SECOND SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2024

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19P CHE2 C06 - COORDINATION CHEMISTRY

(Chemistry)

(2019 Admission onwards)

Time : 3 Hours   Maximum : 30 Weightage

Section A

Answer any *eight* questions. Each question carries 1 weightage.

1. Write a note on the stereochemistry of coordination number 5.

2. Explain the term ligand denticity with suitable examples.

3. Explain 18 electron rule. What are the two methods used to calculate it?

4. Briefly discuss the the merits and demerits of MOT.

5. Calculate the spin only magnetic moment of potassium ferrocyanide and potassium ferricyanide.

6. What is temperature independent paramagnetism? Explain.

7. Explain ring whizzer. How can it be characterized?

8. Distinguish Sn(II) and Sn(IV) using Mossbauer spectroscopy.

9. What is anation reaction? Give example.

10. What are prompt and delayed reactions in photochemistry?

11. State and explain spin selection rule.

12. What is meant by lability in co-ordination complexes?

(8 × 1 = 8 Weightage)

Section B

Answer any *four* questions. Each question carries 3 weightage.

13. How will you determine the stability constant by spectrophotometry?

14. Write a note on spectrochemical series.

15. Between Tetrahedral and Octahedral Co(II) Complexes, in which do you expect to have orbital contribution to magnetic moment? Explain.

16. What are Racah parameter? Explain its significance.

17. Give a case study of new bond formation in the IR spectra up on coordination of ligands to metal ions.

18. Illustrate anisotropy of g value in ESR spectroscopy.

19. Discuss the reducing and oxidizing character of $[Ru(Bipy)_3]^{2+}$.

(4 × 3 = 12 Weightage)

Section C

Answer any *two* questions. Each question carries 5 weightage.

20. Derive the relationship between stepwise formation constants and overall formation constants.

21. Write a note on Crystal field splitting in various fields.

22. (a)What is meant by trans effect? Explain the different theories put forward to explain trans effect.

23. (a) Discuss, with examples, the differences between inner and outer-sphere mechanisms

    (b) Illustrate the redox reactions in the photoexcitation of the compound, $[RuII(bpy)_3]^{2+}$

(2 × 5 = 10 Weightage)

****