ME 339

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.

Score

SECTION - A

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

1. Which of the following subshell is not possible ? (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) CH_3-CH_2Cl 1
   (b) $CH_3-CH_2-O-CH_3$ 1

9. Analyse the following equation which shows the fermentation of molasses.

$$C_6H_{12}O_6 \xrightarrow[\text{wash}]{\text{Enzyme A}} 2C_2H_5OH+2CO_2$$

   (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	$^{24}/_{800}=0.03$
12	400	$^{12}/_{400}=0.03$
6	200	$^{6}/_{200}=0.03$

    (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 $AgNO_3$ 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 - [Ne] $3s^2\,3p^1$
    Y - [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

Score

14. (a) Starting from ethene ($CH_2=CH_2$) how will you prepare the following compounds ? Write the chemical equation of each reaction.
    (i) CH_3-CH_3 1
    (ii) CH_3-CH_2Cl 1
    (b) Which reaction is used to get polythene from ethene ? 1

15. The structural formula of an organic compound is given.
    $CH_3-CH_2-CH=CH_2$
    (a) This compound belongs to _____ family. 1
    (alkane, alkene, alkyne)
    (b) Write the molecular formula an 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 .
    $2SO_2+O_2 \rightleftharpoons 2SO_3+heat$
    (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 SO_3 produced ?
    (i) More oxygen is added 1
    (ii) Pressure is increased 1

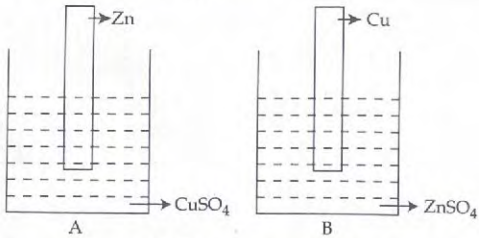
17. The compound 'A' added to the blast furnace decomposes to give a product 'B' which act as the flux in the production of Iron.
    (a) Identify the compounds A and B. 2
    (b) Write the equation of slag formation in blast furnace. 1
    (c) Which is the compound acting as the reducing agent in blast furnace ? 1

18. A metal 'M' on reaction with chlorine at different conditions, two compounds MCl_2 and 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 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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