CHEMISTRY, Paper – I
(English Version)

Time : 3 Hours *Max. Marks : 60*

Note : This question paper consists of three sections *A*, *B* and *C*.

SECTION – A

Note : i) Answer **all** questions **10 × 2 = 20**

ii) Each question carries **two** marks

iii) All are very **short answer** type questions

1. What is Wurtz reaction?
2. Write structural formula of the following compounds.

   i) 3, 4, 4, 5 – Tetramethylheptane ii) 2, 5–Dimethylhexane
3. What can we do reduce the rate of global warming?
4. Define receptor and sink?
5. What are exothermic and endothermic reactions?
6. State the first law of the thermodynamics.
7. What is meant by ionic product of water?
8. Give two chemical equilibrium reactions for which $K_p < K_c$
9. Calculate the weight of 0.1 mole of sodium carbonate.
10. The empirical formula of a compound is CH_2O. its molecular weight is 90. Calculate the molecula formula of the compound.

SECTION – B

II. Note : i) Answer any **SIX** of the following questions. **6 × 4 = 24**

ii) Each question carries **four** marks.

iii) All are **short answer** type questions.

11. What is Hydrogen bond? Explain the different types of Hydrogen bonds with examples.

12. Explain the hybridization involved in PCl_5 molecule.

13. Discuss the application of Lechatelier's principle for the industrial synthesis of ammonia and sulphur trioxide.

14. What is a conjugate acid – base pair? Illustrate with examples.

15. Define normality.

Calculate the normality of oxalic acid solution containing 6.3 g of $H_2C_2O_4.2H_2O$ in 500 ml of solution.

16. Balance the following redox reactions by ion–electron method:

$MnO^-_{4(aq)} + I^-_{(aq)} \rightarrow MnO_{2(s)} + I_{2(s)}$ (in basic medium)

17. Explain, with suitable examples, the following :

i. Electron deficient ii. Electron – precise

iii. Electron – rich hydrides

18. Explain position and functional isomerism with example.

SECTION–C

III. Note: i) Answer any **TWO** of the following questions. **2 ×8 = 16**

ii) Each question carries **EIGHT** marks.

iii) All are **long answer** type questions.

19. Give two methods of preparation of acetylene. How does it react with Water and Ozone?

20. Define IE_1 and IE_2. Why is $IE_2 > IE_1$ for a given atom? Discuss the factors that effect IE of an element.

21. How are the quantum numbers n, l ,m_l and s arrived at? Explain the significance of these quantum numbers.

MARCH – 2025
Board of Intermediate Education
Chemistry 1st Year
SET-1

Time : 3 Hrs | Total Marks : 60 M

SECTION – A

I Answer all the following questions 10x2=20M

1) Why is gypsum added to cement?
2) Name any two man-made silicates?
3) What is pH? Calculate the pH of 0?001 M HCl solution?
4) Calculate kinetic energy of 2 moles of Nitrogen at 27^0C ?
5) Give an account of biological importance of Na^+ and K^+ ions?
6) Assign Oxidation number to the underlined elements in each of the following species:
   a) $NaH\underline{S}O_4$ b) $K_2\underline{Mn}O_4$
7) How does Graphite function as a lubricant?
8) What is chemical Oxygen Demand (COD)?
9) What is PAN? What effect is caused by it?
10) Write the structures of the following compounds:
    a) 3,3,4,5 - tetramethyl Heptane b) 2-methyl pent-1-ene

SECTION – B

II Answer any six of the following questions 6x4=24M

11) Explain the hybridisation involved in SF_6 molecule?
12) Deduce a) Boyle's Law b) Charle's Law from kinetic gas equation?
13) A carbon compound contains 12?8% carbon, 2?1% hydrogen, 5?1% bromine? The molecular weight of the compound is 187?9? Calculate the molecular formula?
14) State and explain the Hess's law of constant Heat summation?
15) Discuss the application of Le-Chatlier's principle for the industrial synthesis of Ammonia?
16) Write a few lines on the utility of hydrogen as a fuel?
17) Explain Borax bead test with a suitable example?
18) Explain the formation of Coordinate Covalent bond with one example?

III Answer any two of the following questions 2 x 8 = 16M

19) How are the quantum numbers n,l and m_1 arrived at? Explain the significance of these quantum numbers?

20) Define IE_1 and IE_2 ? Why $IE_2 > IE_1$ for a given atom? Discuss the factors that effect IE of an element?

21) How do we get benzene from acetylene? Give the corresponding equation? Explain the halogenation, alkylation, nitration and sulphonation of benzene?