

Sl. No.

## SSLC EXAMINATION, MARCH - 2024

## 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. f-block elements which belong to 7<sup>th</sup> period are known as \_\_\_\_\_.  
(Transition elements, Lanthanoids, Halogens, Actinoids) 1
2. Write the name of byproduct obtained in the industrial production of Soap. 1
3. The ore of a metal is lighter than the impurities. Which method is suitable for its concentration?  
(Levigation, Froth floatation, Magnetic Separation, Leaching) 1
4. When ammonium chloride is heated, a gas with basic nature is obtained. Write the name of the gas. 1
5. Which is the product obtained at the cathode when sodium chloride solution is electrolysed?  
(Na, Cl<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>) 1

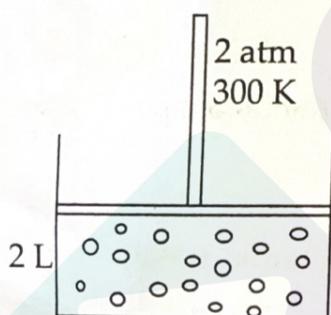
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## SECTION - B

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

4x2=8

6. Stainless steel, Nichrome and Alnico are alloy steels.
- (a) Which alloy steel is used for the production of heating coils ? 1
- (b) Identify the alloy steels having the same components among these. 1
7. (a) Oxidation state of Mn in  $\text{MnO}_2$  is +4. Find out the oxidation state of Mn in  $\text{Mn}_2\text{O}_3$ . 1  
(Hint : Oxidation state of oxygen = -2)
- (b) Transition elements show variable oxidation state. Why? 1
8. The molecular formula of a hydrocarbon is  $\text{C}_4\text{H}_8$ .
- (a) To which category does this hydrocarbon belong ? 1  
[Alkane, Alkene, Alkyne]
- (b) Draw the structure of an alicyclic hydrocarbon with the same molecular formula. 1
9. Analyse the picture and answer the following questions.



- (a) What will be the pressure when the volume of this gas is increased to 4 L at 300 K ? 1
- (b) Which is the gas law related to this ? 1
10. Choose the right compounds from the given box to answer the following questions.
- |   |   |
|---|---|
| (i) $\text{CH}_3-\text{CH}_2-\text{OH}$               | (ii) $\text{CH}_3-\text{CH}_2-\text{COOH}$            |
| (iii) $\text{CH}_3-\text{CH}_2-\text{CO}-\text{CH}_3$ | (iv) $\text{CH}_3-\text{COOH}$                        |
| (v) $\text{CH}_3-\text{OH}$                           | (vi) $\text{CH}_3-\text{CH}_2-\text{COO}-\text{CH}_3$ |
- (a) Which among these is an ester ? 1
- (b) Which are the compounds required to prepare this ester ? 1

## SECTION - C

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

4x3=12

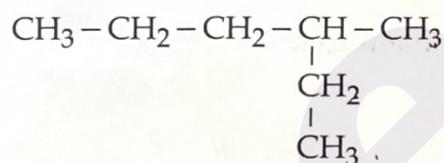
11. Sulphuric acid is called the king of chemicals.

- (a) Industrial preparation of sulphuric acid is known as \_\_\_\_\_ 1
- (b) Which is the catalyst used in this process ? 1
- (c) When concentrated sulphuric acid is added to sugar, a black substance is formed. Explain the reason for this observation. 1

12. Silver is coated on copper bangle by electroplating.

- (a) Which metal is connected to negative terminal of the battery in this process ? 1
- (b) Which is the electrolyte used here ? 1
- (c) Write the chemical equation of the reaction that takes place at the positive electrode. 1

13. The structural formula of a hydrocarbon is given below.



- (a) How many carbon atoms are there in the main chain ? 1
- (b) Name the branch present in the compound. 1
- (c) Write the IUPAC name of this compound. 1

14. Aluminium is the most abundant metal on the earth's crust.

- (a) Which is the ore of aluminium ? 1
- (b) Describe the different steps in the concentration of this ore. 2

15. Complete the following equations.

- (a)  $\underline{X} + \text{Cl}_2 \rightarrow \text{CH}_3 - \text{CH}_2\text{Cl} + \text{HCl}$  1
- (b)  $\text{CH}_3 - \text{CH} = \text{CH}_2 + \text{Cl}_2 \rightarrow \underline{Y}$  1
- (c)  $\text{CH}_3 - \text{CH}_2 - \text{CH}_3 \xrightarrow{\text{Heat}} \text{CH}_4 + \underline{Z}$  1

## SECTION - D

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

4x4=16

16. The subshell electronic configuration of an element is given :  
 $1s^2 2s^2 2p^6 3s^2 3p^6 3d^6 4s^2$
- (a) What is the atomic number of this element ? 1  
 (b) Which subshell among these has the highest energy ? 1  
 (c) Find out the period number and group number of this element. 2
17. The structural formula of an organic compound is given :  
 $\text{CH}_3 - \text{CH}_2 - \text{O} - \text{CH}_3$
- (a) The compounds having  $-\text{O}-\text{R}$  as the functional group are called ether. 1  
 (b) Write the molecular formula of this compound. 1  
 (c) Write the IUPAC name of this compound. 1  
 (d) Write the structural formula of the functional isomer of this compound. 1
18. (a) What is the volume of 1 mol ammonia gas ( $\text{NH}_3$ ) at STP ? 1  
 (b) Find the volume of 68 g ammonia gas at STP. 2  
 [Hint : Molecular mass of  $\text{NH}_3 = 17$ ]  
 (c) Find the number of molecules present in 68 g ammonia gas. 1
19.  $2\text{NO}_{(g)} + \text{O}_{2(g)} \rightleftharpoons 2\text{NO}_{2(g)} + \text{Heat}$
- (a) When does a reversible reaction attain equilibrium ? 1  
 (b) How do the following changes influence the amount of the product.  
 (i) Increase in temperature 1  
 (ii) Increase in pressure 1  
 (iii)  $\text{NO}_2$  is removed from the system. 1
20. The order of reactivity of some elements are given. Analyse it and answer the following questions.  
 $\text{Mg} > \text{Zn} > \text{Fe} > \text{Cu} > \text{Ag}$
- (a) Name any one metal that cannot displace hydrogen from dilute hydrochloric acid. 1  
 (b) Which are the metals that can displace Fe from  $\text{FeSO}_4$  solution ? 1  
 (c) A galvanic cell is constructed using Zn and Fe as electrodes.  
 (i) Which is the anode of this cell ? 1  
 (ii) Write the equation of the chemical reaction taking place at the cathode. 1