

Sl. No.

SSLC MODEL EXAMINATION, FEBRUARY - 2025

CHEMISTRY

(English)

Time : 1½ Hours

Total Score : 40

Instructions :

- The first 15 minutes is cool-off time.
- You may use this time to read the questions and plan your answers.
- Answer only on the basis of instructions and questions given.
- Consider score and time while answering.

Score

SECTION - A

Answer any 4 questions from 1 to 5. Each question carries 1 score.

4x1=4

1. During the laboratory preparation of ammonia, quick lime is used as a _____. 1
2. How many electrons are present in the outermost subshell of noble gases except helium ? 1
3. The molecular mass of oxygen is 32. What is the volume of 320 g oxygen at STP ? 1
4. Which is the by-product obtained in the industrial production of soap ? 1
5. Identify the pair of metals refined by liquation.
(Sn and Pb, Zn and Cd, Al and Fe, Cu and Ag) 1

SECTION - B

Answer any 4 questions from 6 to 10. Each question carries 2 scores.

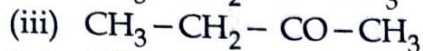
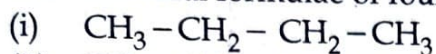
4x2=8

6. The molecular mass of carbon dioxide (CO₂) is 44.
 - (a) What is the mass of $2 \times 6.022 \times 10^{23}$ molecules of CO₂ ? 1
 - (b) What will be the mass of nitrogen having the same number of molecules as that of 264 g CO₂ ? 1
(Molecular mass of nitrogen = 28)
7. The IUPAC name of a hydrocarbon is 2,3-Dimethylbutane.
 - (a) Write the structural formula of the given hydrocarbon. 1
 - (b) A hydrocarbon has 4 carbon atoms in the main chain. There are two methyl groups on the second carbon atom. Write its IUPAC name. 1

8. Complete the table.

Properties of ore	Properties of impurities present in the ore	The method of concentration
Magnetic in nature	Non-magnetic in nature	_____ (a) _____
Low density	High density	_____ (b) _____
High density	Low density	_____ (c) _____
Non-magnetic in nature	Magnetic in nature	_____ (d) _____

9. The structural formulae of four organic compounds are given.



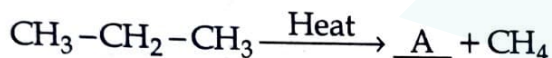
(a) Write the structural formula of the chain isomer of compound (i)

(b) Identify the pair of functional isomers.

1

1

10. Consider the following chemical equation.



(a) Write the structural formula of A.

(b) What is the product obtained when A is subjected to polymerisation ?

1

1

SECTION - C

Answer any 4 questions from 11 to 15. Each question carries 3 scores.

4x3=12

11. (a) The size of air bubbles rising from the bottom of a water tank increases. Give reason.

1

(b) State the gas law related to it.

1

(c) The volume of a fixed mass of a gas at 2 atm pressure is 20L. What will be its volume if pressure is increased four times without changing the temperature ?

1

12. A galvanic cell is to be constructed using the suitable metals and salt solutions given in the box.

Mg, Cu, Fe, Zn, Ag, AgNO_3 solution, Na_2CO_3 solution, MgSO_4 solution, FeSO_4 solution

(a) Which of the following pairs of metals acts as anode and cathode respectively ?
(Zn-Fe, Cu-Mg, Mg-Fe, Mg-Cu)

1

(b) Write the chemical equation of the redox reaction taking place in the above cell.

1

(c) Write the chemical equation of the reaction taking place at the silver electrode, if silver (Ag) is used as one of the electrodes in the cell.

1

Score

13. Some sugar is taken in a watch glass. On adding the substance X into it, a black substance is formed.

- (a) Identify the substance X. 1
 (b) Explain the chemical process involved in this change. 1
 (c) When X reacts with potassium nitrate, an acid is formed. Write the chemical equation of the reaction taking place here. 1

14. The element A belongs to the third period and second group in the periodic table. The element B belongs to the second period and 16th group.

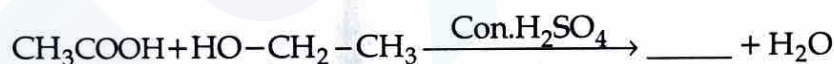
(Symbols are not real)

- (a) Write the subshell electronic configuration of A. 1
 (b) Write the subshell electronic configuration of the noble gas present in the same period as that of B. 1
 (c) Write the chemical formula of the compound formed when A combines with B. 1

15. (a) Match columns A, B and C suitably. 1

A	B	C
Rectified spirit	5-8% Ethanoic acid	- O - R
Vinegar	95.6% Ethanol	- COOH
		- OH

- (b) Complete the following chemical equation and write the IUPAC name of the product. 2



SECTION - D

Answer any 4 questions from 16 to 20. Each question carries 4 scores.

4x4=16

16. The subshell electronic configuration of chromium ($_{24}\text{Cr}$) is written in two ways.

- (i) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^4 4s^2$
 (ii) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^1$
 (a) Which is the most stable configuration ? 1
 (b) Explain the reason for your answer. 1
 (c) Write the stable subshell electronic configuration of copper ($_{29}\text{Cu}$). 1
 (d) Write the period number and group number of copper. 1

P.T.O.

17. Electricity is passed through a colourless solution of sodium salt.

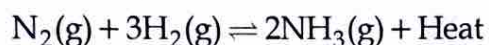
The observations are given below.

- Chlorine gas is liberated at the anode.
- On adding 2-3 drops of phenolphthalein to the solution, the solution turns pink.

Answer the following questions :

- (a) What is the reason behind the change in colour of the solution ? Which product formed makes colour change in the solution ? 1
- (b) Write the chemical equation of the reaction taking place at the cathode. 1
- (c) If molten sodium chloride is used instead of the solution, write the chemical equations of the reactions taking place at anode and cathode. 2

18. A reversible reaction is given.



- (a) How does increase in temperature influence the rate of forward reaction ? 1
- (b) What happens to the amount of product formed when pressure is increased ? 1
- (c) Ammonia formed is removed frequently. How does it affect the rate of forward reaction ? 1
- (d) State the principle applicable here. 1

19. Calamine and zinc blende are two ores of zinc.

- (a) What is the method for concentration of zinc blende ? 1
- (b) After concentration calamine and zinc blende are converted into zinc oxide by two different methods. Explain the methods. 2
- (c) Which method is used to refine zinc metal ? Identify the specific property of zinc chosen for this process. 1

20. (a) Which of the following hydrocarbons can undergo addition reaction ? 1
(C_4H_{10} , C_5H_{12} , C_4H_8 , C_3H_8)
- (b) Write the chemical equations of the addition reaction of this hydrocarbon with Cl_2 and H_2 . 2
- (c) Write the IUPAC name of the product formed by the addition of HCl to the hydrocarbon $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_3$. 1