STUDENT SUPPORT MATERIAL FOR

SSLC EXAMINATION MARCH 2022

പ്രിയ അധ്യാപകരെ,

2021- 22 അധ്യയനവർഷത്തിൽ ഓൺലൈൻ / ഓഫ്‌ലൈൻ രീതിയിലുള്ള പഠനപ്രവർത്തനങ്ങളാണല്ലോ നടന്നു കൊണ്ടിരിക്കുന്നത്. അതുകൊണ്ടുതന്നെ 2022 മാർച്ചിൽ എസ്.എസ്.എൽ.സി പരീക്ഷ എഴുതുന്ന എല്ലാ കുട്ടികൾക്കും കൂടുതൽ പിന്തുണ അനിവാര്യമാണ്.

2020 ഓഗസ്റ്റ് മുതൽ പാലക്കാട് ഡയറ്റിന്റെ നേതൃത്വത്തിൽ ആരംഭിച്ച INTER-BELL എന്ന ഗവേഷണാത്മക പദ്ധതിയിലൂടെ ഫസ്റ്റ് ബെൽ ഓൺലൈൻ ക്ലാസ്സുകളുടെ തുടർച്ചയായി കുട്ടികൾക്ക് വേണ്ടി തയ്യാറാക്കിയ വർക്ക് ഷീറ്റുകൾ പഠന വിടവ് ഒരു പരിധിവരെ നികത്തിയിരുന്നു എന്ന് നമുക്കറിയാം. എന്നിരുന്നാലും പൊതു പരീക്ഷയെ ആത്മവിശ്വാസത്തോടെ നേരിടാനും സമയബന്ധിതമായി പരീക്ഷ എഴുതാനും കുട്ടികളെ പ്രാപ്തരാക്കേണ്ടതുണ്ട്. അതിനു സഹായകമായ സാമഗ്രികൾ ആണ് ഇതിൽ ഉൾപ്പെടുത്തിയിട്ടുള്ളത്. താരതമ്യേന കുട്ടികൾക്ക് വിഷമം അനുഭവപ്പെടാറുള്ള രസതന്ത്രത്തിലെ എല്ലാ യൂണിറ്റുകളിൽ നിന്നും ഉള്ള പ്രധാന ചോദ്യങ്ങളുടെ ഒരു ശേഖരമാണ് ഇത്.

ചോദ്യങ്ങളിലൂടെ കുട്ടികളെ ഫലപ്രദമായി കടത്തിവിടാനും പ്രയാസ മേഖലകൾ കണ്ടെത്തി പരിഹാര ബോധനം നടത്താനും അധ്യാപകർ മുൻകയ്യെടുക്കേണ്ടതുണ്ട്. മികച്ച വിജയം കൈവരിക്കാൻ ഈ പഠന വിഭവം ഏവർക്കും സഹായകരമാകട്ടെ എന്ന് ആത്മാർഥമായി ആശംസിക്കുന്നു.

ആനക്കര
05-02-2022

പ്രിൻസിപ്പാൾ
ഡയറ്റ് പാലക്കാട്

Chapter 1 - Periodic Table and Electronic Configuration

FOCUS AREA

- ✔ Shells and Subshells
- ✔ The number of electrons in subshells
- ✔ Filling of electrons in subshells
- ✔ Peculiarity of the electronic configuration of chromium(Cr) and copper(Cu)
- ✔ Subshell electronic configuration and blocks
- ✔ The period and the group can be found out on the basis of subshell electronic configuration
- ✔ The group number of s block elements
- ✔ p block and d block elements
- ✔ Characteristics of d block elements

NON-FOCUS AREA

- ✔ Properties of f- block elements

Chapter 2 - Gas Laws and Mole Concept

FOCUS AREA

- ✔ Volume, Temperature and Pressure of Gases
- ✔ Gas Laws
  - Boyle's law
  - Charles law
  - Avogadro's law
- ✔ Gram Atomic Mass (GAM)
- ✔ Gram Molecular Mass (GMM)
- ✔ Avogadro Number (N_A)
- ✔ Mole atom

NON-FOCUS AREA

- ✔ Molar volume
- ✔ Molar volume at STP

Chemistry

Model Question Paper I

(Based on Chapters 1 and 2)

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 24 will be 40.

Part I

*A Answer any **FOUR** questions from 1 to 6.* *(4x1)*

1. Identify the subshell that is common to all shells
   (s p d f)
2. The maximum number of electrons that can be accommodated in a 'd' subshell is
   (2, 6, 10, 14)
3. Which of the following subshells is/are not possible?
   (2s 2d 3f 3d 5s 3p)
4. Identify the correct configuration of Cu (atomic no.29)
   $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^9\ 4s^2$
   $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^{10}\ 4s^1$
5. As weather balloons rise high up in the sky, they become larger and larger. Which gas law is related to this?
6. 1 mole of any gas at STP contains ..... No. of molecules.

*B Answer **ALL** questions from 7 to 9.* *(3x1)*

7. Name the 'f' block element which is used as a fuel in nuclear reactors.
8. The element 'X' has **$3s^1$** as its outermost subshell configuration and 'Y' has **$3p^5$** as its outermost subshell configuration. Write the formula of the compound formed by X and Y.
9. GMM of H_2O is 18g. What is the number of molecules contained in 1 GMM of H_2O?

Part II

A Answer the question below. *(1x2)*

10. 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?

*B Answer any **ONE** question from 11 to 12.* *(1x2)*

11. Complete the table below.

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

12. The last subshell of an element is 3p. It has 3 electrons in it.
    a) Write its complete electronic configuration.
    b) Find its period and group.

Part III

A *Answer any **THREE** questions from 13 to 16.* *(3X3)*

13. The element X has 1 electron in its 3s subshell.
    a) Write its complete electronic configuration.
    b) Find the atomic number of X.
    c) To which block does it belong?
14. 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.
15. The subshell configuration of an element X is $[Ar]3d^8\ 4s^2$
    a) How many shells are there in an atom of this element?
    b) In which subshell does filling of last electron take place?
    c) Find the group to which this element belongs.
16. The atomic masses of two elements are given below.

    C = 12 ; O = 16

    i) Find the molecular mass of CO_2

    ii) 1 GMM of CO_2 = …… g

    iii) 1 GMM of CO_2 = ……. Molecules of CO_2

B *Answer the following question.* *(1x3)*

17. 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?

Part IV

A *Answer any **TWO** questions from 18 to 20.* *(2×4)*

18. Subshell electronic configurations of a few elements are given below.

A – $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^5$

B – $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^4$

C – $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^6\ 4s^2$

D – $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2$

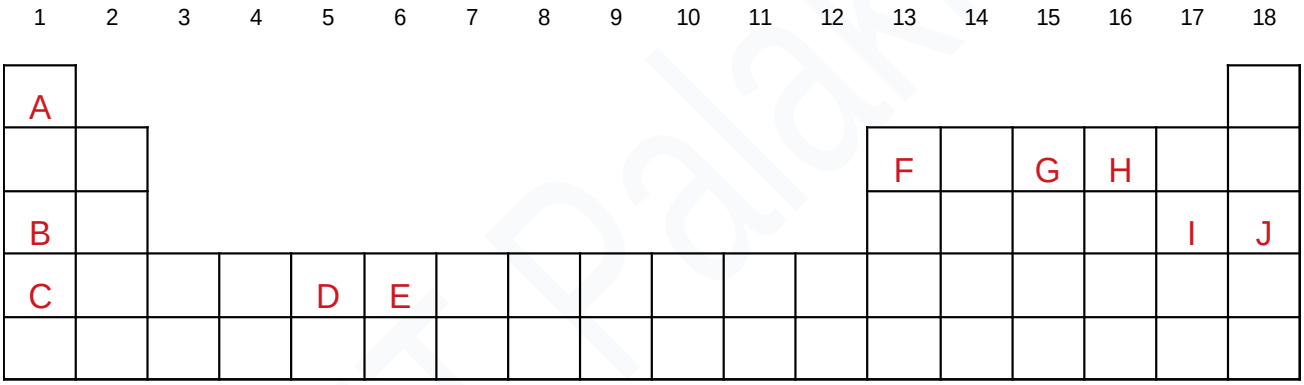
a) Which of the above elements show variable oxidation state?

b) Which of the above elements has the highest metallic character?

c) Which element has the highest ionisation energy?

d) What will be the chemical formula of the compound formed by A & D?

19. Analyse the portion of the periodic table given below and answer the questions that follow.



a) Which one of the above elements has 3 electrons in its outermost p subshell?

b) Which one of these elements shows –2 oxidation state?

c) Which one has the highest atomic radius?

d) Which of the above elements show variable oxidation states?

20. There are subshells in shells around the nucleus.

a) What is the maximum no. of electrons that can be accommodated in a 'p' subshell?

b) Write down all possible subshells in the 3rd shell in the increasing order of their energies.

c) Which of the following is the correct outermost configuration of Chromium (atomic number – 24)? Justify your answer.

$3d^4\ 4s^2$

$3d^5\ 4s^1$

B *Answer any ONE from questions 21 to 22.* *(1×4)*

21. 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?

22. Nitrogen and Hydrogen combine together to give Ammonia.

1 mol NH_3 = ... molecules

10 mols NH_3 = ... L at STP.

Part V

Answer any ONE question from 23 to 24. *(1×5)*

23. The 'f' block elements are the elements coming after Lanthanum and Actinium and they are placed as two separate rows at the bottom of the periodic table.

a) To which two periods do the f block elements belong?

b) In which subshell are the last electrons get filled up in f block?

c) List two uses of f block elements.

d) Name any ONE f block element.

24. 90 g of Water (H_2O) is taken. (1 GMM H_2O = 18 g)

a) Calculate the no. of moles present in the given sample.

b) How many litres are present in the given sample at STP?

c) Write the no.of molecules in the given sample.

Chapter 3 - Reactivity series and Electrochemistry

FOCUS AREA

- ✔ Reaction of metals with water
- ✔ Reaction of metals with air
- ✔ Reaction of metals with acid
- ✔ Reactivity series and displacement reaction
- ✔ Galvanic cell

NON-FOCUS AREA

- ✔ Electrolytic cells
- ✔ Electrolysis of molten sodium chloride
- ✔ Electrolysis of sodium chloride solution.
- ✔ Electroplating

Chapter 4 - Production of metals

FOCUS AREA

- ✔ Minerals and ores
- ✔ Concentration of ores
- ✔ Extraction of metals from concentrated ore
- ✔ Refining of metals
- ✔ Industrial preparation of iron
- ✔ Different types of alloy steels

NON-FOCUS AREA

- ✔ Production of aluminium

CHEMISTRY

MODEL QUESTION PAPER 2

(Based on chapters 3 & 4)

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 24 will be 40.

Part I

A *Answer any **FOUR** questions from 1 to 6.* *(4x1)*

1. Which is the cathode in Cu–Au galvanic cell?
2. Find out the metal which react only with steam?
   (Al, Na, Fe, Cu)
3. Which metal has the ability to displace Cu from $CuSO_4$ solution?
   (Ag, Pt, Cu, Fe)
4. The ore of Zinc is ----------
   (Haematite, bauxite, Calamine, Magnetite)
5. The alloy steel which is use to make permanent magnet is ----------
6. The metal which is extracted from its ore by using electricity is ------
   (Iron, Potassium, Tin, Copper)

B *Answer **ALL** questions from 7 to 9.* *(3x1)*

7. Name the process which used to plate gold on a silver spoon by using electricity?
8. A beaker containing sodium chloride solution is carried out electrolysis. Which substance liberated at cathode ?
9. Which solvent is used for leaching in the concentration of bauxite?

Part II

A *Answer the question below.* *(1x2)*

10. Some electrodes and solutions are given
    ($MgSO_4$, $AgNO_3$) (Mg, Zn, Ag)
    a) Which is the Galvanic cell that can be constructed from the above?
    b) What are the anode and cathode of the cell?

B *Answer any **ONE** question from 11 to 12.* *(1x2)*

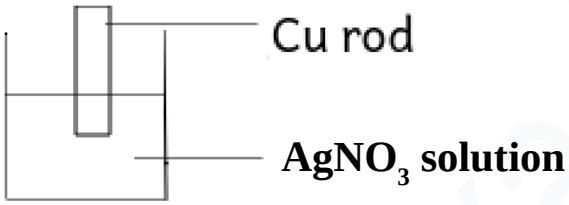
11. NaCl crystals, sugar, molten NaCl, aqueous solution of NaCl are given. Which of the above conduct electricity? Why?
12. Bauxite and clay are two naturally occurring minerals of aluminium.
    a) Which one of these is an ore of aluminium?
    b) Give two reasons for your answer.

Part III

A Answer any **THREE** questions from 13 to 16. (3X3)

13. Some metals are given (Mg, Fe, Cu, Sn)
    a) Which element react with hot water?
    b) Which element doesn't react with dilute acid?
    c) If you construct a galvanic cell using two metals from the above two situations, which metal act as the electrode that undergo oxidation?

14. A Cu rod immersed in $AgNO_3$ solution



    a) What happens to the colour of solution?
    b) This type of reactions are named as ?
    c) Write down the chemical equation for the redox reaction occurring here?

15. Some metals and their refining methods are given. Match them correctly.

Metals	Refining Method
Zinc, Mercury	Electrolytic Refining
Copper, Silver	Liquation
Tin, Lead	Distillation

16. Some chemical reactions taking place in blast furnace are given.
    i. $Fe_2O_3 + 3\ CO \longrightarrow 2\ Fe + CO_2$
    ii. $CaCO_3 \longrightarrow CaO + CO_2$
    iii. $CaO + SiO_2 \longrightarrow CaSiO_3$
    a) What is the chemical formula of haematite?
    b) Which compound reduces haematite?
    c) Identify the flux used here?

B *Answer the following question.* *(1x3)*

17. Write any three practical utility of electrolysis?

Part IV

A *Answer any TWO questions from 18 to 20.* *(2×4)*

18. A redox reaction is given below.

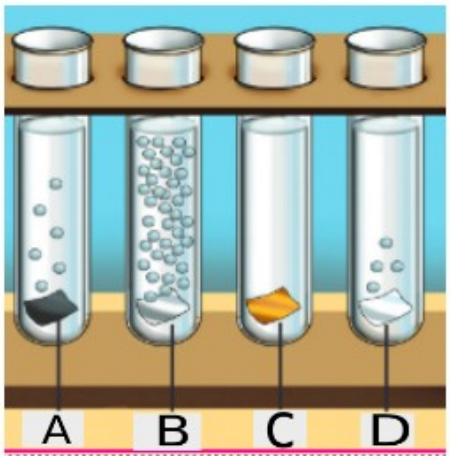
$$FeCl_2 + Mg \rightarrow MgCl_2 + Fe$$

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. Four different metal pieces of same mass dipped in dilute HCl is shown in the figure.



a) Which is the gas evolved in the test tubes?

b) Write the equation showing the reaction of metal B with HCl. (valency of B = 2)

c) Arrange the metals as seen in the reactivity series?

d) If we construct a galvanic cell using any two of the above metals, which metal will always act as the cathode?

20. Match columns A, B & C suitably.

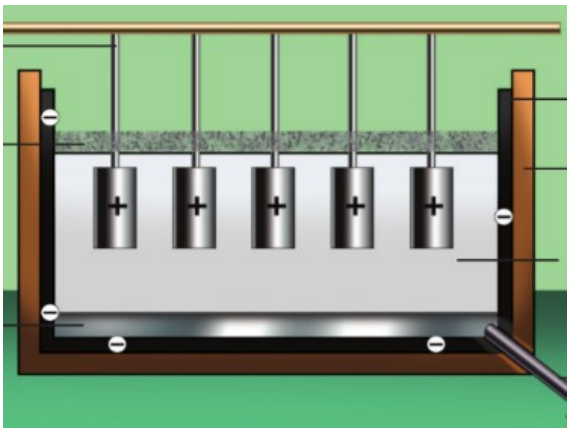
A Characteristics of ore	B Method of concentration	C Example
Ore particles are heavier than the impurities.	Froth floatation	Bauxite
Ore particles are lighter than the impurities.	Leaching	Ore of gold
Ores that get dissolved in solution	Magnetic separation	Tin stone
Magnetic nature of ore	Levigation	Zinc sulphide

B Answer any ONE from questions 21 to 22. *(1×4)*

21. Complete the following table relating with electroplating

Instance	Anode	Electrolyte
Silver plated on a copper spoon	-----(a)-----	-----(b)-----
Gold plated on a silver spoon	-----(c)-----	-----(d)-----

22. The following figure shows the electrolysis of Alumina.



a) Name the preparation process of Aluminium?
b) Identify the anode and cathode in the given cell?
c) Why cryolite is added to alumina during its electrolysis?

Part V

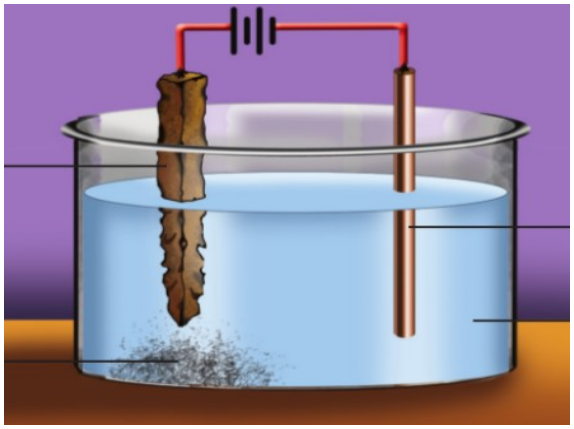
Answer any ONE question from 23 to 24. *(1×5)*

23. Reaction of some metals with water is given in the table. (symbols are not real)

Metal	Reaction with water
A	Reaction with steam
B	Does not react
C	Reacts vigorously even with cold water
D	React with hot water

a) Based on the above reaction, arrange the given metals in the decreasing order of their reactivity
b) If a galvanic cell is constructed using A and B as electrodes, which is the anode?
c) Write the equation of the reaction taking place at electrode B of the cell. (valency of B=2)
d) Which metal always act as cathode among them?

24. The following figure gives the electrolytic refining of copper. Observe the figure and complete the table.



Anode	-----(a)-----
Cathode	-----(b)-----
Electrolyte	-----(c)-----
Chemical reaction taking place at anode	-----(d)-----
Chemical reaction taking place at cathode	-----(e)-----

Chapter 5 - Compounds of Non - Metals

FOCUS AREA

- ✔ Laboratory preparation of Ammonia
- ✔ Properties-Physical and Chemical
- ✔ Liquor ammonia and liquid ammonia
- ✔ Uses of ammonia
- ✔ Reversible reaction- Forward and backward reaction
- ✔ Chemical equilibrium- characteristic properties
- ✔ Le- Chatelier principle
- ✔ Effect of concentration, pressure and temperature in equilibrium.
- ✔ Catalyst and Chemical equilibrium

NON-FOCUS AREA

- ✔ Sulphuric acid
  - Uses
  - Industrial preparation
  - Physical properties
  - Chemical properties
- ✔ Dehydrating nature
- ✔ Drying nature
- ✔ Reaction with salts
- ✔ Oxidising property
- ✔ Identification of sulphates

Chemistry

Model Question Paper 3

(Based on Chapters 5)

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 24 will be 40.

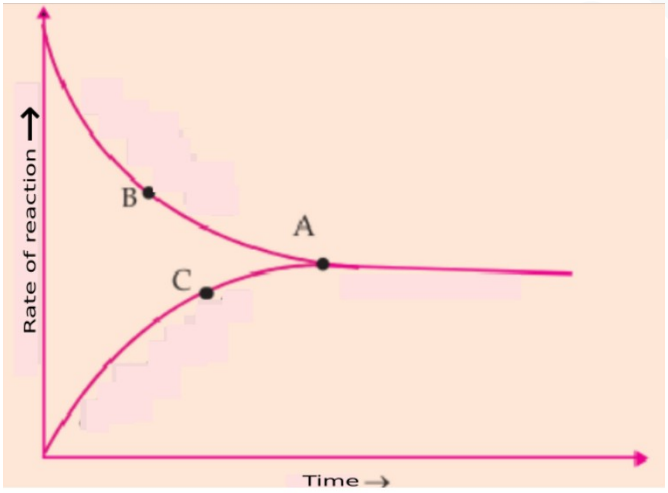
Part I

A Answer any FOUR questions from 1 to 6. *(4x1)*

1. Which of the gas come out first when ammonium chloride is heated?

   a) HCl b) NH_3 c) NH_4Cl d) NH_4OH

2. From the graph find out the point which represents equilibrium state.



3. Find the relation in the first pair and complete the second pair

   Aqueous solution of ammonia : liquor ammonia

   Liquified ammonia : _____

4. Ammonium chloride is taken in a boiling tube and it is heated. At the mouth of the tube a wet red litmus paper is shown. What happens to the litmus paper?
5. Which is the Catalyst used in Haber process?
6. What is the optimum temperature to be used in the industrial production of ammonia?

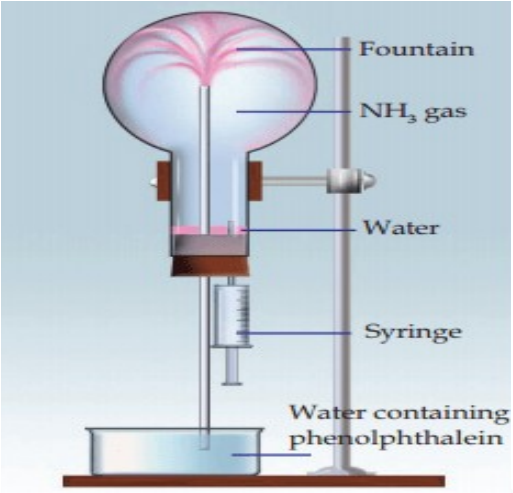
B Answer ALL questions from 7 to 9. *(3x1)*

7. The viscosity of sulphuric acid is comparatively------ (low / high)
8. Mention any one important use of sulphuric acid.
9. Catalyst used in the industrial production of sulphuric acid?

Part II

A *Answer the question below.* *(1x2)*

10. From the figure,



a) What inference can be made about the solubility of ammonia in water?
b) Why does water rush into the flask?

B *Answer any **ONE** question from 11 to 12.* *(1x2)*

11. a) Which is the reagent used to identify the sulphate salts.
b) Write the observation of this experiment.

12. Write equations for the following chemicals to prepare from sulphuric acid.
i. Hydrogen chloride
ii. Oleum

Part III

A Answer any **THREE** questions from 13 to 16. (3X3)

13. $2SO_2(g) + O_2(g) \leftrightharpoons 2SO_3(g) + heat$

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

14. a) $2NO + O_2 \leftrightharpoons 2NO_2 + heat$

In this chemical reaction identify the forward reaction and backward reaction.
b) Point out any two characteristics of chemical equilibrium.

15. $H_2 + I_2 \leftrightharpoons 2HI$

a) Write the reactants and products in this reaction.
b) If products are removed from the system at equilibrium what happens

to the speed of Forward reaction?

c) What is the change if pressure is increased in this reaction?

16. Analyse the following equations and answer the questions.

i) $H_2(g) + I_2(g) \leftrightharpoons 2HI(g)$

ii) $N_2(g) + 3H_2(g) \leftrightharpoons 2NH_3(g)$

iii) $NH_4Cl(s) \leftrightharpoons NH_3(g) + HCl(g)$

a) Which of these reactions are affected by change in pressure? What are the reasons?

b) How the increase in pressure influence the reaction which you have already identified?

B *Answer the following question.* *(1x3)*

17. Observe the following chemical equation

$$Cu + 2H_2SO_4 \rightarrow CuSO_4 + SO_2 + 2H_2O$$

a) Which one has oxidation state as zero?

b) What is its oxidation state after the chemical reaction?

c) Is the change oxidation or reduction?

Part IV

A *Answer any **TWO** questions from 18 to 20.* *(2x4)*

18. $N_2(g) + 3H_2(g) \leftrightharpoons 2NH_3(g) + heat$

How do the following factors influence the forward reaction?

a) Product is removed.

b) Decrease in pressure.

c) More N_2 is added.

d) More NH_3 is added.

19. Select the correct statements which are related to the influence of catalyst in a reversible reaction.

i) Forward reaction takes place when a catalyst is used in a reversible reaction.

ii) Catalyst helps to attain equilibrium faster.

iii) Catalyst does not help to form product easily.

iv) The catalyst increases the rates of both the forward and the backward reactions to the same extent.

v) Increases the speed of backward reaction.

vi) It is not beneficial to add a catalyst in a system which has already attained equilibrium.

vii) Positive catalysts are substances which increase the rate of reactions.

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

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

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.

B Answer any ONE from questions 21 to 22. *(1×4)*

21. Sulphuric acid is industrially manufactured by using contact process. Write all the equations of this process in the correct order.

22. 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.

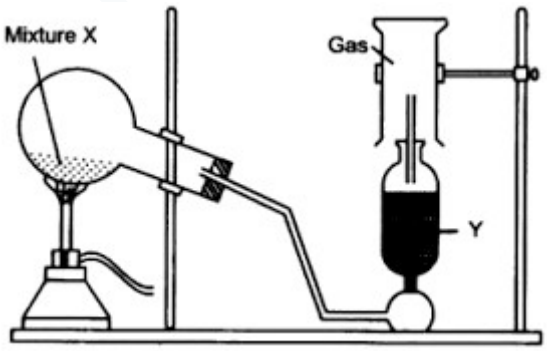
Part V

Answer any ONE question from 23 to 24. *(1×5)*

23. $A + B + \text{heat} \leftrightharpoons 2C + D$

This reversible reaction is in equilibrium. What happens to the amount of products under the following conditions?
a) C is removed from the system.
b) B is added in excess.
c) Temperature is increased.
d) Suitable catalyst is added after reaching equilibrium.
e) Pressure is decreased.

24.



a) Which are the reactants used for the laboratory preparation of ammonia.
b) Which substance is used as drying agent (Y) during the laboratory preparation of ammonia?
c) During the laboratory preparation of ammonia, the gas jar is kept in an inverted position. Why?
d) Write any two uses of ammonia.

Chapter 6 - Nomenclature of organic compounds and isomerism

FOCUS AREA

- ✔ Hydrocarbons and their classification as Alkane, Alkene and Alkynes
- ✔ General formula of Alkane, Alkene and Alkynes
- ✔ Writing the structures of Alkane, Alkene and Alkynes
- ✔ Homologous series
- ✔ Naming of Alkanes
  - With no branch
  - With one branch
  - With more than one same branch
- ✔ Naming of alkenes
- ✔ Naming of alkynes
- ✔ Functional groups – Hydroxyl group, Carboxylic group, Halo group, Alkoxy group.

NON-FOCUS AREA

- ✔ Isomerism
  - Chain isomers
  - Functional isomers
  - Position isomers

Chapter 7 - Chemical reactions of organic compounds

FOCUS AREA

- ✔ Substitution Reactions.
- ✔ Addition Reactions.
- ✔ Polymerisation
- ✔ Combustion of Hydrocarbons
- ✔ Thermal cracking.

NON-FOCUS AREA

- ✔ Some Important Organic Compounds
  - Alcohols - Methanol & Ethanol
  - Carboxylic acids - Ethanoic acid
  - Esters
- ✔ Soap and Detergent

Chemistry

Model Question Paper 4

(Based on Chapters 6 & 7)

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 24 will be 40.

Part I

*A Answer any **FOUR** questions from 1 to 6.* *(4x1)*

1. Which of the following hydrocarbon is an odd one?

   (CH_4 , C_3H_4 , C_3H_6, C_2H_2 , C_2H_4)

2. Choose the compound from the box which of the following compounds undergoes thermal cracking.

CH_4, C_2H_4, C_8H_{18} , CH_3Cl

3. Find the relation and fill in the blank.

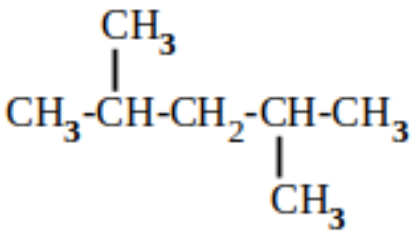
   Hydroxyl group : –OH

   Carboxylic group : .....

4. To which category does $CH_3–CH_2–CH_3$ belong?

   (Alkane, Alkene, Alkyne, Cyclo alkane)

5. Write the IUPAC name of the following compound.



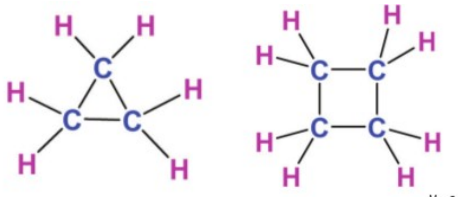
6. Write the name of the functional group in Pent –2–ol

   (Alkoxy, Hydroxyl, Halo, Aldehyde)

*B Answer **ALL** questions from 7 to 9.* *(3x1)*

7. Name the comound having 99% alcohol.
8. Draw the structure of the Benzene.

9. The structure of some of the compounds are given below. Find the number of Hydrogen atoms in a similar compound having five Carbon atoms?



Part II

A *Answer the question below.* *(1x2)*

10. Write the structural formula of the compound C_4H_{10}?

B *Answer any **ONE** question from 11 to 12.* *(1x2)*

11. The second Carbon atom of an organic compound having three Carbon atoms contain one hydroxyl group,
    a)Write the IUPAC name of the compound.
    b)Write the position isomer of the same compound.

12.What are the merits and demerits of detergent over soap?

Part III

A Answer any **THREE** questions from 13 to 16. (3X3)

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. The below given is an organic compound.

$CH_3\text{-}C\equiv C\text{-}CH_3$

a) Write its molecular formula?
b) Which is the equation to find the molecular formula this compound?
(C_nH_{2n+2}, C_nH_{2n-2}, C_nH_{2n})
c)Write its IUPAC name.

15. a) Write the structural formula of 2,2–Dimethyl hexane?
b) Write the structural formula of its chain isomer?

16.The equation of a polymerisation reaction is given below.

$$n\ CF_2 = CF_2 \rightarrow -[CF_2 - CF_2]-_n$$

a) Write the name of its monomer?

b) Write the name of the polymer?

c) Write the use of this polymer?

B *Answer the following question.* *(1x3)*

17. P – $CH_3-CH_2-CH_2-CH_3$

Q – $CH_3-CH_2-CH_2-OH$

R – $CH_3-O-CH_2-CH_3$

S – $CH_3-CH_2-CH=CH_2$

a) Which is an alkane?

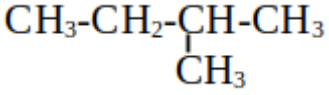
b) Which is the position isomer of the compound 'S'

c) Which are functional isomers?

Part IV

A *Answer any **TWO** questions from 18 to 20.* *(2×4)*

18.



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.

19. Match the given table suitably

Reactants	Products	Name of the reaction
$CH_3-CH_3 + Cl_2$	$CH_2=CH_2 + CH_4$	Addition reaction
$2\ CH_3-CH_3 + 7O_2$	CH_3-CH_3	Substitution reaction
$CH_2=CH_2 + H_2$	$4CO_2 + 6H_2O$	Thermal cracking
$CH_3-CH_2-CH_3$	$CH_3-CH_2-Cl + HCl$	Combustion

20. A homologous series of a hydrocarbon is following.

CH_4	C_2H_6	C_3H_8

a) In which of the following these compounds included

(Alkane, Alkene, Alkyne, Cyclo alkane)

b) Write the general equation of the series.

c) Draw the structure of C_2H_6

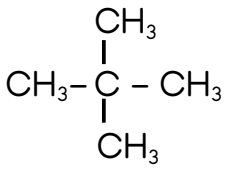
d) Write the name of the radical CH_3

B Answer any ONE from questions 21 to 22. *(1×4)*

21. Find the isomers of the following compounds? Which type of isomers are there?

a) $CH_3–CH_2–CH_2–CH_2–CH_3$

b) $CH_3–CH_2–CH_2–CH_2–OH$

c)


d) $CH_3–CH_2–CH(OH)–CH_3$

e) $CH_3–CH_2–CH_2–OH$

f) $CH_3–CH_2–O–CH_3$

22. Ethanol is manufactured by adding yeast to molasses.

a) Name this reaction?

b) Which are the enzymes in the yeast to help the reaction?

c) Write the equations of reactions of manufacturing of ethanol?

d) What is power alcohol?

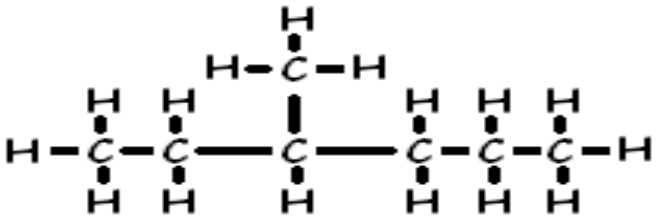
Part V

Answer any ONE question from 23 to 24. *(1×5)*

23. Fill in the blanks and complete the table

MONOMER	POLYMER	ONE USE
.....	P.V.C	.....
Ethene	.....	Making bags
.....	Teflon	Nonstick vessels.
Isoprene	.....	Tyres

24.



Write the following

a) Condensed chemical formula.
b) Molecular formula.
c) IUPAC name.
d) Which are the compounds obtained after combustion?
e) The next homologue of the compound C_4H_{10}.

****

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