



MAR IVANIOS COLLEGE (AUTONOMOUS)
THIRUVANANTHAPURAM

Reg. No. :.....

Name :.....

Fifth Semester B.Sc. Degree Examination, November 2016

First Degree Programme under CBCSS

Core Course: Chemistry – IV

AUCH541: Inorganic Chemistry – III

Time: 3 Hours

Max. Marks: 80

SECTION – A

Answer ALL questions in one word to maximum of two sentences.

1. Give an example for a boron based polymer.
2. What is inorganic graphite ?
3. Compounds of transition metals are generally coloured. Why ?
4. What is Wilkinson's catalyst ?
5. Give one example for an anticancerous drug.
6. What are carboranes ?
7. Which has greater tendency to form complexes: lanthanides or actinides ?
8. What are carbides ?
9. Give one example for a metal alkene complex.
10. Give a method for the preparation of $\text{Fe}(\text{CO})_5$.

(10 × 1 = 10 Marks)

SECTION – B

Answer any EIGHT questions, each in a short paragraph not exceeding 50 words.

11. What are nitrides ?
12. State Jahn – Teller Effect.
13. Absorption spectra of lanthanides consist of sharp lines. Give reason.
14. Define glass transition temperature.

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15. Explain the biological functions of Hemoglobin and Myoglobin.
16. What are interhalogen compounds ? Give two examples.
17. Cupric salts are coloured while cuprous salts are colourless. Give reason.
18. What are Zeolites ? Mention their uses.
19. What are the uses of noble gases ?
20. What are the limitations of the valence bond theory of Co – ordination compounds ?
21. What is an ambidentate ligand ? Give examples.
22. Tetrahedral complexes have generally high spin. Explain.

(8 × 2 = 16 Marks)

SECTION – C

Answer any SIX questions, each in a paragraph not exceeding 120 words.

23. What is lanthanide contraction ? What are its consequences ?
24. Give an account of bonding in Zeise's salt.
25. What are silicones ? How are they prepared ? Give some important uses.
26. Explain why $[\text{Co}(\text{NH}_3)_6]^{3+}$ is diamagnetic while $[\text{CoF}_6]^{3-}$ is strongly paramagnetic.
27. Why do transition metals show variable valency ?
28. How is borazole prepared ? Why is it called inorganic benzene ?
29. Describe the comparison of lanthanides and Actinides.
30. How are XeF_2 and XeF_4 prepared ? Give their structure.
31. What are the factors that affect stability of metal complexes ?

(6 × 4 = 24 Marks)

SECTION – D

Answer any TWO questions, not exceeding four pages.

32. Define organometallic compounds. Discuss its classification in details with examples of each class.
33. Discuss crystal field theory and the splitting patterns of d orbitals in octahedral and tetrahedral fields according to crystal field theory.
34. Explain the role of alkali and alkaline earth metals in biological system.
35. Explain the preparation properties, structure and bonding in diborane.

(2 × 15 = 30 Marks)

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