

Instructions :

Answer the questions as per the directions given. First 15 minutes are allowed for careful reading and appropriate selection of choices.

I. OBJECTIVE TYPE QUESTIONS.

PART A

(Answer any 4 questions from 1 to 6. Each carries 1 score) 1x4 = 4

1. Which of the following sub shells are not possible ?
(3p, 5s, 3f, 4d, 1p)
2. The atomic mass of oxygen is 16. Which of the following sample contains 6.022×10^{23} oxygen atoms ?
(8g Oxygen, 32g Oxygen, 16g Oxygen, 1g Oxygen)
3. Which of the following metals reacts vigorously with water ?
(Mg, Zn, Na, Fe)
4. Write the name of the basic compound formed when ammonium chloride is heated.
5. Complete the following suitably.
Liquor ammonia: Concentrated aqueous solution of ammonia
Liquid ammonia:
6. Write the name of the functional group present in $\text{CH}_3\text{-CH}_2\text{-OH}$.
(Carboxylic group, Hydroxyl group, Alkoxy group)

PART B

(Answer all the questions from 7 to 9. Each carries 1 score) 1x3 = 3

7. Molar volume of any gas at STP isLitres.
8. Lanthanoids belongs to block in the periodic table.
(s, p, d, f)
9. The compound formed when Al(OH)_3 is heated during the concentration of bauxite is ?

II. VERY SHORT ANSWER TYPE QUESTIONS.

PART A

(Answer the one question. It carries 2 scores) 2x1 = 2

10. Complete the table suitably.

Metal	Method of concentration	Characteristics
Zn	.....	Low Boiling point.
Sn	.....	.....
Cu	Electrolytic refining	.....

PART B

(Answer any 1 questions from 11 to 12. Each question carries 2 scores)

11. The volume of a fixed mass of CO₂ gas at STP is 89.6 litres. Calculate the mass of this gas.
(Molecular mass of CO₂ is 44)
12. Identify the pairs of isomers and write down the type of isomerism present in them?
- CH₃-CH₂-CH₂-CH₂-CH₃
 - CH₃-CH₂-CH₂-CH₂-OH
 - CH₃-CH₂-CH-CH₃
 |
 OH
 - CH₃-C-CH₃
 |
 CH₃

III. SHORT ANSWER TYPE QUESTIONS.

PART A

(Answer any 3 questions from 13 to 16. Each question carries 3 scores)

13. The third shell of an atom contains 5 electrons.
- Write the sub shell electronic configuration of the element ?
 - Find the block to which this element belongs.
 - Find the group of this element.
14. The volume of a fixed mass of gas at different pressures are given in the table.
(Temperature is kept constant)

Pressure (P)	Volume (V)
1 atm	8 L
.....	4 L
4 atm	.....

- Complete the table.
 - What is the relation between pressure and volume?
 - Which gas law is applicable here?
15. CH₃-CH₂-CH₂-CH=CH₂ is an unsaturated hydrocarbon.
- Which of the following homologues series does this compound belong to ?
(alkane, alkene, alkyne)
 - Write the general formula for representing this homologues series ?
 - Write the IUPAC name of this compound ?
16. Complete the table

Substance	GMM	Mass in gram	No of moles	No of molecules	No of atoms
H ₂ O	18g	.....	5	.....	15 x 6.022 x 10 ²³
H ₂	2g	10	.....	5 x 6.022 x 10 ²³	.....
CH ₄	.....	32	.....	2 x 6.022 x 10 ²³	10 x 6.022 x 10 ²³

(Atomic mass:H=1, O=16, C=12)

PART B

(Answer the one question. It carries 2 scores)

17.a. Name the anode and cathode used in the electrolysis of aluminium

b. The production of aluminium is known as

c. What is the role of cryolite in the electrolysis of alumina

LONG ANSWER TYPE QUESTIONS.

PART A

(Answer any 2 questions from 18 to 20. Each question carries 4 scores)

18. The subshell electronic configuration of some elements are given

(symbols are not real)

A-[Ne]3s²3p⁴, B-[Ar]4s², C-[Ne]3s², D-[Ar]3d⁵4s²

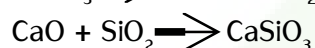
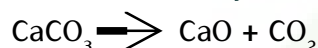
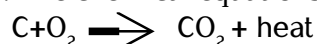
a. Name the element which belongs to d block

b. Name the elements which belong to the same group.

c. Name the element which shows -2 oxidation state.

d. Write the complete subshell electronic configuration of D⁴⁺ ion ?

19. The chemical equations related to the industrial production of iron are given below.



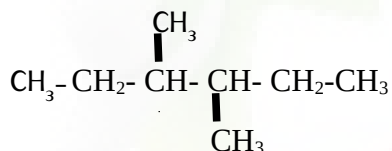
a. The ore of Iron is

b. Write the equation for the reduction of iron.

c. Which is the compound acting as reducing agent?

d. Write the equation for the formation of slag.

20.



a. The number of carbon atoms present in the longest chain is

b. Write the name of the branch.

c. Write the position of the branch.

d. Write the IUPAC name of the compound.

PART B

(Answer any 1 question from 21 to 22. Each question carries 4 scores)

21. The process of the decomposition of an electrolyte by passing electricity is known as electrolysis.

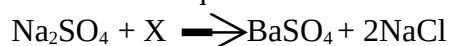
a. Name the products formed at the anode and cathode during the electrolysis of sodium chloride solution.

b. Write the equation for the chemical reaction taking place at the anode.

c. Which are the ions remain in the solution?

d. Write any two practical utility of electrolysis.

22. The chemical equation for a reaction is given below.



a. The term "X" denotes

b. The white residue formed after the reaction is

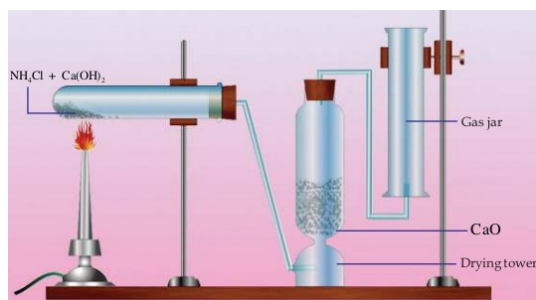
c. What will happen if dilute hydrochloric acid is added to the white residue?

d. Which salt can be identified by this reaction?

ESSAY TYPE QUESTIONS.

(Answer any 1 question from 23 to 24. Each question carries 5 scores)

23. The laboratory preparation of ammonia is given in the figure.



- What are the reactants used in this reaction?
 - Write the chemical equation for the reaction.
 - What is the necessity of using CaO in this reaction?
 - Why don't the gas jar keep in an erect position?
 - Write a method to identify whether ammonia is collected in the gas jar.
24. Some metals and salt solutions are given below.
(Zn, Fe, Cu, Ag, ZnSO₄ solution, CuSO₄ solution)

- Which of the above metals can be used for constructing a galvanic cell?
- What is the reason behind the selection of those metals?
- Identify the anode and cathode of the cell.
(Hint: Reactivity of Zn>Fe>Cu>Ag)
- The direction of electron flow is from metal electrode to metal electrode.
- Write the equation for the redox reaction occurring in the cell.