0123
(TS)

B

Total No. of Questions - **21**

Total No. of Printed Pages - **2**

Regd. No.

Part - III
CHEMISTRY, Paper - I
(English Version)

Time : 3 Hours ***Max. Marks : 60***

Note : Read the following instructions carefully.

1) Answer **all** questions of Section 'A'. Answer **any six** questions in Section 'B' and answer **any two** questions in Section 'C'.

2) In Section 'A', questions from Sr. Nos. **1** to **10** are of **Very Short Answer Type**. Each question carries **two** marks. Every answer may be limited to **2** or **3** sentences. Answer all these questions at one place in the same order.

3) In Section 'B', questions from Sr. Nos. **11** to **18** are of **Short Answer Type**. Each question carries **four** marks. Every answer may be limited to **75** words.

4) In Section 'C', questions from Sr. Nos. **19** to **21** are of **Long Answer Type**. Each question carries **eight** marks. Every answer may be limited to **300** words.

5) Draw labelled diagrams **wherever necessary** for questions in Sections 'B' and 'C'.

SECTION A **10 × 2 = 20**

Note : Answer **all** questions.

1. Name two adverse effects caused by acid rains.

2. What is Chemical Oxygen Demand (COD)?

3. Write the functional isomers of organic compound C_3H_6O.

4. Define inert pair effect.

5. Write the biological importance of Na^+ ions.

6. What is meant by ionic product of water? What is its value at room temperature?

7. Calculate the kinetic energy of 5 moles of nitrogen at 27^0C.

8. Calculate the oxidation number in $Cr_2O_7^{2-}$ ion on chromium (Cr) atom.

9. What is Plaster of Paris?

10. Give the formula of borazine. What is its common name?

SECTION B

6 × 4 = 24

Note : Answer **any six** questions.

11. Write the postulates of Kinetic Molecular Theory of Gases.

12. A carbon compound contains 4.07% hydrogen, 24.27% carbon and 71.65% chlorine. Its molar mass is 98.96 gm. What are its empirical and molecular formulas?

13. a) State the third law of thermodynamics.
    b) Define entropy.

14. Explain the concept of Bronsted-Lowry acid base theory with suitable examples.

15. Explain with suitable examples of the following :
    a) Electron – deficient hydrides
    b) Electron – rich hydrides

16. Explain the differences in properties of diamond and graphite on the basis of their structures.

17. Explain Wurtz reaction and Friedel – Crafts alkylation with examples.

18. What is polymerization? Explain with one example.

SECTION C

2 × 8 = 16

Note : Answer **any two** questions.

19. a) What are the postulates of Bohr's model of hydrogen atom?
    b) Explain the significance of 'n' and 'l' quantum numbers.

20. What is hybridization? Explain sp, sp^2 and sp^3 hybridizations with one example each.

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