DIET KANNUR

MUKULAM SSLC MODEL EXAM -MARCH 2022

CHEMISTRY

Time:1 1/2 hours Total score:40 Marks

Instructions

- 15 minutes is given as the cool off time. This time is to be used this time to read and understand the questions well.
- If a question contains choices, the required number of questions need to be answered.
- The instructions and marks for each question are given along with the questions.

PART I

A. Answer any four questions from 1 to 6 (Each carries 1 score)

(4 X1=4)

1. Which of the following subshell is not possible?
   (1s,3f,4f,2p)
2. Which of the following can undergo addition reaction?
   (Ethane, Propane, Propene, Butane)
3. The method used to concentrate Sulphide ores is _____
4. The functional group of carboxylic acid is _____
   (-OH, -COOH , -OR -COO-)
5. Which gas law represents the relation between volume and temperature of a gas at constant pressure?
6. Name the aqueous solution of ammonia.

B. Answer all questions from 7 to 9.(Each carries 1 score)

(3 **X1=3)**

7. Name the by- product in the industrial production of soap.
8. Lanthanoids belongs to _____ block of the periodic table.
   (s,p,d,f)
9. The catalyst used in the industrial production of sulphuric acid is_____.

PART II

A. Answer the following question. (Carries 2 score)

(1 X2=2)

10. n $CH_2 = CH_2$ ⟶ --------A------

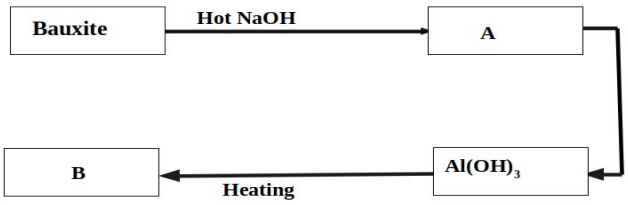
    a) Identify A
    b) Which is the type of organic reaction Shown by this equation?

A. Answer any one the questions from 11 to 12. (Carries 2 score)

(1 X2=2)

11. Analyse the structure of an organic compound given below .
    CH_3-CH_2-O-CH_3
    a) What is the general name of this type of compounds.
    b) Write the IUPAC name of this compound.

12. Complete the flow diagram .



PART III

A. Answer any three questions from 13 to 16. (Each carries 3 score)

(3 X3=9)

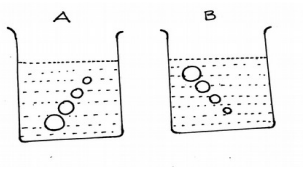
13. Ammonia is manufactured by Haber process. Equation is given below.

$N_{2\,(g)} + 3H_{2\,(g)} \leftrightharpoons 2NH_{3\,(g)}$ + heat

Write the change in the rate of forward reaction under following conditions.

a) More N_2 is added.
b) Temperature is increased.
c) Pressure is increased.

14. The figure showing air bubbles rising from the bottom of an aquarium are shown below.



a) Select the correct figure.
b) Which is the gas law associated with this?
c)Write the mathematical representation of this law.

15. a) Select the correct subshell electronic configuration of $_{29}$**Cu** from the following.

$1S^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^{10}\ 4s^1$
$1S^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^9\ 4s^2$

b) Justify your answer?
c) Write the subshell electronic configuration of Cu^{2+}

16. Match the columns A, B and C suitably.

A Reactants	B Products	C Name of the reaction
$CH_3 – CH_3 + Cl_2$	$CO_2 + 2H_2O$	Addition Reactions
$CH_4 + O_2$	$CH_2=CH_2$	Substitution reactions
$CH \equiv CH + H_2$	$CH_3\text{-}CH_2Cl + HCl$	Combustion

B. Answer the following question (3 score) **(1 X3=3)**

17.Structural formulae of two organic compounds are given.

i) CH_3-CH_2-CH_2-OH

ii) CH_3-O-CH_2-CH_3

a) Write the molecular formulae of these two compounds.

b) Which type of isomerism is shown by them?

c) Write the structure of the position isomer of the first compound.

PART-IV

A. Answer any 2 questions from 18-20 . (Each carries 4 score)

(2 X4=8)

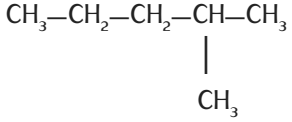
18. a) Find the molecular mass of NH_3

(Hint: Atomic mass of N=14, H=1)

b)What is the number of molecules in 1 GMM of Ammonia.

c)Calculate the number of GMM and number of molecules in 85g of Ammonia.

19.



a) What is the number of carbon atoms in the longest chain?

b) Find the position of the branched carbon atom.

c) Name the branch.

d) Write the IUPAC name of the compound.

20. The subshell electronic configuration of an element is given. (Symbol is not real).

A- **$1S^2$ $2s^2$ $2p^6$ $3s^2$ $3p^6$ $3d^3$ $4s^2$**

a) Find the atomic number of this element.

b) Find the block and period of this element.

c) Write any one property of elements of this block.

B. Answer any one question from 21 to 22. (4 scores) **(1X4=4)**

21. H_2SO_4 is a very important chemical .

a) Name the process of industrial production of H_2SO_4 .

b) Why concentrated H_2SO_4 is not used as the drying agent in the preparation of Ammonia?

c) If we add con.H_2SO_4 to glucose, what do you observe?

d)Which property of sulphuric acid is shown here?

22. Molten NaCl is electrolysed .

a) Which is the product obtained at the cathode?

b) Write the equation of reaction taking place at the anode and cathode?

c) instead of molten NaCl if aqueous NaCl is electrolysed ,what will be the product obtained at the cathode?

PART V

A. Answer any one question from 23 to 24. (5 score) **(1 X 5=5)**

23. A galvanic cell is constructed by using Zn and Cu.

a) Write the energy change taking place in a galvanic cell.

b) Identify the anode and cathode in this galvanic cell.
c) Write the equation of chemical reaction taking place at the anode.
d) instead of Zn if Ag is used, which metal acts as the anode?

24. Iron is industrially prepared by using blast furnace.
a) Name the ore of iron.
b) Which method is used to concentrate the ore of iron?
c) Which is the compound used for reducing iron ore?
d) Along with the ore limestone is also fed in to the furnace. What is its function?
e) Write the equation of slag formation.