SSLC EXAMINATION, MARCH - 2019
CHEMISTRY
(English)

Time : 1½ Hours
Total Score : 40

General Instructions :

- The first 15 minutes is the cool-off time. You may use the time to read and plan your answers.
- Answer the questions only after reading the instructions and questions thoroughly.
- Questions with marks series 1, 2, 3 and 4 are categorised as sections A, B, C and D respectively.
- Five questions are given in each section. Answer any four from each section.
- Answer each question by keeping the time.

SECTION - A

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

1. Which of the following molecule can undergo addition reaction ?
   (methane, ethane, propene, butane)

2. The glass used to make lenses and prisms is ________.

3. Atomic mass of Nitrogen is 14. Which of the following sample contain $6.022 \times 10^{23}$ Nitrogen atoms ?
   
   (7 g Nitrogen, 14 g Nitrogen, 28 g Nitrogen, 1 g Nitrogen)

4. The ore of a metal is lighter than the impurities. Which method is suitable for its concentration ?

5. A fresh piece of Mg ribbon loses its luster after a few days. This is due to the formation of the compound ________.
(Answer any 4 questions from 6 to 10. Each question carries 2 scores.)

6. The last subshell of an element is 3p and there are 3 electrons in it.

(a) Write the complete electronic configuration of the element. 1
(b) Identify its period and group. 1

7. An iron nail is dipped in CuSO₄ solution. (Reactivity order Fe > Cu)

(a) What is the change that can be noticed on the iron nail after a while? 1
(b) Write down the chemical equation of the oxidation reaction occurs here. 1

8. 4 g of NaOH is dissolved in water and the volume is made upto 1 L.

(1 mole of NaOH = 40 g)

(a) Calculate the molarity of the resultant solution. 1
(b) How will you make 1 M solution of NaOH using the same amount (4 g) of NaOH? 1

9. Concentrated Cu₂S is converted into oxide by roasting.

(a) Write the process of roasting. 1
(b) How impurities like sulphur and phosphorus are removed in this process? 1

10. Ethanoic acid is an organic compound having industrial values.

(a) How ethanoic acid is manufactured industrially? 1
(b) Give any one use of ethanoic acid. 1
(Answer any 4 questions from 11 to 15. Each question carries 3 scores.)

11. \( H_2(g) + I_2(g) = 2HI(g) \)
   (a) What is the total number of moles of reactants and products in the above reaction? 2
   (b) What is the effect of pressure in this reversible reaction? Explain.

12. The structure of a hydrocarbon is given below:

\[
\begin{aligned}
\text{CH}_3 &- \text{CH} - \text{CH}_2 - \text{CH}_3 \\
\text{CH}_2 \\
\text{CH}_3
\end{aligned}
\]
   (a) How many C - atoms are there in the main chain? Which is the word root? 1
   (b) Identify the branch and its position number. 1
   (c) Write the IUPAC name of this compound. 1

13. The chemical equation for the manufacture of ammonia is \( N_2(g) + 3H_2(g) \rightarrow 2NH_3(g) \)
   (a) Complete the following:
   \( 1 \text{ mol } N_2 + \ldots \cdot \ldots \cdot H_2 \rightarrow \ldots \cdot \ldots \cdot NH_3 \) 1
   (b) Calculate the amount of \( H_2 \) required to react with 28 g of \( N_2 \) completely.
      [Hint: Molecular mass of \( N_2 = 28 \), \( H_2 = 2 \)] 1
   (c) What will be the volume of \( NH_3 \) formed at STP, if 22.4 L of \( N_2 \) is completely reacted? 1

14. Consider the metals and solutions given in the box.
   \[ \text{Zn, Mg, Cu, Ag, CuSO}_4 \text{ solution, MgSO}_4 \text{ solution} \]
   (a) Which of the above metals are to be selected to construct a Galvanic cell? 1
   (b) Identify the anode and cathode of the cell.
      [Hint: Reactivity order \( Mg > Zn > Cu > Ag \)] 1
   (c) Write the redox reaction taking place in this cell. 1

15. Alumina is mixed with cryolite and subjected to electrolysis to extract aluminium.
   (a) Why cryolite is added to alumina? 1
   (b) Which are the ions present in alumina? 1
   (c) Write the equation of the reduction reaction taking place at negative electrode. 1
(Answer any four questions from 16 to 20. Each question carries 4 scores.)

16. Zinc piece and zinc powder are taken in two test tubes and equal amount of dil. HCl is added.
   (a) In which test tube does the reaction proceed faster?  
   (b) Give the reason.  
   (c) Give an instance from daily life, where such condition is made use.  

17. The structure of two organic compounds are given below:
   (i) CH₃-CH₂-CH₂-CH₂-OH
   (ii) CH₃-CH₂-O-CH₂-CH₃
   (a) Write the molecular formula of these compounds.  
   (b) Which type of isomerism do they exhibit?  
   (c) Explain this isomerism.  
   (d) Write the structural formula of a position isomer of compound (i)  

18. The atomic number of an element is 19.
   (a) Write the subshell electronic configuration.  
   (b) Identify its group, period, block and oxidation state.  
   (c) Write any one characteristic of the block to which the element belongs.  

19. Two organic reactions are given below:
   \[ \text{H} \quad \| \quad \text{H} \]
   (i) \[ \text{H-} \text{C} = \text{Cl} + \text{Cl-Cl} \rightarrow A + \text{HCl} \]
   (ii) \[ n \text{CH}_2=\text{CH} \rightarrow B \]
   (a) Identify the products A and B.  
   (b) Which type of reaction is (i)?  
   (c) The product B has industrial values. Give its name and use.  

20. - Aspirin is an antipyretic  
    - Amoxicillin is an antibiotic
   (a) Give the functions of antipyretics and antibiotics.  
   (b) Write any two unhealthy practices among people in using medicines.