) Identify the reactant and write the balanced equation for the following:
Nitric acid reacts with compound Q to give a salt $Ca(NO_3)_2$, water and carbon dioxide. [2]

(ii) What property of sulphuric acid is exhibited in each of the following cases: [2]
(a) In the preparation of HCl gas when it reacts with sodium chloride.
(b) When concentrated sulphuric acid reacts with copper to produce sulphur dioxide gas.

(iii) Give balanced equations for each of the following: [3]
(a) Laboratory preparation of ethyne from calcium carbide.
(b) Conversion of acetic acid to ethyl acetate.
(c) Laboratory preparation of nitric acid.

(iv) The following table is related to an industrial process of an acid. [3]

Name of the process	Reactant	Catalyst	Final Product
(a)	$SO_2 + O_2$	(b)	(c)

C Ca_2H_2

Question 4

(i) Equation for the reaction when compound A bubbled through bromine dissolved in carbon tetrachloride is as follows: [2]

$$A \xrightarrow{Br_2/CCl_4} CH_2Br$$
$$CH_2Br$$

(a) Draw the structure of A.
(b) State your observation during this reaction.

(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) Give chemical equations for the following: [3]
(a) The preparation of ethyne from 1,2-di-bromoethane.
(b) The laboratory preparation of methane from sodium acetate.
(c) Ethanol reacts with sodium at room temperature.

(iv) The following questions are based on the preparation of ammonia gas in the laboratory: [3]
(a) Name the compound normally used as a drying agent during the process.
(b) How is ammonia gas collected?
(c) Explain why ammonium nitrate is not used in the preparation of ammonia.

Question 5

(i) Name the alloy which is made up of : [2]
(a) Copper, Zinc and Tin
(b) Lead and Tin

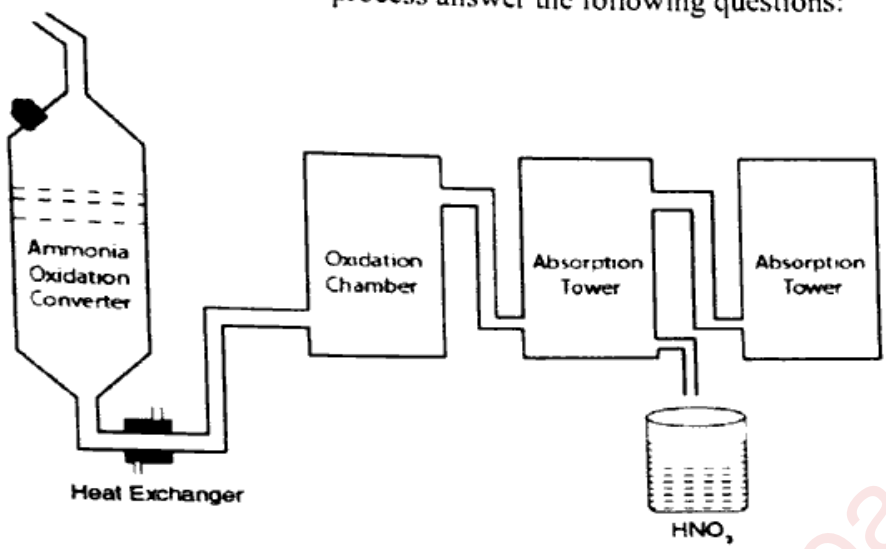
(ii) Choose the correct answer from the list given below: [2]

Zinc blende , C_2H_2, calamine, CH, haematite

(a) The ore which can be concentrated by magnetic separation.
(b) Empirical formula of ethyne.

(iii) Rohan wants to electroplate a spoon with nickel. [3]
(a) To which electrode should he connect the article to be electroplated?
(b) Write the equation for the reaction that will occur at the cathode.
(c) What should the anode be made up of?

(iv) The diagram given below is a representation of the industrial preparation of nitric acid by Ostwald's process. With respect to the process answer the following questions: [3]



(a) Write the temperature and the catalyst required during the catalytic oxidation of ammonia.
(b) Give the balanced chemical equation for the reaction occurring during the conversion of nitrogen dioxide to nitric acid.

Question 6

(i) Calculate the no. of molecules in 500 g of sodium chloride.Atomic mass of Na = 23,Cl = 35.5 [2]

(ii) Give reasons: [2]
(a) Carbon tetrachloride does not dissolve in water
(b) Alkali metals are good reducing agents.

(iii) X [2, 8, 7] and Y [2, 8, 2] are two elements. Using this information complete the following: [3]
(a) _____ is the metallic element.
(b) Metal atoms tend to have a maximum of _____ electrons in the outermost shell.
(c) _____ is the reducing agent.

(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 most electronegative element of period 3.

Question 7

(i) What do you understand by lone pair of electrons? [2]

(ii) Name: [2]
(a) a yellow monoxide that dissolves in hot and concentrated caustic alkali.
(b) a weak alkali.

(iii) M is a metal above hydrogen in the activity series 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) What kind of combination exists between M and O?
(b) State the number of electrons in the outermost shell of M.
(c) Name the group to which M belongs.

(iv) (a) What do you understand by amphoteric oxide? [3]
(b) Electrolysis is a redox process.Explain.
(c) What ions must be present in a solution used for electroplating a particular metal?

Question 8

(i) Draw the electron dot structure of: [2]
(a) Methane molecule
(b) Nitrogen molecule [Atomic number : N = 7, C =6, H= 1]

(ii) Complete the following sentences by choosing the correct answer from the bracket. [2]
(a) The salt that can be prepared by direct combination is _ _ _ _ _ _ [$FeCl_3$/$FeCl_2$]
(b) The metallic oxide which can be reduced by using common reducing agents is _ _ _ _ _ _ _ [Fe_2O_3/ Al_2O_3].

(iii) An organic compound contains 4.07 % hydrogen, 71.65% chlorine and remaining carbon. Its molar mass is 98.96. [Atomic masses : H = 1, Cl = 35.5, C = 12] [3]
Find its,
(a) Empirical formula
(b) Molecular formula

(iv) The atomic number of an element Z is 16.State [3]
(a) the period to which it belongs.
(b) Whether the element is a metal or non-metal?
(c) State the formula of the compound between Z and hydrogen.