

Sl. No.

SSLC EXAMINATION, MARCH - 2022

CHEMISTRY

(English)

Time : 1½ Hours

Total Score : 40

General instructions to Candidates :

- There is a 'cool-off time' of 15 minutes in addition to the writing time. Use this time to get familiar with questions and to plan your answers.
- Questions with different scores are given as distinct parts.
- Read the instructions carefully before answering the questions.
- Keep in mind, the score and time while answering the questions.
- The maximum score for questions from 1 to 24 will be 40.

PART - I

Score

Questions from 1 to 9 carries 1 score each.

A. Answer any four questions from 1 to 6.

4x1=4

- | | | |
|----|---|---|
| 1. | Identify the compound which contains a carbon-carbon triple bond.
(C_5H_{12} , C_2H_2 , C_3H_6 , CH_4) | 1 |
| 2. | Which one of the following subshells has the highest energy ?
(1s, 3d, 4s, 3p) | 1 |
| 3. | Find the relation and fill up suitably.
(a) Tin stone : Magnetic separation
(b) Bauxite : _____ | 1 |
| 4. | Which gas is produced when metals react with dilute hydrochloric acid ? | 1 |
| 5. | 1 GMM of a substance contains _____ number of molecules. | 1 |
| 6. | What happens to the rates of forward and backward reaction at equilibrium point ? | 1 |

B. Answer all questions from 7 to 9.

7. Which metal is deposited at cathode, when molten sodium chloride is electrolysed ? 1
(Sodium, Hydrogen, Chlorine, Calcium)
8. How many electrons are donated by first group elements generally in chemical reactions ? 1
(1, 2, 3, 4)
9. In which electrode aluminium metal is produced during the electrolysis of Alumina ? 1

PART - II

Questions from 10 to 12 carry 2 scores each.

A. Answer the following question.

1x2=2

10. (a) Which are the two compounds formed when Ammonium Chloride (NH_4Cl) is strongly heated ? 1
(b) Write the chemical equation for this reaction. 1

B. Answer any one question from 11 and 12.

1x2=2

11. Find the mass of 44.8 L of NH_3 kept at STP 2
(Hint : Atomic mass N = 14, H = 1)
12. (a) What is electroplating ? 1
(b) Which is the electrolyte used in electroplating of copper on an iron bangle ? 1

PART - III

Questions from 13 to 17 carry 3 scores each.

A. Answer any three questions from 13 to 16.

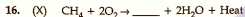
3x3=9

13. (a) Atomic number of an element is 17. Write its subshell electronic configuration. 1
(b) Find the group number and period number of this element in the periodic table. 2
14. (a) Molten iron obtained from the blast furnace contains 4% carbon and other impurities. What is this known as ? 1
(b) Which alloy steel is used for making permanent magnets ? 1
(c) Some alloy steels contain the same component. Then how do they possess different properties ? 1



How do the following changes influence the amount of the product ?

- (a) Temperature decreases 1
 (b) Pressure increases 1
 (c) Ammonia produced is removed continuously from the system. 1



- (Y) $nCF_2 = CF_2 \rightarrow \text{---} CF_2 - CF_2 \text{---}_n$
 Teflon
- (a) Complete the chemical equation X. 1
 (b) Name the reaction Y. 1
 (c) Write any one use of Teflon. 1

B. Answer the following questions.

1x3=3

17. (i) $CH_3 - CH_2 - CH_2 - CH_3$
 (ii) $CH_3 - CH_2 - CH_2 - CH_2 - OH$
 (iii) $CH_3 - CH_2 - O - CH_2 - CH_3$
 (iv) $CH_3 - CH_2 - CH_3$
- (a) Identify the isomer pair in the given compounds. 1
 (b) Name the isomerism. 1
 (c) How many isomers are possible for compound (i) ? 1

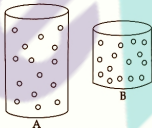
PART - IV

Questions from 18 to 22 carry 4 scores each.

A. Answer any two questions from 18 to 20.

2x4=8

18.



A and B represent two gas cylinders. The gas in the cylinder A is completely transferred to cylinder B, keeping the temperature constant.

- (a) Compare the gas pressure in cylinder A and cylinder B. 1
 (b) Which gas law is related to this ? 1
 (c) 10 L of a gas is kept in a cylinder at 2 atm pressure. Keeping the temperature constant, the gas is completely transferred to a 20 L cylinder. What is the new pressure of the gas ? 2

19. Haematite is converted into iron by reactions taking place in blast furnace.
- (a) Write the molecular formula of Haematite. 1
- (b) Which substance acts as the reducing agent in this process ? 1
- (c) Molten iron is produced alongwith slag from the furnace. What is meant by slag ? 1
- (d) Write the chemical equation that shows the formation of slag. 1
20. $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \underset{\text{CH}_3}{\text{CH}} - \text{CH}_3$
- (a) How many carbon atoms are there in the longest chain of this hydrocarbon ? 1
- (b) Give the name of the branch. 1
- (c) What is the position number of the branch ? 1
- (d) Write the IUPAC name of the compound. 1

B. Answer any one question from 21 to 22.

1x4=4

21. (a) The industrial preparation of sulphuric acid is known as _____. 1
- (b) Which is the catalyst used in this process ? 1
- (c) Take some sugar in a watch glass and add a few drops of concentrated sulphuric acid into it. What is your observation ? Which chemical property of sulphuric acid is shown here ? 2
22. Choose the compounds from the box and answer the following questions.
- $\text{CH}_3\text{COOH}, \text{CH}_3 - \text{COO} - \text{CH}_2 - \text{CH}_3,$
 $\text{CH}_3 - \text{CH}_2 - \text{OH}, \text{C}_{12}\text{H}_{22}\text{O}_{11}$
- (a) Which is a Carboxylic acid ? 1
- (b) Which compound is an ester ? 1
- (c) Identify ethanol. 1
- (d) Which substance is used in the industrial preparation of ethanol ? 1

PART - V

Questions from 23 and 24 carry 5 scores each.

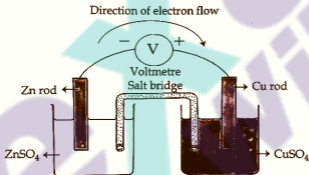
A. Answer any one question from 23 and 24.

1x5=5

23. Atomic number of Manganese (Mn) is 25.

- | | |
|---|---|
| (a) Write the subshell electronic configuration of Mn. | 1 |
| (b) Find the block of Mn in the periodic table. | 1 |
| (c) Which category of elements does Mn belong ?
(Transition element, Halogens, Noble gases, Alkaline earth metals) | 1 |
| (d) What is the oxidation number of Mn in MnO_2 ?
(Oxidation number of oxygen is -2) | 1 |
| (e) Write the subshell electronic configuration of Mn^{2+} . | 1 |

24. A picture of galvanic cell is given below :



- | | |
|--|---|
| (a) What is the energy change taking place in a galvanic cell ? | 1 |
| (b) Identify the anode in the given cell. | 1 |
| (c) Write the chemical equation of the reaction taking place at anode. | 1 |
| (d) In which electrode does oxidation take place ? | 1 |
| (e) Write the chemical equation of the redox reaction in the cell. | 1 |