# 0123
# TS

**A**

**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 :

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

(ii) 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 **two** or **three** sentences. Answer all these questions at one place in the same order.

(iii) 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.

(iv) 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.

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



### SECTION – A

**$10 \times 2 = 20$**

**Note :** Answer **all** questions.

1. State first law of thermodynamics.
2. State Graham's law of diffusion.
3. Calculate the oxidation number of Manganese (Mn) in $MnO_4^-$ ion.
4. What is Lewis acid ? Give one example.
5. Lithium reacts with water less vigorously than sodium. Give reason.
6. What happens when magnesium metal is burnt in air ?
7. What is Biochemical Oxygen Demand (BOD) ?
8. Write IUPAC names of the following structures :

   (a) $CH_3 - CH_2 - CH_2 - CH = CH_2$

   (b) $CH_3 - CH_2 - \overset{\overset{O}{\|}}{C} - CH_3$

9. Which gases cause Green House Effect ?

10. State Hess law of constant heat summation.

## SECTION – B

**6 × 4 = 24**

**Note :** Answer any **six** questions.

11. Write the postulates of kinetic molecular theory of gases.

12. Balance the following equation in acid medium by Ion-electron method :
$Fe^{+2}_{(aq)} + Cr_2O_7^{2-}{}_{(aq)} \rightarrow Fe^{+3}_{(aq)} + Cr^{+3}_{(aq)}$

13. Explain hybridisation of phosphorous in the formation of $PCl_5$.

14. Discuss the application of Le-Chatlier's principle for the industrial synthesis of Sulphur trioxide ($SO_3$).

15. What is Hydrogen bond ? How many types ? Give one example each.

16. Write two oxidation and two reduction reactions of Hydrogen peroxide.

17. Explain the structure of Diborane.

18. Give hybridisation of carbon in
(a) $CO_3^{-2}$ (b) diamond (c) graphite (d) fullerene

## SECTION – C

**2 × 8 = 16**

**Note :** Answer any **two** questions.

19. What are the postulates of Bohr's model of hydrogen atom ? Explain the formation of lines in the Hydrogen spectrum.

20. How the following properties varies in a group and in a period ?
(a) Atomic radius (b) Ionisation enthalpy
(c) Electronegativity (d) Electron gain enthalpy

21. Write any two methods of preparation of ethylene. How does it reacts with the following ?
(a) Cold, dil. alk. $KMnO_4$
(b) $Br_2/CCl_4$