

20P212

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Name.....

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2021

(CUCSS - PG)

(Regular/Supplementary/Improvement)

CC19P CHE2 C06 - COORDINATION CHEMISTRY

(Chemistry)

(2019 Admission onwards)

Time: Three Hours

Maximum: 30 Weightage

PART- A

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

1. What is template effect?
2. How can Sn(II) and Sn(IV) be distinguished by Mössbauer spectroscopy?
3. Explain photoaquation reaction with example.
4. How do Orgel diagrams differ from Tanabe-Sugano diagram?
5. How chemical shift is measured in NMR spectroscopy?
6. Name any two calibrants used in Gouy balance.
7. Explain the application of IR spectroscopy in identifying monodentate and bidentate ligands.
8. Explain cis effect with a suitable example.
9. How do d-orbitals split in a square planar field?
10. What is Marcus theory of electron transfer?

(8 × 1 = 8 Weightage)

PART- B

Answer any *six* questions. Each question carries 2 weightage.

11. Explain how charge transfer spectra are produced? How do they differ from d-d transitions?
12. What is trans effect? Discuss the theories of trans effect.
13. What is meant by isomer shift in Mössbauer spectroscopy? How is it related to Curie temperature of Iron?
14. Give a brief account of the photochemical reactions of Ruthenium complexes.
15. Explain Jahn-Teller effect. Discuss its spectral consequences.
16. Write a note on macrocyclic ligands with examples.
17. Discuss any two methods for determining stability of complexes.
18. Explain the drawbacks of crystal field theory.

(6 × 2 = 12 Weightage)

PART- C

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

19. Discuss the determination of magnetic susceptibility of metal complexes by Gouy method.
20. Explain A, D and I mechanism of substitution reactions in octahedral transition metal complexes bringing out the factors affecting the reactions.
21. Discuss the principle involved in ESR spectroscopy. How is it applicable in the study of structure and bonding in Copper (II) complexes?
22. Compare the outer sphere and inner sphere mechanisms for electron transfer reactions in transition metal complexes, with suitable examples.

(2 × 5 = 10 Weightage)
