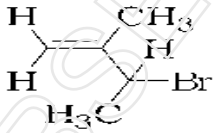
SAMPLE PAPER-01
CHEMISTRY (Theory)
Class – XII

Time allowed: 3 hours Maximum Marks: 70

General Instructions:

a) All the questions are compulsory.
b) There are **26** questions in total.
c) Questions **1** to **5** are very short answer type questions and carry **one** mark each.
d) Questions **6** to **10** carry **two** marks each.
e) Questions **11** to **22** carry **three** marks each.
f) Questions **23**is value based question carrying **four** marks.
g) Questions **24**to **26** carry **five** marks each.
h) There is no overall choice. However, an internal choice has been provided in one question of two marks, one question of three marks and all three questions in five marks each. You have to attempt only one of the choices in such questions.
i) Use of calculators is **not** permitted. However, you may use log tables if necessary.

1. Why a Schottky defect is formed when calcium chloride is added to silver chloride crystal?
2. Give the IUPAC name of  .
3. In Haber's process, it is necessary to remove CO when ammonia is obtained. Give Reason
4. What are point defects? Mention its types.
5. Why the process of adsorption is always exothermic?
6. Give the resonance structures and bond parameters for N_2O_3 and N_2O_4.
7. Give a chemical test to distinguish Ethylamine and diethylamine by giving equations.
8. What is the effect of temperature on the solubility of a solid in a solvent?
9. Give the parameters that characterize a unit cell.

   Or

   Explain how much portion of an atom located at a) the corner and b) body centre of a cubic unit cell is part of its neighbouring unit cell?
10. Give reasons:
    i. Ortho nitrophenol is more acidic than orthomethoxy phenol.
    ii. Ethers possess a dipole moment even if the alkyl radicals in the molecule are identical.

11. What mass of propene is obtained from 34.0 g of 1-iodo-propane on treating with ethanolicKOH, if the yield is 36%?
12. What are the forces that stabilize the protein structures?
13. Complete the reactions:
    i. $POCl_3 + H_2O \rightarrow$
    ii. $P_4O_{10} + H_2O \rightarrow$
    iii. $P_4 + KOH + H_2O \rightarrow$
14. Define the following term with an example:

a) Tranquilizers
b) Analgesics
c) Antipyretics

15. Explain the termcopolymerisation with two examples.
16. Give four criterions to be followed for the selection of stationary phase in chromatography.
17.

i. Why noble gases have low boiling points?
ii. Why are the elements of group 18 known as noble gases?
iii. Why He is used in diving apparatus?

18. What are the factors which determine the magnitude of the orbital splitting energy?

Or

How the nature of the ligand affect the stability of a complex ion?

19. Differentiate addition and condensation polymers.
20. Calculate the number of active hydrogen atoms in the molecule of an organiccompound, if an ex cess of methyl magnesium iodide reacts with 0.6 g of an organic compound $C_3H_6O_3$ to evolve 295.7 mL of methane gas at STP.
21. The decomposition of N_2O_5 in CCl_4 at 318K has been studied by monitoring the concentration of N_2O_5 in the solution. Initially the concentration of N_2O_5 is 2.33 mol L^{-1} and after 184 minutes, it is reduced to 2.08 mol L^{-1}. The reaction takes place according to the equation

$$2N_2O_5\ (g) \rightarrow 4\ NO_2\ (g) + O_2\ (g)$$

a) Calculate the average rate of this reaction in terms of hours, minutes and seconds.
b) What is the rate ofproduction of NO_2 during this period?

22. Why F shows only one oxidation state whereas other halogens show more than two positive oxidation states?
23. Ethanol is used for drinking purpose. But to refrain people from drinking industrial alcohol, it is denatured. Now a days some countries use ethanol as an additive in gasoline since it is cleaner fuel.
    a. What is denatured alcohol? Why it is denatured?
    b. Would you support the use of ethanol as an additive in gasoline for India?
    c. What are the values associated with your decision?

24. Calculate the equivalent conductivity of 1 M H_2SO_4 solution whose conductivity is 26 x 10^{-2} ohm^{-1} cm^{-1}.

Or

How long will it take to deposit 1.0 g of Cr when a current of 1.25 A flows through a solution of chromium (III) sulphate? [Molar mass of Cr = 52].

25.

a) Give the structures of chromate ion and dichromate ion.
b) Give the preparation of potassium permanganate.

Or

a) Give the structure of manganite ion and permanganate ion.
b) Give the schematic representation of chemical reactions of lanthanoids.

26. Convert the following into benzoic acid:

a. Ethylbenzene
b. Acetophenone
c. Bromobenzene
d. Styrene

Or

An organic compound X contains 69.77% C, 11.63% H and rest Oxygen. The molecular mass of the compound is 86. The compound X does not reduce Tollen's reagent, but forms an addition compound with sodium hydrogen sulphite and gives positive iodoform test. On vigorous oxidation, X gives ethanoic and propanoic acids. Identify the possible structure of X.