S 1739

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**.

Score

PART - I

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. 1

   (C_5H_{12}, C_2H_2, C_3H_6, CH_4)

2. Which one of the following subshells has the highest energy ? 1

   (1s, 3d, 4s, 3p)

3. Find the relation and fill up suitably. 1

   (a) Tin stone : Magnetic separation

   (b) Bauxite : _____

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

Score

B. **Answer all questions from 7 to 9.** 3x1=3

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

Score

15. $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)} + Heat$

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

16. (X) $CH_4 + 2O_2 \rightarrow$ _____ $+ 2H_2O +$ Heat

(Y) $nCF_2 = CF_2 \rightarrow \{CF_2 - CF_2\}_n$

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

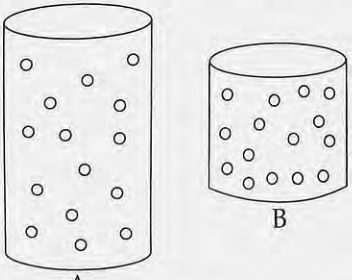
(c) How many isomers are possible for compound (i) ? 1

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

Score

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. $CH_3 - CH_2 - CH_2 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_3$

(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.

CH_3COOH, $CH_3 - COO - CH_2 - CH_3$, $CH_3 - CH_2 - OH$, $C_{12}H_{22}O_{11}$

(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

Score

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

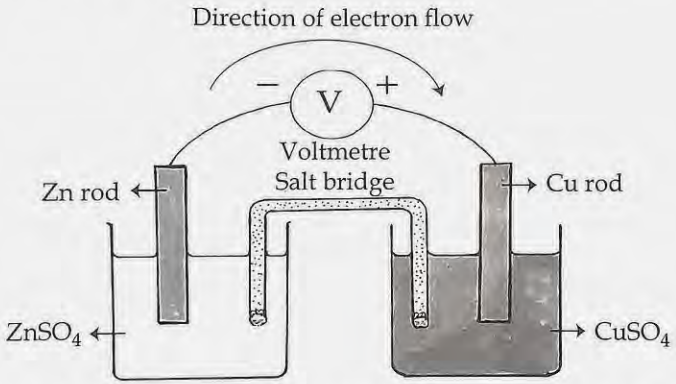
(b) Find the block of Mn in the periodic table. 1

(c) Which category of elements does Mn belong ? 1
(Transition element, Halogens, Noble gases, Alkaline earth metals)

(d) What is the oxidation number of Mn in MnO_2 ? 1
(Oxidation number of oxygen is -2)

(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

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