19U611 (Pages: 2) Name: .....

Reg.No: .....

SIXTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2022

(CBCSS - UG)

CC19U CHE6 B09 - INORGANIC CHEMISTRY-IV

(Chemistry - Core Course)

(2019 Admission - Regular)

Time : 2.00 Hours Maximum : 60 Marks

Credit : 3

Part A (Short answer questions)

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

1. List the processes that occur in flame emission spectroscopy.
2. Comment on the structures of the alkyls and aryls of Group V elements.
3. What is meant by a mononuclear carbonyl? Give an example.
4. What is 18-electron rule?
5. Transition metal ions form a number of interstitial compounds. Explain.
6. Mention two differences in the characteristics of lanthanides and actinides.
7. Name a metalloporphyrin. What is the metal present in it?
8. Name the ring system present in each of the following: (i) cyanocobalamine; (ii) chlorophyll.
9. On the basis of CFT, explain why octahedral complexes is more stable than tetrahedral complexes
10. Explain the term low spin complex with suitable examples.
11. What does the term distorted octahedral complexes mean?
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. What is a cyclic voltammogram? Explain its nature.
14. What are Ziegler-Natta catalysts? Explain the significance of their uses in polymerization reactions with sui.

15. Explain why transition metals are hard and brittle while alkaline and alkaline earth metals are soft.

16. Discuss in detail metaltoxicity.

17. Discuss the relationship between the coordination numbers of metal ions and the stereochemistry of complexes taking the examples of coordination numbers 4 and 6.

18. What are the conditions of Jahn Teller distortion in an octahedral complex?

19. Discuss the MO diagram of [CoF6]3- and explain its magnetic character and colour.

(Ceiling: 30 Marks)

Part C (Essay questions)

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

20. Discuss the instrumentation and applications of AFM.

21. (a) What is meant by lanthanide contraction?
    (b) What are its consequences?

(1 × 10 = 10 Marks)

****