

CHEMISTRY

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

[Attempt all Questions from this section]

1 Identify the substance underlined in each of the following cases:

- 1 The ore of Zinc that is roasted.
2. The electrolyte that is used in electroplating an article with nickel.
3. An organic compound containing the carboxyl group.
4. A diacidic base which is a white precipitate and is insoluble in excess NH_4OH .
5. A substance which becomes powdery on exposure to air.

2. Write balanced equation and name the type of reactions:

1. Acetic acid reacting with alcohol in presence of conc. H_2SO_4 .
2. Heating of ammonium chloride.
3. Adding sodium carbonate solution to calcium chloride solution.

(6)

3. Complete the following table:

Name of the Process	inputs	Catalyst	Equation for the catalysed reaction	Output
1. _____	SO_2 & O_2	_____	_____	_____
2. _____	_____	Iron	_____	_____
3. _____	_____	_____	_____	Nitric acid

(6)

4. Draw the structure of the following compounds; 1. Methanal 2) Propyne

(2).

5. Name the following:

1. A ductile non metal.

2. A metal with a low melting point.

3. The salt which has no ionisable hydrogen.

(3)

6. Write balanced equation and the property of the acid listed below:

1. Zinc sulphide & dilute H_2SO_4 .

3. Potassium bisulphite & dilute Nitric acid.

4. Copper & concentrated nitric acid.

(6)

7. What do you observe

1. Lead nitrate crystals are heated.

2. Dilute HCl is added to sodium thiosulphate.

3. Excess chlorine reacting with Ammonia.

4. Sodium is added to Ethanol.

(4)

8. In the decomposition of potassium nitrate, calculate the mass of potassium nitrite formed if 10 moles of potassium nitrate is heated? Find the volume of Oxygen evolved at the same time. [K=39, N=14, O=16]

(3)

9. Calculate the number of gram atoms present in 13.8 g of sodium. (Na=23)

(1)

10. Calculate the mass of 10^{22} atoms of Calcium. (Ca=40, Avogadro's number = 6×10^{23})

(1)

11. Two solutions A & B have pH 5.2 & 12.6. Which one will liberate CO_2 gas when added to a carbonate salt. Which one will turn phenolphthalein to pink in colour? Define pH?

(3)

12. Give one word for the following:

a. Process of formation of ions from molecules which are not in the ionic state.

b. The tendency of an element to form chains of identical atoms.

c. Salts formed by the partial replacement of the hydroxyl group of a diacidic base by an acid radical.

d. Elements which form negative ions by the gain of electrons.

e. Coating iron sheets by molten iron.

(5)

SECTION II

(Answer any four questions)

QUESTION II

1. Explain the trend in Electron affinity & Electro negativity down the group? (2)
2. Why I.P increases over a period from left to right ? (1)
3. Draw the electron dot diagram for the formation of CaO. {Ca=20, O=8} (2)
4. Define a co-ordinate bond? Draw the formation of Ammonium ion ? (2)
5. Distinguish between the following pairs of compounds: A Lead salt & a Zinc salt.
Write its equation also? (3)

QUESTION III

1. Name the method of preparation of the following salts and write its balanced equations:
 - a. Ferrous chloride
 - b. Sodium sulphate
 - c. Cupric chloride
 - d. Lead carbonate (4)
2. Name a diacidic base ? Write an equation to get a triacidic base using a weak alkali. (2)
3. Fill in the blanks:
----- hydrocarbons are more ----- due to the presence of-----
in the double or the triple bond and therefore undergo ----- reaction. (2)
4. Write a test to distinguish between an Ethane & Ethene (2)

QUESTION IV

1. Write balanced equations:

1. Aluminium hydroxide reacting with potassium hydroxide.
2. Lead dioxide reacting with Conc. HCl. (2)
2. What do you observe when ammonia is passed over hot copper oxide. Write its equation? (2)
3. Draw the chain isomers of Butane. Name them? (2)
4. What do you observe at anode in the electrolysis of CuSO_4 using copper anode? (2)
Write the equation at anode?

4. Write equation at anode in the electrolytic reduction of Alumina? What is the purpose of adding cryolite during the electrolysis?

QUESTION V

1. Write equation for the laboratory preparation of ETHYNE? What happens when Bromine in CCl_4 is added into it? Draw the structure of the saturated product and write its IUPAC name?

2. What do you observe when freshly prepared FeSO_4 solution is added into solution of nitrite salt? Write its equation?

3. Write equations for the following conversions:

a. Ethane to Ethanol using copper catalyst.

b. Ethene to Ethane.

4. Write equations for the following;

1. Copper reacting with concentrated sulphuric acid.

2. Sodium carbonate and dilute sulphuric acid.

5. Name the principal alloy of Aluminium?

QUESTION VI

1. Differentiate between Mineral and Ore?

2. How is HCl gas collected? Which property of HCl is shown by that method?

3. Calculate the volume occupied by 1.5 moles of a gas at STP? Find the weight of 5.6 dm^3 of a basic gas at STP?

4. Write equation to show oxidising property of conc. H_2SO_4 with

a. Sulphur b. HBr

5. Write the IUPAC name of $\text{CH}_3\text{-CH}_2\text{-OH}$. How is it prepared? Write its equation?