

PRELIMINARY EXAMINATION: 2024-2025

CLASS: X

SUBJECT: CHEMISTRY

NAME OF STUDENT:

MAX. MARKS: 80

DATE:

TIME: 2 HOURS

NOTE: You will not be allowed to write during the 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 from the given options:

[15]

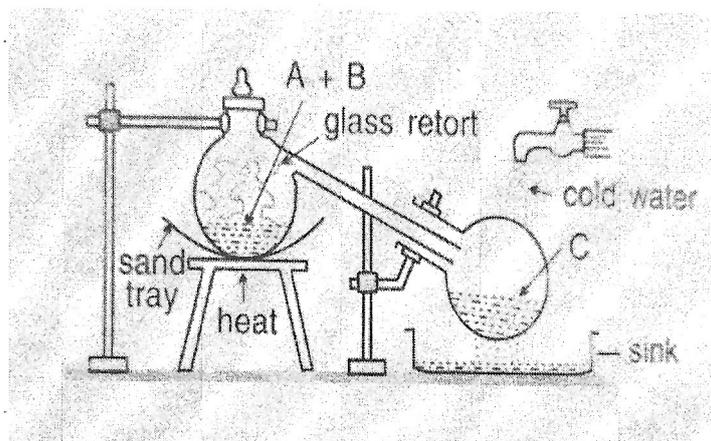
(Do not copy the question, write the correct answers only.)

- i) The organic compound prepared by the reaction between calcium carbide and water:
 - a) Ethane
 - b) Ethene
 - c) Ethyne
 - d) Propyne
- ii) The first homologue in the carboxylic series:
 - a) Methanal
 - b) Methanol
 - c) Methanoic acid
 - d) Acetic acid
- iii) It is used as drying agent to dry hydrogen chloride:
 - a) Conc. nitric acid
 - b) Conc. sulphuric acid
 - c) Conc. phosphoric acid
 - d) Oxalic acid
- iv) The process of conversion of ammonia to nitric acid:
 - a) Ostwald's process
 - b) Haber's process
 - c) Contact process
 - d) Electrolytic process
- v) The compound obtained when sulphur trioxide is absorbed in concentrated sulphuric acid:
 - a) Dil. sulphuric acid
 - b) Dil. sulphurous acid
 - c) Pyrosulphuric acid
 - d) Conc. sulphurous acid
- vi) A. Assertion: F_2 molecule contains a nonpolar covalent bond.
B. Reason: The bond is formed between similar atoms.
 - a) Both the statements are true.
 - b) Both the statements are false.
 - c) Statement A is true and statement B is false.
 - d) Statement A is false and statement B is true.
- vii) Which molecule contains a double covalent bond between adjacent carbon atoms?

P. C_2H_4	Q. C_2H_2	R. C_3H_6
a) Only P	b) Only R	
c) Both P and R	d) Both P and Q	
- viii) An electrolyte which completely dissociates into ions is:
 - a) Sugar solution
 - b) Ammonium hydroxide
 - c) Alcohol
 - d) Potassium hydroxide
- ix) The metallic electrode which takes part in an electrolytic reaction:

A. Copper	B. Nickel	C. Graphite
a) Only A	b) Only B	
c) Only C	d) Both A and B	
- x) The organic compound which undergoes addition reaction is:

- e) An acidic gas gives dense white fumes of [ammonium hydroxide /ammonium chloride] with ammonia.
- v) The figure given below illustrates the apparatus used in the laboratory preparation of nitric acid. [5]



- Name A (a liquid) and B (a solid). (Do not give the formulae).
- Write a balanced chemical equation for the above preparation.
- Why do we use all glass apparatuses?
- The acid prepared is yellow in colour. Why?

SECTION B (40 Marks)

(Attempt any four questions from this Section)

Question 3

- Ranjana wants to prove that ammonia is a reducing agent. To demonstrate this, she passes ammonia gas over heated copper oxide. What will she observe? [2]
 - Write a balanced chemical equation for the above reaction.
- Arrange the following as per the instructions given in the brackets: [3]
 - Na, Li, K, Rb (decreasing order of metallic character)
 - Mg, Cl, Na, S (increasing order of atomic size)
 - Cl, F, Br, I (Increasing order of electronegativity)
- Name the alloy which is made-up of: [2]
 - Aluminium and magnesium
 - Lead and tin
- The following questions are based on the preparation of ammonia gas in the laboratory: [3]
 - Explain why ammonium nitrate is not used in the preparation of ammonia.
 - Name the compound normally used as a drying agent during the process.
 - Name the method of collection of ammonia gas.

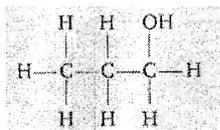
Question 4

- What property of sulphuric acid is exhibited in each of the following cases: [3]
 - In the preparation of HCl gas when it reacts with sodium chloride.
 - When concentrated sulphuric acid reacts with copper to produce sulphur dioxide gas.
 - When few drops of concentrated sulphuric acid is added to blue vitriol.
- The following questions relate to the extraction of aluminium by electrolysis. [2]
 - Name the calcium containing compound added to alumina.
 - Give a balanced equation for the reaction that takes place at the cathode.
- Give balanced equations for each of the following: [3]
 - Action of warm water on aluminium nitride.
 - Oxidation of carbon with concentrated nitric acid.
 - Dehydration of ethanol by concentrated sulphuric acid at the temperature of 170°C.
- Copper sulphate solution is electrolysed using copper electrodes. [2]
 - Which electrode is the oxidising electrode?

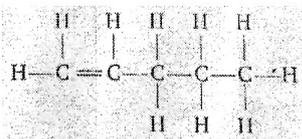
b) Write the equation for the reaction occurring at the above electrode.

Question 5

- i) Give a chemical test to distinguish between: [4]
- Sodium chloride solution and sodium nitrate solution.
 - Hydrogen chloride gas and hydrogen sulphide gas.
 - Calcium nitrate solution and zinc nitrate solution.
 - Carbon dioxide gas and sulphur dioxide gas.
- ii) Identify the following: [3]
- A bond formed between two atoms by sharing of a pair of electrons, with both electrons being provided by the same atom.
 - A reaction in which the hydrogen of an alkane is replaced by a halogen.
 - The energy required to remove an electron from a neutral gaseous atom.
- iii) Give the IUPAC name of the following organic compounds: [2]
- a.



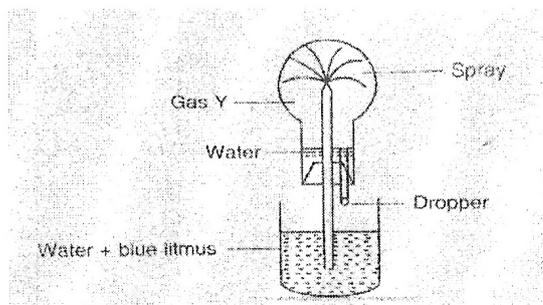
b.



- iv) Calculate the number of moles in 4 grams of sodium hydroxide. [1]
[Given: RAM of Na=23, O=16, H=1]

Question 6

- i) Study the figure given below and answer the questions that follow: [3]



- Identify the gas Y.
 - What property of the gas does this experiment demonstrate?
 - Name another gas which has the same property and can be demonstrated through this experiment.
- ii) Draw structural formula for each of the following compounds: [3]
- 2-methyl propane
 - 3-hexene
 - Isomer of ~~n-butane~~ butene
- iii) Atom Y has two electrons in N-shell. Atom X has atomic number 17 and atom Z has atomic number 6. [4]
- Which atom is likely to form a cation?
 - What is the formula of compound formed between X and Z?
 - Draw the electron dot diagram of the compound of X and Y.
 - State one property of the compound formed between X and Z.

Question 7

- i) Explain why: [3]
- Hydrogen chloride can be termed as a polar covalent compound.

- b) A solution of cane sugar does not conduct electricity, but a solution of sodium chloride is a good conductor of electricity.
- c) Dilute nitric acid is generally considered a typical acid but not so in the reaction with metals.
- ii) Solution P has a pH of 13, solution Q has a pH of 6 and solution R has a pH of 2. [3]
- a) Which solution will liberate ammonia from ammonium sulphate on heating?
- b) Which solution is a strong acid?
- c) Which solution contains molecules as well as ions?
- iii) A compound has zinc 47.8% and chlorine 52.2%. Find its empirical formula. [2]
[Given: RAM of Zinc=65, Cl=35.5]
- iv) Write balanced chemical equation for the following: [2]
- a) Reaction between ammonia and oxygen in the presence of a catalyst.
- b) Reaction between sodium sulphite and dilute hydrochloric acid.

Question 8

- i) Mr. Ramu wants to electroplate his key chain with nickel to prevent rusting. For this electroplating: [5]
- a) Name the electrolyte.
- b) Name the cathode.
- c) Name the anode.
- d) Give the reaction at the cathode.
- e) Give the reaction at the anode.
- ii) Fill in the blanks from the choices given in brackets: [5]
- a) On moving left to right in a period the number of valence electrons (remains the same, increases, decreases).
- b) Covalent compounds have (low, high) boiling point.
- c) The energy required to remove one electron from neutral isolated gaseous atom to convert it into a cation is called(electron affinity, ionization potential, electronegativity)
- d) Copper ions are deposited at (cathode, anode) during the electrolysis of aqueous copper sulphate solution with platinum electrode.
- e) Dilute acetic acid solution is a (weak, strong) electrolyte.

END