QP CODE: 20000780

20000780

Reg No : .....

Name : .....

MSc DEGREE (CSS) EXAMINATION , NOVEMBER 2020

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

6E1F90E6

Time: 3 Hours Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. Write a note on the sigma and pi bonding character of the ligand NO.
2. Define Jahn Teller (JT) effect.
3. What are correlation diagrams? Explain with an example.
4. The complex $[Mn(H_2O)_6]^{2+}$ has very light pink colour. Explain the reason.
5. Explain the origin of paramagnetism in the case of high spin complexes.
6. Explain associative mechanisms with an example.
7. How dechelation can be done with the assistance of ligands?
8. Find the the ground state term symbols of La^{3+} and Lu^{3+}.
9. Explain optical isomerism exhibited by coordination complexes with a suitable example.
10. Write a note on the resolution of optically active complexes.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. Discuss various thermodynamic aspects which determine the formation of complexes.
12. Discuss the effect of tetrahedral crystal field on d orbitals.
13. Discuss luminescence spectra with special reference to coordination compounds.

14. What are the causes of anomalous magnetic moments of coordination complexes?

15. Discuss Substitution reactions in tetrahedral and five-coordinate complexes.

16. Explain inner sphere reactions with examples.

17. Write a descriptive account of the organometallic compounds formed by the lanthanoids.

18. Compare the influence of lanthanide contraction and actinide contraction in the complex formation of lanthanides and actinides.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Discuss Molecular orbital theory with the help of M.O energy level diagrams for octahedral complexes without and with π-bonding.

20. Discuss temperature dependant and temperature independent paramagnetism.

21. Explain trans effect with theories and give any two applications of trans effect.

22. (a) Discuss linkage isomerism exhibited by coordination compounds (b) Explain Electronic and steric factors affecting linkage isomerism (c) Explain the concept of symbiosis with suitable examples.

(2×5=10 weightage)