Part – III
CHEMISTRY
Paper – II

(English Version)

Time : 3 Hours

Max. Marks : 60

Note : Read the following instructions **carefully**.

(i) Answer **ALL** the questions of Section – A. Answer **ANY SIX** questions in Section – B and **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 **2** or **3** sentences. Answer **ALL** these questions at **one** place in **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 Section – B and Section – C.

SECTION – A

Note : Answer **ALL** questions.   (10×2=20)

1. What is cryoscopic constant ?

2. What are pseudo first order reactions ? Give one example.

3. What is the role of cryolite in the metallurgy of aluminium ?

4. What happens when white phosphorus is heated with concentrated NaOH solution in an inert atmosphere of CO_2 ?

5. SO_2 can be used as an antichlor. Explain.

6. Why Zn^{2+} is diamagnetic where as Mn^{2+} is paramagnetic ?

7. What is Ziegler-Natta catalyst ?

8. What is PHBV ? How is it useful to man ?

9. What are artificial sweetening agents ? Give example.

10. What is the difference between a soap and a synthetic detergent ?

SECTION – B

Note : Answer ANY SIX questions.   (6×4=24)

11. Derive Bragg's equation.

12. Vapour pressure of water at 293 K is 17.535 mm Hg. Calculate the vapour pressure of the solution at 293 K when 25 g of glucose is dissolved in 450 g of water.

13. What is catalysis ? How is catalysis classified ? Give two examples for each type of catalysis.

14. Explain the purification of sulphide ore by froth flotation method.

15. Explain the structures of (a) XeF_6 and (b) $XeOF_4$.

16. Explain Werner's theory of co-ordination compounds with suitable examples.

17. What are hormones ? Give one example for each.

    (a) Steroid hormones

    (b) Polypeptide hormones

    (c) Amino acid derivatives.

18. (a) What are ambident nucleophiles ?

    (b) What are enantiomers ?

SECTION – C

Note : Answer ANY TWO questions.   (2×8=16)

19. (a) State and explain Kohlrausch's law of independent migration of ions.

    (b) What is molecularity of a reaction ? How is it different from the order of a reaction ? Name one bimolecular and one trimolecular gaseous reactions.

20. (a) How does ozone react with the following :

    (i) PbS   (ii) KI   (iii) Hg   (iv) Ag

    (b) Write balanced equations for the following :

        (a) NaCl is heated with concentrated H_2SO_4 in the presence of MnO_2.

        (b) Chlorine is passed into a solution of NaI in water.

21. Describe the following :

    (a) Kolbe reaction

    (b) Aldol condensation

    (c) Carbyl amine reaction

    (d) Williamson synthesis.