20U611 (Pages: 2) Name: .....

Reg.No: .....

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2023

(CBCSS - UG)

(Regular/Supplementary/Improvement)

CC19U CHE6 B09 - INORGANIC CHEMISTRY - IV

(Chemistry - Core Course)

(2019 Admission onwards)

Time : 2.00 Hours Maximum : 60 Marks

Credit : 3

Part A (Short answer questions)

Answer ***all*** questions. Each question carries 2 marks.

1. Mention two advantages and two disadvantages of colorimetry.
2. What is electron microscopy?
3. Mention the components of the electrochemical cell in cyclic voltametry.
4. Explain the structure of dimethylberyllium.
5. Se ion is colourless while Cr2+ ion is coloured. Explain.
6. Mention two differences in the characteristics of lanthanides and actinides.
7. Give the structure of Vitamin B12.
8. Name two Zn containing enzymes.
9. Explain the term effective number.
10. On the basis of CFT, explain why octahedral complexes is more stable than tetrahedral complexes
11. Briefly explain the Jahn-Teller effect taking the example of account of Cu(II) in octahedral ligand environment.
12. Briefly discuss the factors affecting stability of complexes.

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

Answer ***all*** questions. Each question carries 5 marks.

13. Name two reactions of ferrocene.
14. What are Ziegler-Natta catalysts? Explain the significance of their uses in polymerization reactions with sui.
15. How does Valence Bond Theory attempt to explain the nature of bonding in metals?

16. What are the similarities and differences between haemoglobin and myoglobin?
17. Explain on the basis of CFT for colours and magnetism in complexes.
18. If the Fe2+ coordination complex is [Fe(CN)6] 4- , state whether you expect the complex to be high spin or low spin? Explain your answer
19. Discuss the terms with examples lability and inertness of complexes.

(Ceiling: 30 Marks)

Part C (Essay questions)

Answer any ***one*** question. The question carries 10 marks.

20. What are metal carbonyls? Discuss the bonding in metal carbonyls.
21. Discuss the free electron theory of metallic bonding and how it explains the metallic properties.

(1 × 10 = 10 Marks)

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