HIGHER SECONDARY IST YEAR
CHEMISTRY

MODEL QUESTION PAPER

TIME:2 ½ Hrs **MARKS:70**

PART-I

I. Answer all the questions.
Choose the most appropriate answer

15x1=15

1. The number of atoms present in 0.5 gram atoms of Nitrogen is same as the atoms in
   a) 12g of C b) 8g of the Oxygen c) 32g of S d) 24g of Magnesium

2. Froth flotation process is suitable for concentrating ------- ores
   a) Sulphide b) Oxide c) Carbonate d) Halide

3. Consider the following statements
   1. Transition metals have the ns^{1-2} $(n-1)d^{1-10}$ electronic configuration
   2. Cl^- ion is bigger than Cl atom
   3. Second ionization potential is lesser than the first ionization potential

   Which of the following statement(s) given above is/are not correct.
   a) 1,2and 3 b) only 2 c) only 3 d) 2 and 3

4. Match the list I with list II and select the correct answer using the code given below the lists.

List I		List II	
A	$Na + O_2$	1	Sodium Deuteroxide
B	$Na + H_2O$	2	Sodium Peroxide
C	$Na + NH_3$	3	Sodium Hydroxide
D	$Na + D_20$	4	Sodamide

Code:

	A	B	C	D
a.	1	2	3	4
b.	4	3	2	1
c.	2	3	4	1
d.	1	3	4	2

5. The basic oxide among the following
   a) Bi_2O_3 b) SnO_2 c) HNO_3 d) SO_3

6. The Weiss indices of a plane are $\frac{1}{2}, \frac{1}{2}, \frac{1}{2}$. Its miller indices will be ––––––.
   a) (0,1,1) b) (1,0,1) c) (2,2,2) d) $(\frac{1}{2}, \frac{1}{2}, \frac{1}{2})$

7. Excluded volume per molecule is
   a) $4V_m$ b) $2V_m$ c) $\frac{Vm}{2}$ d) $4nV_m$

8. The compound which contains both ionic and covalent is
   a) CH_4 b) H_2 c) KCN d) KCl

9. Work done in the reversible expansion is ------
   a) Minimum b) Maximum c) Zero d) Not predictable

10. The equilibrium constant for the reaction $CO_{2(g)} + C_{(s)} \leftrightarrow 2CO_{(g)}$. When the partial pressure of CO_2 and CO are 0.04atm and 0.2 atm respectively is
    a) 1.9 atm b) 1 atm c) 2 atm d) 0.04 atm

11. IUPAC name of $CH_2{=}CH{-}CH_2Cl$ is
    a) Allyl chloride b) 3 -chloro 1-propene c) 1- chloro 2-propene d) Vinyl Chloride

12. In the detection of Sulphur using Lassaigne's test the purple colour is developed due to
    a) $Na_4[Fe(CNS)_5NO]$ b) $Na_4[Fe(CN)_5NOS]$ c)$Fe(CNS)_3$ d) Na(CNS)

13. Diels – Alder reaction is a reaction between
    a) diene and dieneophile b) electrophile and nucleophile c) Oxidant and reductant d) free radicals

14. The ortho and para directing groups are
    a) activating groups b) deactivating group c) both (a) & (b) d) No effect

15. Statement I: Aryl halides do not readily undergo Nucleophilic substitution reactions under ordinary conditions.
    Statement II: In Aryl halides C-X bond is short and strong.
    a. Both the statements are individually true but statements II is not the correct explanation of statement I.
    b. Both the statements are individually true and statement II is the correct explanation of statement I.
    c. Statement I is true but statement II is false.
    d. Statement I is false, but statement II is true.

PART-II

II . Answer Any Six Questions in which Question No.21 is compulsory

6x2=12

16. Calculate the normality of solution containing 6.3g of hydrated oxalic acid in 500 ml of solution.

17. Write the electronic configuration of chromium and copper

18. How does ozone react with the following (a)PbS (b) BaO_2

19. Write the significance of Vanderwaal's constant 'a' and 'b'

20. Calculate the vapour pressure of the solution. When the mole fraction of the solute is 0.5, the vapour pressure of the pure solvent is 0.6 atm.

21. Substantiate with reason NH_3 is a Nucleophile and $AlCl_3$ is a electrophile.

22. 0.12g of an organic compound gave on combustion gave 0.11g of CO_2. Calculation the percentage of C in the organic compound.

23. Write notes on Fridel Craft's alkylation.

24. Predict the structure of SF4 using VSEPR theory ?

PART-III

III. Answer Any Six Questions in which Question No.30 is compulsory **6x3=18**

25. .Write any two methods of preparation of Tritium.

26. How is Plaster of Paris prepared ? Write any 2 of its uses.

27. Explain the characteristics of s – Block elements.

28. Define Isotropy and Anisotropy.

29. Two moles of H_2 and three moles of I_2 are taken in $2dm^3$ vessel and heated. If the equilibrium mixture contains 0.6 moles of HI, calculate kp and kc for the reaction.

30. (i) Defind Half life period
(ii) The time for half life of first order reaction is 1 hr. What is time taken for 87.5% completion of the reaction.

31. Using Huckel's Aromatic rule prove naphthalene is a aromatic compound,

32. Write the two methods of preparation of free radicals

33. Complete the following Reaction
    a. $CH_4 + O_2 \xrightarrow{MoO_3}$
    b. $3CH \equiv C - CH_3 \xrightarrow[\text{Under pressure}]{\text{Red hot tube}}$
    c. $C_6H_5OH \xrightarrow[\text{Zinc}]{\text{Dry distillation}}$

PART-IV

IV Answer All the Questions

5x5=25

34. i. Calculate the Equivalent mass of Sulphuric Acid (2)
ii. How will you determine equivalent mass of an element by oxide method. (3)

(or)

i. Describe the principle process involved in the purification of the metal by this Zone Refining method. (3)
ii.Distinguish between ores and minerals with suitable example. (2)

35. i. Determine the number of electrons in the Ist shell and mention the values of its quantum numbers. (3)
ii.Write a note on principal Quantum Number. (2)

(or)

i. Explain the liquification of gases by Claude's method. (3)
ii. Classify the following gases NH_3, N_2, H_2, CO_2 as "permanent" and "temporary" gases. (2)

36. Calculate the lattice enthalpy of $CaCl_2$ given that the enthalpy of

(i) sublimation of Ca is 121 $KJmol^{-1}$
(ii) Dissociation of Cl_2 to 2Cl is 242.8 $KJmol^{-1}$
(iii) Ionization of Ca to Ca^{2+} is 2422 $KJmol^{-1}$
(iv) Electron gain for Cl to Cl^- is-355 $KJmol^{-1}$
(v) $\Delta H°_f$ *overall is* -795 $KJmol^{-1}$

(or)

Distinguish between Order and Molecularity of a reaction

37. i. Comment on the constant value of Enthalpy of neutralization between strong acid and strong Base. (3)

ii. Define Zeroth law of thermodynamics (2)

(or)

i. Discuss the principle and procedure involved in purification of organic compound by paper Chromatography. (3)

ii. Why organic compounds need to be purified (2)

38. a. Give the structural formula for

i. But -1- ene
ii. 2 - methyl 2 - propanol
iii. Methoxy Ethane
iv. Ethane dioic acid
v. (N-methyl amino) methane

(or)

b. An organic compound (A) of Molecular formula C_7H_8 on treatment with Cl_2 in the presence of sunlight to give compound (B) of molecular formula C_7H_7Cl. Compound (B) react with Zn-Cu couple to give back compound (A). Compound (B) on mild oxidation with $Cu(NO_3)_2$ gives (C) C_7H_6O. Identify (A), (B), (C). Explain the reactions.
