DIET PALAKKAD

INTER BELL

SSLC PREMODEL EXAMINATION MARCH 2023

CHEMISTRY

Time: 1 ½ hours Total Score: 40

Instructions:

- **15 minutes is given as cool off time.**
- **Use cool-off time to read the questions and plan your answers.**
- **Attempt the questions according to the instructions.**
- **Keep in mind, the score and time while answering the questions.**
- **The maximum score for questions from 1 to 20 will be 40.**

Answer any FOUR questions from 1 to 5. *(1 x 4)*

1. Identify the subshell that is common to all shells

(s p d f)

2. Which metal has the ability to displace Cu from $CuSO_4$ solution?

(Ag, Pt, Cu, Fe)

3. The ore of Zinc is ----------

(Haematite, bauxite, Calamine, Magnetite)

4. Find the relation and fill in the blank.

Carboxylic group : .....
Hydroxyl group : -OH

5. As weather balloons rise high up in the sky, they become larger and larger. Which gas law is related to this?

Answer any FOUR questions from 6 to 10 *(2 x 4)*

6. The subshell configuration of Na is $1s^2$ $2s^2$ $2p^6$ $3s^1$

a) Find the group and period to which Na belongs.

b) What is the atomic number of Na?

7. **a) Which substance is used as drying agent during the laboratory preparation of ammonia?**

b) During the laboratory preparation of ammonia, the gas jar is kept in an inverted position. Why?

8. Complete the table below.

Volume	No. of moles
5 L	i) ……..
10 L	x
ii) …….	2x

9. a) Which is the reagent used to identify the sulphate salts.

b) Write the observation of this experiment.

10. Complete the table

MONOMER	POLYMER	ONE USE
.....	P.V.C	.....
Ethene	.....	Making bags
.....	Teflon	Non-stick vessels.

Answer any FOUR questions from 11 to 15 (3 x 4)

11. $2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g) + heat$

Find out the influence of following factors in this reaction,

a) Concentration of oxygen increased

b) Pressure increased

c) SO_3 is removed from the system

12. Subshell configuration of a few elements are given below. Analyse and answer the questions that follow.

A - $1s^2\ 2s^2\ 2p^7$ **B - $1s^2\ 2s^2\ 2p^3$**

C - $1s^2\ 2s^2\ 2p^6\ 3s^2$ **D - $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^5\ 4s^2$**

E - $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^1$

a) Identify the incorrect configuration and correct it.

b) Write any two properties of element D.

c) Write the Group Number and Period Number of element C.

13. Write the products of the following addition reactions?

1. $CH_2=CH_2 + HCl \rightarrow$ -------
2. $CH\equiv CH + 2H_2 \rightarrow$ -------
3. $CH_2=CH_2 + Cl_2 \rightarrow$ -------

14. a) Write the structural formula of 2,2-Dimethyl hexane?

b) Write the structural formula of its chain isomer?

15. The chemical formulae of two different chlorides of Fe are given below. (Atomic number of Fe = 26)

Ferrous chloride - $FeCl_2$

Ferric chloride - $FeCl_3$ (The oxidation state of Cl^- = -1)

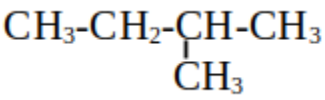
a) In which compound does Fe show $^+2$ oxidation state?

b) Write the subshell electronic configuration of Fe^{3+}

c) Why does Fe show different oxidation states?

Answer any FOUR questions from 16 to 20 (4 x 4)

16.



a) How many Carbon atoms are there in the main chain of the compound?

b) Write the number of the Carbon having the branch?

c) Name the branch?

d) Write the IUPAC name.

17. The chemical equation of the industrial preparation of ammonia is given below.

$N_2(g)+3H_2(g) \rightleftharpoons 2NH_3(g)+heat$

a) Which is the endothermic reaction in this?
(Forward reaction / Backward reaction)

b) According to the Le Chatelier principle temperature is to be decreased to get maximum yield of ammonia. Why?

c) What is the reason for taking an optimum temperature in this reaction?

d) What is the optimum temperature of this reaction.

18. A redox reaction is given below.

$$FeCl_2 + Mg \rightarrow MgCl_2 + Fe$$

If a galvanic cell is constructed based on the given redox reaction,

a) Which are the electrolytes you choose?

b) Draw the diagram of the cell you constructed.

c) Write the equation of the reaction occurring at the negative electrode.

19 . Equal volumes of all gases under the same conditions of temperature and pressure contain the same number of molecules.

(Molar volume = 22.4 L)

a) What is the volume of 2 moles of CO_2 gas at STP?

b) How many molecules of CO_2 gas will be there in 2 moles at STP?

20. Give reason for the following

a) Sulphuric acid can not be used as drying agent in the preparation of ammonia in laboratory.

b) Clothes will get burnt when concentrated sulphuric acid happened to fall on it.

c) While diluting sulphuric acid, the acid should be added to water, not water in to acid.

d) Sulphuric acid is formed by the direct dissolution of sulphur trioxide in water. Still, sulphur trioxide is not directly dissolved in water.

****