S 1839

Sl. No.

SSLC EXAMINATION, MARCH - 2023

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. The monomer of Polyvinyl Chloride is _____. 1

2. In an atom, four electrons are present in the p subshell of its M Shell. How is it represented ? 1

   [$2p^4$, $4p^4$, $3p^4$, $5p^4$]

3. Find the relation and fill up : 1

   C_nH_{2n+2} : Alkane

   C_nH_{2n-2} : _____

4. Phenolphthalein is pink in colour in the solution of ammonia in water. This shows that ammonia is _____ in nature. 1

5. Which is the electrolyte used in electroplating copper on an iron ring ? 1

   [$FeSO_4$, $AgNO_3$, $ZnSO_4$, $CuSO_4$]

P.T.O.

Score

SECTION - B

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

6. Choose the suitable method used in each of the following processes from the bracket.

   [Liquation, Leaching, Froth floatation, Distillation]

   (a) Concentration of sulphide ores. 1

   (b) Refining of metals with low boiling points. 1

7. (a) How many GMM is present in 90 g water [H_2O] ? 1

   (b) Find the number of molecules present in it. 1

   [Hint : Molecular mass of water = 18]

8. Ethanol is an alcohol which is extensively used for industrial purposes.

   (a) What is rectified spirit ? 1

   (b) How does rectified spirit differ from absolute alcohol ? 1

9. Concentrated ores are converted into their oxides by two processes.

   (a) Name of the process carried out in the presence of air is _____. 1

   (b) Which process is used in the case of carbonate ore ? 1

10. Concentrated sulphuric acid forms nitric acid on reaction with nitrates. The chemical equation of this reaction is given below.

    $NaNO_3 + H_2SO_4 \rightarrow NaHSO_4 + HNO_3$

    (a) Which sodium salt is used to get hydrochloric acid [HCl] in the same manner ? 1

    (b) Write down the chemical equation of this reaction. 1

Score

SECTION - C

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

11. Subshell electronic configurations of a few elements are given. One of them is a noble gas. [Symbols are not real]

P - $1s^2\ 2s^2\ 2p^6$

Q - $1s^2\ 2s^2\ 2p^5$

R - $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^2\ 4s^2$

S - $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2$

Answer the following questions.

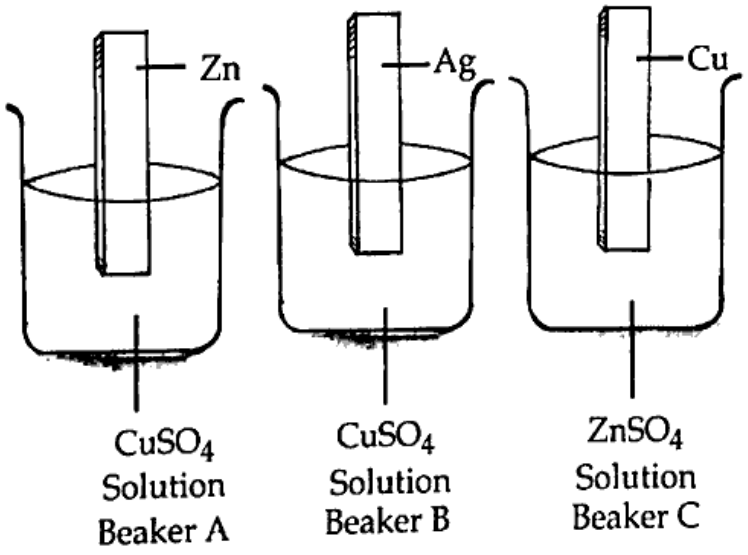
(a) Which element has the highest Ionisation Energy ? **1**

(b) Which element belongs to s-block ? **1**

(c) Which element shows variable oxidation state ? **1**

12. Observe the figure.

Metal rods are dipped in salt solutions taken in three beakers.



(a) In which beaker does displacement reaction take place ? Give reason. **2**

(b) Write down the chemical equation of the oxidation reaction taking place in this beaker. **1**

[Hint : Order of reactivity Zn > Cu > Ag]

Score

13. Chemical equations of the reactions taking place in blast furnace during the industrial production of iron are given below.

(i) $C + O_2 \rightarrow CO_2 + Heat$

(ii) $CO_2 + C + Heat \rightarrow 2CO$

(iii) $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$

(iv) $CaCO_3 \rightarrow CaO + CO_2$

(v) $CaO + SiO_2 \rightarrow CaSiO_3$

Answer the following questions.

(a) Which compound acts as the reducing agent ? 1

(b) What is the function of CaO in the production of iron ? 1

(c) Which is the slag formed here ? 1

14. The structural formula of an organic compound is given.

$CH_3 - CH_2 - CH = CH_2$

(a) Write down the IUPAC name of this compound. 1

(b) What is its molecular formula ? 1

(c) What is the molecular formula of the adjacent homologue coming after it ? 1

15. Complete the table using names of reactions given in the box.

Polymerisation
Combustion
Addition reaction
Substitution reaction
Thermal cracking

Chemical equation	Name of reaction
$CH_3-CH=CH_2+H_2 \rightarrow CH_3-CH_3-CH_3$	(a) 1
$CH_3-CH_3+Cl_2 \rightarrow CH_3-CH_2-Cl+HCl$	(b) 1
$CH_4+2O_2 \rightarrow CO_2+2H_2O$	(c) 1

Score

SECTION - D

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

16. The atomic number of element X is 8.

(a) Write the subshell electronic configuration of X. **1**

(b) Find its group number and period number. **1**

(c) Write the chemical formula of the compound formed when element X reacts with Aluminium (Al). **2**
[Hint : Valency of Al = 3]

17. The data given in the table shows the relation between the volume and temperature of a definite mass of gas. [Pressure is kept constant]

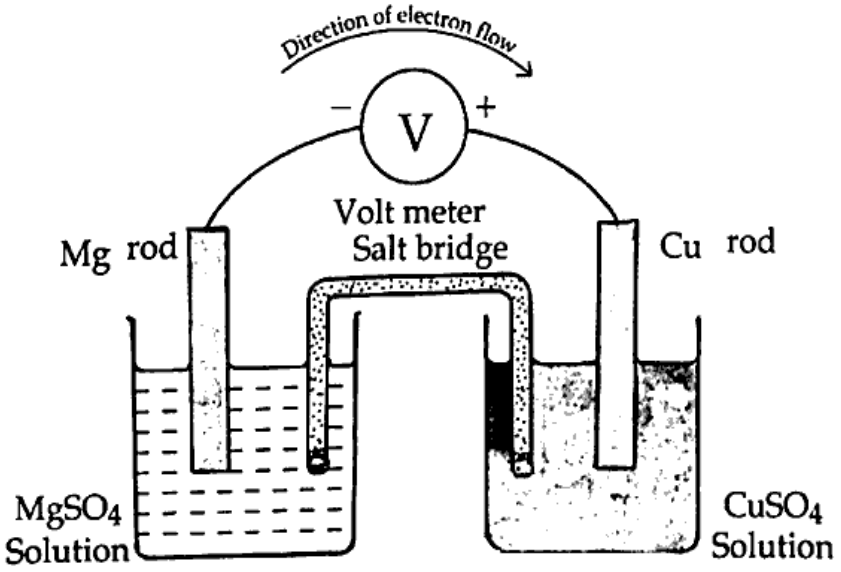
Volume (V)	Temperature (T)	$\frac{V}{T}$
600 mL	300 K	(x)
800 mL	(y)	2

(a) Find 'x' and 'y'. **2**

(b) Which gas law is applied here ? **1**

(c) An inflated balloon is kept in Sunlight, it will burst. Give reason. **1**

18. The given diagram represents a galvanic cell.



[Hint : Order of reactivity : Mg > Cu]

(a) What is the energy change taking place in galvanic cells ? **1**

(b) At which electrode does oxidation takes place in galvanic cells ? **1**

(c) Identify the cathode in the given cell. **1**

(d) Write down the chemical equation of the reaction taking place at the cathode in the given cell. **1**

Score

19. A reversible reaction at equilibrium is given.

$2NO_{(g)} + O_{2(g)} \rightleftharpoons 2NO_{2(g)} + Heat$

Answer the following :

(a) How does increase in temperature influence the amount of product formed ? 1

(b) What change is to be made in pressure to get more product ? 1

(c) How does increase in concentration of oxygen influence the rate of forward reaction ? 1

(d) What is the function of a catalyst in reversible reactions ? 1

20. Examine the organic compounds given below.

(i) $CH_3-CH_2-CH_2-CH_2-CH_3$

(ii) $CH_3-CH_2-CH_2-OH$

(iii) $CH_3-CH_2-CH_2-Cl$

(iv) $CH_3-CH_2-O-CH_3$

(v) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-CH_3$

(vi) $CH_3-\underset{\displaystyle Cl}{\underset{|}{CH}}-CH_3$

(a) Identify the isomeric pairs. 3

(b) Which is the functional isomer pair ? 1