

**SECOND YEAR B.Sc. DEGREE EXAMINATION
MARCH/APRIL 2009**

Polymer Chemistry (Main)

Paper III – INORGANIC CHEMISTRY – II

(Common to Paper III of Industrial Chemistry)

Time : Three Hours

Maximum : 50 Marks

Section A

Answer any twelve questions.

Each question carries 1½ marks.

1. Discuss the principle involved in zone refining of metals.
2. What is the role of flux in metallurgy?
3. Give the name and formulae of two ores of titanium.
4. Explain the role of gypsum during the setting of cement.
5. What happens when orthoboric acid is heated?
6. What are freons? Mention their uses.
7. What is meant by a $3c - 2e$ bond?
8. Which is more stable : Cu^{-+} or Cu^{+} ? Substantiate your answer.
9. Which is more basic : $La(OH)_3$ or $Lu(OH)_3$? Give reasons for your answer.
10. Actinides form oxocations, but lanthanides don't why?
11. Give the name and structure of two sigma bonded organometallic compounds.
12. What is meant by thermal pollution? How does it affect the aquatic environment?
13. What are determinate errors? How can they be minimized?
14. Name a redox indicator and explain its functioning.
15. How are interstitial carbides prepared? Mention their uses.
16. What are lamellar compounds? Explain with examples.

(12 x = 18 marks)

Section B

Answer any four questions.

Each question carries 4 marks.

17. Differentiate between 'poling' and 'parting' with suitable examples.
18. Give an account of the classification of silicates, giving examples.

Turn over

19. How is borazole prepared? Compare its properties with those of benzene.
20. Write a note on the magnetic properties of lanthanides.
21. Discuss the factors that affect the stability of metal complexes.
22. How do haemoglobin and myoglobin differ in their structure and mechanism of action?

(4 x 4 = 16 marks)

Section C

Answer any two questions.

Each question carries 8 marks.

23. Give an account of the nature of bonding in transition metal complexes on the basis of valence bond theory. Discuss its limitations when compared to molecular orbital theory.

(5 + 3 = 8 marks)

24. (a) How is ferrocene prepared? Give an account of its structure and reactivity.

(b) Write a note on dinitrogen complexes.

(5 + 3 = 8 marks)

25. (a) Discuss the importance of ozone layer in the stratosphere. What is ozone depletion and how can it be controlled?

(b) Give a brief account of pollution caused by plastics.

(5 + 3 = 8 marks)

26. (a) Describe the use of EDTA in complexometric titrations.

(b) What is the principle involved in the separation of Cu^{2+} and Cd^{2+} in group II analysis.

(6 + 2 = 8 marks)

[2 x 8 = 16 marks]