

SSLC MODEL EXAMINATION, FEBRUARY - 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.)

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|----|--|---|
| 1. | The most stable outermost subshell electronic configuration of ${}_{24}\text{Cr}$ is :
($3d^{10} 4s^1$, $3d^4 4s^2$, $3d^5 4s^1$, $3d^9 4s^1$) | 1 |
| 2. | The volume of 1 GMM of any gas at STP is _____. | 1 |
| 3. | Which is the product obtained at the cathode when sodium chloride solution is electrolysed ?
(H_2 , Cl_2 , Na, O_2) | 1 |
| 4. | Write the name of catalyst used in the industrial production of sulphuric acid. | 1 |
| 5. | Which one of the following organic compounds undergoes addition reaction ?
($\text{CH}_3 - \text{CH}_3$, CH_4 , CH_3Cl , $\text{CH}_2 = \text{CH}_2$) | 1 |

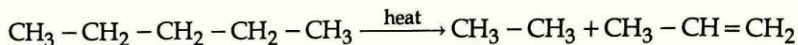
SECTION - B

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

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|----|--|---|
| 6. | A few drops of conc. H_2SO_4 are added to blue coloured copper sulphate crystals taken in a watch glass. | |
| | (a) Write the observation. | 1 |
| | (b) Which property of sulphuric acid is exhibited here ? | 1 |
| 7. | (a) Which of the following metals is purified using distillation method ?
(Tin, Lead, Zinc, Iron) | 1 |
| | (b) Which property of the metal is used here ? | 1 |

P.T.O.

8. Analyse the following chemical equation.

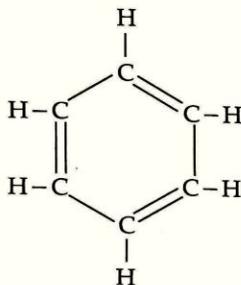


- (a) Name of the unsaturated compound obtained as the product is _____ 1
 (b) Which type of reaction is this? 1
 (Substitution, Addition, Thermal cracking, Polymerisation)

9. The number of molecules in a given sample of ammonia (NH_3) is $2 \times 6.022 \times 10^{23}$.

- (a) Find the number of moles present in it. 1
 (Atomic mass : N = 14, H = 1)
 (b) What is the mass of this sample? 1

10. The structure of an aromatic hydrocarbon is given.



- (a) What is the name of this compound? 1
 (b) Write the molecular formula of this compound. 1

SECTION - C

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

11. A gas kept in cylinder A having volume 5 L at 4 atm pressure is completely transferred to cylinder B of volume 10 L at constant temperature.

- (a) What is the volume of the gas in cylinder B? 1
 (b) What will be the pressure in cylinder B? 1
 (c) Which Gas law is associated with this situation? 1

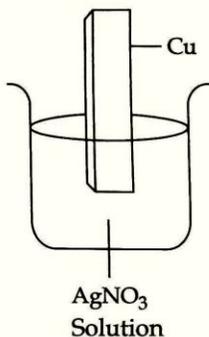
12. Certain facts regarding an organic compound are given.

- It contains four carbon atoms.
- There are only single bonds between the carbon atoms.
- It is an alicyclic compound.

- (a) Draw the structure of this compound. 1
 (b) Write the molecular formula of this compound. 1
 (c) Write the structure of an alkene with the same molecular formula. 1

13. The atomic number of an element X is 26. (Symbol is not real)
- | | |
|---|---|
| (a) Write the subshell electronic configuration of X. | 1 |
| (b) Find the group number of X. | 1 |
| (c) Write any one property of the elements belonging to the block in which X is included. | 1 |

14. Observe the figure in which a copper plate is immersed in AgNO_3 (Silver Nitrate) solution. (Reactivity : $\text{Cu} > \text{Ag}$)

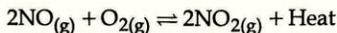


- | | |
|---|---|
| (a) The reaction taking place here is a redox reaction. Why ? | 1 |
| (b) What change can be observed on the copper plate ? | 1 |
| (c) Write the equation of the oxidation reaction taking place here. | 1 |
15. $\text{CH}_3 - \text{COOH}$ is the condensed formula of an organic compound.
- | | |
|---|---|
| (a) To which category does the compound belong ?
(alcohol, ether, ester, acid) | 1 |
| (b) Write the IUPAC name of this compound. | 1 |
| (c) Write any one use of this compound. | 1 |

SECTION - D

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

16. A reversible reaction at equilibrium is given.



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|--|---|
| (a) Write the equation of the forward reaction. | 1 |
| (b) How do the following changes affect the rate of forward reaction ? | |
| (i) Adding more oxygen | 1 |
| (ii) Increasing pressure | 1 |
| (c) What is the effect of catalyst in a reversible reaction at equilibrium ? | 1 |

17. A and B are two organic compounds with different functional groups and having same molecular formula C_3H_8O .
- (a) Write the structural formula of compound A having $-OH$ as functional group. 1
 - (b) Write the structural formula of B. 1
 - (c) Write the IUPAC name of B. 1
 - (d) Write the structure of the position isomer of A. 1
18. Aluminium is a widely used metal in daily life.
- (a) Which is the ore of aluminium ? 1
 - (b) Which method is used for the concentration of this ore ? 1
 - (c) Which is the reducing agent used for the production of aluminium ? 1
 - (d) Why cryolite is used during the production of aluminium ? 1
19. The atoms of elements A and B contain 3 shells each (Symbols are not real). A belongs to group 2 and B belongs to group 16.
- (a) Write the subshell electronic configuration of A. 1
 - (b) What is the valency of element B ? 1
 - (c) Write the chemical formula of the compound formed by the reaction of A and B ? 2
20. A galvanic cell is constructed using Mg and Cu as electrodes. (Reactivity : $Mg > Cu$)
- (a) What is the energy change taking place in a galvanic cell ? 1
 - (b) Which is the anode of the given galvanic cell ? 1
 - (c) Write the equation of the chemical reaction taking place at the cathode. 1
 - (d) How many galvanic cells can be constructed using the metals Mg, Zn and Cu ? 1