

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 is the subshell commonly seen in all the shells?
(s, p, d, f)
2. The amount of substance in grams equal to its molecular mass is called _____
3. Which of the following metals can displace Zn metal from ZnSO₄ solution?
(Cu, Ag, Mg, Fe)
4. Ammonia gas is passed through a drying tower. Which substance is used in this?
5. When Ammonia leaks, water is sprayed to reduce its intensity. What is the reason for this?
(Pungent smell, High solubility in water, Basic nature, Low density)
6. Which is the functional group present in CH₃-COOH
(Hydroxyl, Carboxylic, Alkoxy, Halo)

PART B

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

1x3 = 3

7. The last electron in the f block elements is filled up in the _____ shell.
(Outermost shell, Innermost shell, Penultimate shell, Ante penultimate shell)
8. 22.4L will be the volume of any gas contain _____ number of molecules at STP.
9. What is the oxidation state of Mn in MnO₂
(+1, +2, +4)

II. VERY SHORT ANSWER TYPE QUESTIONS.

PART A

(Answer the given question. It carries 2 scores)

2x1 = 2

10. Zinc blende is the ore of Zinc.
 - a. Name the method used for the concentration of this ore.
 - b. Which property of Zinc blende is used here for the concentration?

PART B

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

2x1 = 2

11. a. Write down the number of moles in 44.8 L of NH₃ gas in STP?
b. Find out the number of molecules present in same volume (44.8L) of NH₃ gas?
(1 mole = 6.022 x 10²³)
12. a. Write down the IUPAC name of CH₃-CH₂-O-CH₃?
b. Write the structural formula of its functional isomer?

III. SHORT ANSWER TYPE QUESTIONS.

PART A

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

3x3 = 9

13. The outermost subshell electronic configuration of an element is $3s^2 3p^5$.

- Write down the atomic number of the element.
- Find out the period and group of the element.
- write down the subshell electronic configuration of the inert gas belonging to this period?

14.

Volume V (L)	Temperature T (K)	V/T
600	300	2
800(a).....	2
.....(b).....	450	2

- Find out the values of (a) and (b).
 - State the gas law related to this?
 - Write an example from daily life related to this law?
15. Mass of some compounds in grams are given below.

(A= 180g H₂O, B= 22g CO₂, C= 17g NH₃)

Answer the following questions. (Atomic mass H=1 , O=16, C=12, N=14)

- Arrange A,B,C in ascending order of the number of moles in them.
 - Find the number of molecules in A.
16. Match the following

A	B	C
CH ₃ -C≡CH	Alcohol	Alkoxy group
CH ₃ -CH ₂ -OH	Ether	Tripple bond
CH ₃ -CH ₂ -O-CH ₃	Alkyne	Hydroxyl group

PART B

(Answer the given question. It carries 3 scores)

3x1 = 3

17. Aluminium is the most abundant metal seen in the earth's crust.

- Name the ore of Aluminium.
- Which method is used for the concentration of Aluminium?
- Which is the electrolyte used during the electrolysis of aluminium?

LONG ANSWER TYPE QUESTIONS.

PART A

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

4x2 = 8

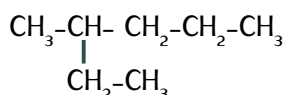
18. There are 7 electrons in the 3rd shell of the element X?

- Write down the subshell electronic configuration of X.
- Write down the atomic number of X.
- Find out the period and block of X.

19. Iron is industrially produced in the Blast furnace.

- what are the raw materials fed into the blast furnace?
- What is the use of lime stone (CaCO₃) in this process?
- Name the compound which reduces iron oxide to iron?

20.



- How many carbon atoms are present in the main chain?
- Write down the word root?
- Name the alkyl radical and write down its position?
- Write down the IUPAC name of the compound?

PART B

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

4x1 = 4

21. During the electrolysis of molten Sodium Chloride,

- Which is the substance obtained at cathode?
- Write down the equation of the chemical reaction taking place at anode.
- What is the energy change taking place in an electrolytic cell?
- Write down two practical utility of electrolysis.

22. Answer the following questions related to the industrial preparation of Sulphuric acid.

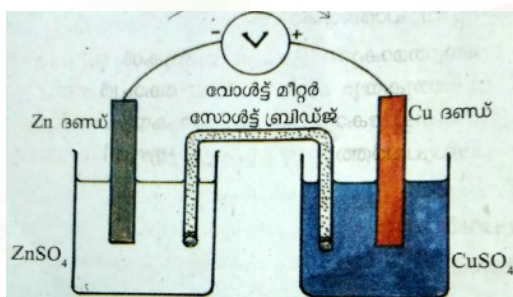
- What is the name of the process by which H_2SO_4 is prepared industrially?
- H_2SO_4 is formed also by the direct dissolution of SO_3 in water. But SO_3 is not directly dissolved in water. Why?
- $\text{H}_2\text{S}_2\text{O}_7$ is formed during the production of Sulphuric acid. Name this product.

ESSAY TYPE QUESTIONS.

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

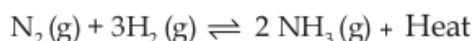
5x1 = 5

23. Figure of a Galvanic cell is given below.



- In which electrode does the oxidation takes place?
- What is the direction of the electron flow?
- Which metal acts as a cathode?
- What is the reaction taking place in cathode?
- Write down the chemical equation of redox reaction taking place in this cell.

24. Nitrogen combines with Hydrogen to form Ammonia. The chemical reaction is as follows.



- Write down the forward reaction in this reversible reaction.
- Write down the total number of moles of both the reactants and products.
- Write two methods to increase the quantity of the product?