

Sl. No.

# SSLC MODEL EXAMINATION, FEBRUARY - 2024

## CHEMISTRY

(English)

Time : 1½ Hours

Total Score : 40

**Instructions :**

- The first 15 minutes is cool-off time.
- You may use the 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.

**SECTION - A**

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

- |   | Score |
|---|-------|
| 1. Which of the following subshell is not possible ?<br>(3f, 3d, 3p, 4f)                      | 1     |
| 2. Which is the product obtained at the cathode when molten sodium chloride is electrolysed ? | 1     |
| 3. The highly concentrated aqueous solution of ammonia is known as _____.                     | 1     |
| 4. Write the general name of the compounds having carboxylic (-COOH) functional group.        | 1     |
| 5. State Boyle's law.   | 1     |

**SECTION - B**

[Answer any four questions from 6 to 10. Each question carries 2 scores]

- |   |   |
|---|---|
| 6. Select the correct statements regarding gases from the following.  | 2 |
| (a) The real volume of gas molecules is very less when compared to the total volume of the gas                                |   |
| (b) The gas molecules move in one direction only  |   |
| (c) The gas molecules are in random motion in all directions  |   |
| (d) The collisions of gas molecules are inelastic   |   |
| 7. A glass rod dipped in concentrated hydrochloric acid (con. HCl) when shown over ammonia gas, thick white fumes are formed. |   |
| (a) Which is the compound formed in this experiment ?   | 1 |
| (b) Write the chemical equation of the formation of this compound.  | 1 |

Score

8. Write the IUPAC names of the following compounds.
- (a)  $\text{CH}_3-\text{CH}_2\text{Cl}$  1  
 (b)  $\text{CH}_3-\text{CH}_2-\text{O}-\text{CH}_3$  1
9. Analyse the following equation which shows the fermentation of molasses.
- $$\text{C}_6\text{H}_{12}\text{O}_6 \xrightarrow[\text{wash}]{\text{Enzyme A}} 2\text{C}_2\text{H}_5\text{OH} + 2\text{CO}_2$$
- (a) Identify the 'Enzyme A'. 1  
 (b) Which is the product obtained when wash is subjected to fractional distillation? 1
10. (a) Which method is used to purify zinc metal? 1  
 (b) Which property of zinc is utilised here? 1

## SECTION - C

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

11. The given table shows the results of an experiment on a fixed mass of gas at constant pressure.

Volume (V) L	Temperature (T) K	V/T
24	800	$\frac{24}{800} = 0.03$
12	400	$\frac{12}{400} = 0.03$
6	200	$\frac{6}{200} = 0.03$

- (a) Identify the gas law represented by this table 1  
 (b) Write any one situation in daily life to which this can be related 1  
 (c) Find the volume of this gas at 100 K 1
12. A copper plate is dipped in  $\text{AgNO}_3$  solution and kept for some time.
- (a) Write any two observations with respect to this reaction that takes place here 2  
 (b) Write the reason for the change occurred in the solution 1
13. Subshell electronic configurations of two elements are given.  
 [Symbols are not real]  
 X -  $[\text{Ne}] 3s^2 3p^1$   
 Y -  $[\text{Ne}] 3s^2 3p^5$
- (a) Find the groups of X and Y 1  
 (b) What is the valency of Y? 1  
 (c) Write the chemical formula of the compound formed by the combination of X and Y. 1

14. (a) Starting from ethene ( $\text{CH}_2=\text{CH}_2$ ) how will you prepare the following compounds? Write the chemical equation of each reaction.
- (i)  $\text{CH}_3-\text{CH}_3$  1  
 (ii)  $\text{CH}_3-\text{CH}_2\text{Cl}$  1
- (b) Which reaction is used to get polythene from ethene? 1
15. The structural formula of an organic compound is given.  
 $\text{CH}_3-\text{CH}_2-\text{CH}=\text{CH}_2$
- (a) This compound belongs to \_\_\_\_\_ family. 1  
 (alkane, alkene, alkyne)
- (b) Write the molecular formula and IUPAC name of this compound 1
- (c) Write the structural formula of alicyclic compound with the same molecular formula of the above given compound. 1

## SECTION - D

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

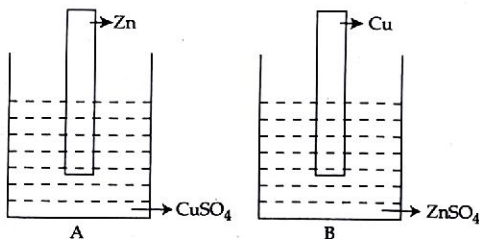
16. Analyse the given equation for the main step in the manufacture of Sulphuric acid.
- $$2\text{SO}_2 + \text{O}_2 \rightleftharpoons 2\text{SO}_3 + \text{heat}$$
- (a) Write the name of the process used for the manufacture of Sulphuric acid. 1
- (b) Which is the catalyst used in the manufacture of Sulphuric acid? 1
- (c) Which is the effect of the following changes in the amount of  $\text{SO}_3$  produced?
- (i) More oxygen is added 1  
 (ii) Pressure is increased 1
17. The compound 'A' added to the blast furnace decomposes to give a product 'B' which act as the flux in the production of Iron.
- (a) Identify the compounds A and B. 2
- (b) Write the equation of slag formation in blast furnace. 1
- (c) Which is the compound acting as the reducing agent in blast furnace? 1
18. A metal 'M' on reaction with chlorine at different conditions, two compounds  $\text{MCl}_2$  and  $\text{MCl}_3$  are formed.
- (a) Find the oxidation states of M in each of these compounds. 1
- (b) If the 3d subshell of this metal contains 6 electrons, write the complete subshell electronic configuration of this metal atom. 1
- (c) Write the subshell electronic configuration of the metal ion in  $\text{MCl}_2$ . 1
- (d) Write any one property of the elements in the block to which this metal belongs. 1

Score

19. An organic compound with  $-OH$  as functional group has the molecular formula  $C_3H_8O$ .

- (a) Write two possible structural formulae of this compound. 2
- (b) Write the structure and IUPAC name of a functional isomer of the above compounds. 2

20. Observe the following figures :



- (a) In which of these beakers does a chemical reaction take place? 1
- (b) Write the chemical equation of the reaction. 1
- (c) How will you construct a galvanic cell using the materials provided in the beakers? Draw the figure of the galvanic cell and explain. 2

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