UJJUALAM.
Headmasters Forum, Tirur.
Self Evaluation Tool for SSLC Students.

SET A **CHEMISTRY** **Score: 20**

[First 10 minutes is Cool off time. Read the questions carefully. Write answers for 20 score.]

1. Which metal reacts vigorously in cold water? (Na, Mg, Cu) (1)

2. The maximum number of electrons that can be accommodated in 'p' subshell is -------- (1)

3. 1 mole Helium = ... Helium atoms (1)

4. Molar volume at STP = ...litre (1)

5. Complete the table. (2)

Element	Sub-shell electronic configuration	Group	Period
$_{11}Na$	$1s^2 2s^2 2p^6 3s^1$	.....(a).....	.....(b).....
$_{9}F$	.....(c).....	.....(d).....	2

6. Electronic configuration of Copper(Atomic Number – 29) is given below. (2)
Which one of them is correct? Give reason.
(a) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^9 4s^2$ (b) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^1$

7. Molecular mass of CO_2 is 44 (2)
a) Find out the number of moles present in 88g CO_2
b) Find the volume of 88g CO_2 at STP.

8. Salts in molten and aqueous states are as electrolytes. (2)
a) What is electrolyte?
b) What is the reason for the electrical conductivity of electrolytes?

9. The outer electronic configuration of an element X is $3p^5$. (Symbol is not real) (3)
a) Write the complete sub-shell electronic configuration.
b) Find the period, block, group number and valency of the element.

10. Find the molecular mass of the following. (Atomic mass N - 14, C- 12, H - 1, O- 16) (3)
a) NH_3 b) $C_6H_{12}O_6$ c) CH_4

11. Choose only the correct statements related to the the gaseous molecules. (3)
(i) very low energy
(ii) random motion in all directions
(iii) freedom of movement is very high
(iv) force of attraction is greater
(v) very high energy
(vi) molecules are at rest

12. a) Draw the figure of a Galvanic cell that can be constructed using the materials given below. (3)

[Zn rod, Cu rod, Fe rod, $CuSO_4$ solution, $FeSO_4$ solution]

b) Write the anode and cathode.

13. Sub-shell electronic configuration of some elements are given below. (4)

(symbols are not real)

A. $1S^2 2s^2 2p^6 3s^2$ C. $1S^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^2$

B. $1S^2 2s^2 2p^6$ D. $1s^2 2s^2 2p^5$

a) Which of the above is an inert gas?

b) Identify the transition element?

c) Find the 's' block element.

d) Which is the highly reactive non metal?

14. Two compounds of $_{26}Fe$ are $FeCl_2$ and $FeCl_3$ (4)

a) Which one of the above compounds contain Fe^{3+} ion

b) Write the sub-shell electronic configuration of Fe^{3+} ion.

c) 'd' block elements shows variable oxidation states. Give reason.

15. a) Which of the samples given below contains $2 \times 6.022 \times 10^{23}$ number of molecules. (4)

i) 4g H_2 ii) 28g N_2 iii) 64g O_2

b) Which of the given samples contains the least number of molecules.

16. Molten NaCl is electrolysed. (4)

a) Which are the ions present in molten NaCl?

b) Which product is liberated at the negative electrode?

c) Whether NaCl in solid state conduct electricity? Why?

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SET B **CHEMISTRY** **SCORE : 20**

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1. Choose the subshell which is not possible? [2p 3d 4s 2d] (1)

2. 'd' block elements are also called .....elements (1)

3. Write the Avogadro number. (1)

4. The electrode in which oxidation taking place is ..... (1)

5. The size of the air bubbles rising from the bottom of a pond increases.
   Give reason? Which is the gas law related to this? (2)

6. The outer subshell electronic configuration of an element is $3s^2\,3p^1$. (2)
   a. Find the block and group of the element.
   b. Write the complete subshell electronic configuration of the element.

7. How many GAM is present in 46 g of sodium(Na) and 60 g of carbon(C) (2)
   (Atomic mass of Na = 23, C = 12)

8. Which are the ions present in molten NaCl? Which is the product obtained
   in the anode by the electrolysis of molten NaCl? (2)

9. a) The molecular mass of Oxygen is 32. 1GMM Oxygen = ----------g (3)
   b) Find the number of GMM and the number of molecules present in
   64g Oxygen (O_2)

10. The atomic number of Mn is 25. (3)
    a) Write the complete subshell electronic configuration of Mn.
    b) Calculate the oxidation state of Manganese (Mn) in $MnCl_2$
    (Oxidation state of chlorine is -1)
    c) Write the subshell electronic configuration of manganese ion in $MnCl_2$

11. An inflated balloon kept in sunlight increases in size. Why? (3)
    Which gas law helps you to explain this situation. Write the mathematical
    expression of the law.

12. Zinc(Zn) is more reactive than copper(Cu). A Galvanic cell is constructed using
    these two metals.
    a) Write the anode and cathode. (3)
    b) What is the direction of electron flow?
    c) Write the chemical equation of reaction takes place in copper electrode.

13. Pressure and volume of a fixed mass of gas at constant temperature is given in the table. Complete the table and answer the following questions. (4)

Pressure P	Volume V
1 atm	8 L
2 atm	4L
4 atm	----(x)----
-----(y)-----	1 L

a) Calculate P x V
b) Find x and y
c) Name the gas law which helps you to solve the problem.

14. The subshell electronic configuration of an element is $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^5$ (4)
a) Find the atomic number of the element.
b) Find the group to which this element belongs.
c) What is the valency of the element?
d) Give the oxidation state commonly shown by this element.

15. Two iron nails are dipped in aqueous solutions of $CuSO_4$ and $ZnSO_4$. (4)
(Hint: Reactivity Zn >Fe> Cu)
a) In which iron nail does changes occurs?
b) What is the change observed?
c) Why chemical change happens here? Explain this, on the basis of reactivity.

16. A sample of 56g Nitrogen gas is given. Find the following (Atomic mass N=14) (4)
a) 56g Nitrogen = ----- GAM
b) Calculate the number atoms present in 56g Nitrogen.
c) 56g Nitrogen = ----- GMM
d) Calculate the number molecules present in 56g Nitrogen.

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Set – A **SSLC Self Evaluation Tool.**

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CHEMISTRY

Time- 1 Hour **Score: 20**

(There are questions for 40 scores, of which questions for only 20 scores to be answered.)

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1. The impurities present in the ore are known as 1

2. Fill up suitably. 1
   Concentrated aqueous solution of ammonia : Liquor ammonia
   Liquefied ammonia : .....

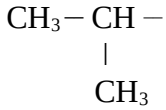
3. The compounds having OH as the functional group are commonly called 1

4. The monomer of natural rubber is ..... 1`

5. Magnetite(Fe_3O_4), Bauxite($Al_2O_3.2H_2O$), Copper Pyrites($CuFeS_2$) are some ores. 2
   (a) Which of the above is concentrated by froth floatation?
   (b) Which one is concentrated by magnetic separation?

6. Which of the following statements related to chemical equilibrium are correct? 2
   (a) Chemical equilibrium is attained in an open system.
   (b) The rates of forward and backward reactions are become equal at equilibrium.
   (c) At the equilibrium both the reactants and products co-exist.
   (d) Chemical equilibrium is static at the molecular level.

7. The structural formula of an organic compound is 2



   (a) Find the number of carbon atoms in the longest chain. What is the word root?
   (b) Write the IUPAC name of this compound.

8. Analyse the following two equations and find out A and B. 2

   (i) $H_3C - C \equiv CH + Cl_2 \rightarrow A$

   (ii) $A + H_2 \rightarrow B$

9. Complete the table 3

Metal	Refining Method
Zn	.....
.....	Liquation
Cu	.....

10. N_2O_4 + Heat $\rightleftharpoons$ $2NO_2$ 3
    In this reversible reaction how do the following changes influence the rate of forward reaction.
    (a) concentration (b) pressure (c) temperature

11. Complete the table.` 3

Structural formula	Functional group	IUPAC name
CH_3-CH_2-OH	Hydroxyl	.....(a).....
.....(b).....	.....(c).....	Methoxy ethane

12. $CH_3-CH_2-CH_2-CH_3 \rightarrow CH_3-CH_3 + A$ 3

(a) Write the structural formula of A
(b) Write the IUPAC name of A
(c) Write the name of this reaction.

13. Some chemical equations of reactions taking place in the blast furnace are given. 4

$Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$

$CaCO_3 \rightarrow CaO + CO_2$

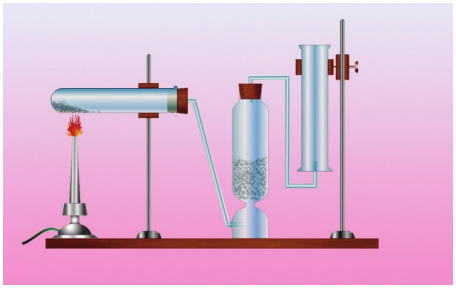
$CaO + SiO_2 \rightarrow CaSiO_3$

(a) Which is the reducing agent used in the production of Iron?
(b) Write the gangue in haematite. Write the name of flux used to remove the gangue.
(c) Write the equation of reaction for the formation of slag in the blast furnace.

14. i) $CH_3-CH_2-O-CH_2-CH_3$ ii) $CH_3-CH_2-CH_2-CH_2-OH$ 4

(a) Write the similarities and differences between the two compounds.
(b) Write the IUPAC names of these compounds.
(c) Which type of isomers are they? Substantiate your answer.

15. The figure showing the production of ammonia in the laboratory is given below. 4



(a) Write the names of the reactants used to produce ammonia in the laboratory.
(b) Write the chemical equation of the reaction.
(c) Which substance is used as drying agent here?
(d) The gas jar used for collecting ammonia is kept inverted. Give reason.

16. Analyse the given chemical equations. 4

(i) $H-C \equiv C-H + H_2 \rightarrow A$

(ii) $n\,A \rightarrow B$

(a) Find A and B.
(b) Write the name of these reactions.

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CHEMISTRY

Time- 1 Hour **Score: 20**

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1. The product obtained by the polymerisation of Vinyl chloride is..... 1

2. What is the product formed when ammonia is dissolved in water? Complete the equation. 1

$NH_3 + H_2O \rightarrow$ .....

3. Which of the following is a saturated hydrocarbon? 1

[C_2H_4, C_3H_4, C_2H_6, C_2H_2]

4. Complete the following suitably. 1

Copper pyrites : $CuFeS_2$

Calamine : .....

5. Methods for the concentration of ores are given. 2

Levigation, Froth flotation, Magnetic separation, Leaching

(a) Which of the above is used to concentrate if the ore particles are heavier and impurities are lighter?

(b) Which method is used to concentrate sulphide ores?

6. Some statements related to the structure of a hydrocarbon are given. 2

(i) An unsaturated hydrocarbon without any branches.

(ii) There are 5 carbon atoms.

(iii) There is a double bond on the second carbon.

(a) Write the structural formula of this compound.

(b) Write its IUPAC name.

7. Which characteristics of Sulphuric acid is shown in each of the given circumstances? 2

(a) Concentrated Sulphuric acid is dropped on cotton cloth.

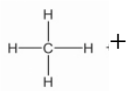
(b) Chlorine gas is passed through concentrated Sulphuric acid.

8. Teflon is a polymer. 2

a) Write the name of the monomer of Teflon.

b) Write one use of Teflon.

9. Analyse the following equation. 3



$+ Cl-Cl \rightarrow$ .....(A)..... $+ H-Cl$

a) Identify A.

b) The above reaction is a substitution reaction. Why?

10. Bauxite is the main ore of aluminium. 3

(a) Write the chemical formula of Bauxite.
(b) Which solution is used for the leaching of Bauxite.
(c) Electricity is used as the reducing agent in the manufacture of aluminium. Why?

11. The chemical equation of the production of ammonia in the laboratory is given below. 3

$2NH_4Cl + Ca(OH)_2 \rightarrow$ .....A..... + $2H_2O$ + ...B.....

a) Identify A and B.
b) Which is the drying agent used in this reaction?

12. The structural formula of a hydrocarbon is given. 3

$$CH_3-CH_2-\underset{\displaystyle CH_2-CH_2-CH_3}{\underset{|}{CH}}-CH_2-CH_3$$

(a) How many carbon atoms are there in the main chain of this hydrocarbon?
(b) Write the name of branch present in it.
(c) Write the IUPAC name of this hydrocarbon.

13. Match the following. 4

A	B
n $CH_2= CH_2 \rightarrow -[CH_2-CH_2]-$	Thermal Cracking
$CH_4 + Cl_2 \rightarrow CH_3Cl + HCl$	Addition
$CH_3-CH_2-CH_3 \rightarrow CH_4 + CH_2= CH_2$	Polymerisation
$CH_2= CH_2 + H_2 \rightarrow CH_3-CH_3$	Substitution

14. The structural formula of a compound is given below. 4

$$CH_3-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$$

(a) Write the name of the functional group present in this compound.
(b) By which name do the compounds having this functional group are commonly known?
(c) Write the IUPAC name of this compound.
(d) Write the structural formula of the functional isomer of this compound.

15. The chemical equation of the industrial production of ammonia is given below.

$N_{2\,(g)} + 3H_{2\,(g)} \rightleftharpoons 2NH_{3\,(g)}$ + Heat 4

a) Which are the reactants?
b) What change will happen under the following conditions?
(i) Concentration of nitrogen is increased (ii) Pressure is decreased
c) Write one use of ammonia.

16. Iron (Fe) is produced industrially in blast furnace. 4

a) Which are the materials fed into the furnace?
b) Which is the compound that reduces iron oxide into iron?
c) Why limestone ($CaCO_3$) is added in the production of iron in blast furnace?