QP CODE: 23004968

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Reg No : .....

Name : .....

MSc DEGREE (CSS) EXAMINATION , JULY 2023

Second Semester

CORE - CH500201 - COORDINATION CHEMISTRY

M Sc ANALYTICAL CHEMISTRY,M Sc APPLIED CHEMISTRY ,M Sc CHEMISTRY,M Sc PHARMACEUTICAL CHEMISTRY,M Sc POLYMER CHEMISTRY

2019 Admission Onwards

5D79E781

Time: 3 Hours Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. Why trialkyl phosphine ligand is stronger ligand than ammonia?
2. How does chelate effect influence the stability of complexes?
3. Explain the significance of Racah parameters.
4. The magnetic moment measurement cannot distinguish between square planar and tetrahedral complexes of Cu(II) but can distinguish between square planar and tetrahedral complexes of Ni(II). Justify.
5. Explain Curie point and Neel point.
6. Explain the base catalysed hydrolysis reaction in octahedral systems.
7. What is Taube Mechanism?
8. Write a short note on σ-bonded complexes of lanthanides.
9. Draw and explain the geometrical isomers of $[Co(NH_3)_4 Cl_2]^+$.
10. Explain the structure of Prussian blue. Give any 2 uses of it.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. How do the d orbitals split when they are placed in octahedral crystal fields?

12. Describe Jahn-Teller effect of d^9 system.

13. State and explain the selection rules in electronic spectroscopy.

14. Explain charge transfer spectra.

15. Explain the factors which affect the rate of reactions in square planar systems.

16. Describe substitution reaction in five coordinate complex with suitable examples.

17. Explain electronic and magnetic properties of lanthanoid complexes with suitable examples.

18. Discuss about the sandwich complexes of actinoids.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Explain the M.O energy level diagrams for octahedral and tetrahedral complexes without and with π-bonding.

20. Describe inter and intra antiferromagnetism of metal complex with suitable examples.

21. Explain the kinetics and mechanism of substitution reactions in octahedral complexes.

22. (a) Discuss in detail the resolution of optically active complexes. (b) Explain asymmetric synthesis catalyzed by coordination compounds.

(2×5=10 weightage)