



Date: 27-10-2018
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

PART- A

Answer **ALL** questions

10X2 = 20

1. What is EAN rule? Give an example.
2. Write the IUPAC name of (i). $[\text{Cr}(\text{H}_2\text{O})_5\text{Cl}]^{2+}$ (ii). $\text{K}_3[\text{Fe}(\text{CN})_6]$
3. State Jahn- Teller theorem.
4. Define spectrochemical series.
5. What are Vaska's complexes?
6. What are Schff bases?
7. What are carbenes? Give an example.
8. What is Monsanto acetic acid process?
9. What do you mean by chelate therapy?
10. Mention the biological role of cytochromes.

PART- B

Answer any **EIGHT** questions

8x5 = 40 marks

11. Write notes on Werner's coordination theory.
12. Discuss the thermodynamics of formation of coordination compounds.
13. Explain the splitting of d-orbitals of metal ion in octahedral geometry using crystal field theory.
14. Mention the evidences of crystal field splitting.
15. Calculate CFSE of high and low spin, d^5 octahedral complexes.
16. Explain outer sphere electron transfer reaction.
17. Predict the geometry of the diamagnetic, $\text{K}_4[\text{Fe}(\text{CN})_6]$ paramagnetic $\text{K}_4[\text{FeCl}_6]$ complexes using valence bond theory.
18. How is phthalocyanine synthesized by metal template synthesis?
19. Write a brief note on Jahn-Teller effect.
20. Discuss the role of Wilkinson catalyst in hydrogenation reaction of alkenes.
21. Give a brief account on invivo and invitro nitrogen fixation.
22. Explain the role of metal in enzymic activity of carboxy peptidase.

PART- C

Answer any **FOUR** questions

4x10 = 40 marks

23. Give a brief account on geometrical and optical isomerism of coordination complexes.
24. Construct MO energy level diagram for octahedral metal complexes with σ bonding ligands.
25. Enumerate the substitution reaction in square planar complexes.
26. a) What are ferrocenes? How will you synthesize it? **(4)**
- b) Describe the structure and bonding in ferrocene. **(6)**
27. Discuss the biological role of hemoglobin.
28. (i). Discuss the bonding in metal carbonyls using MO theory. **6 marks**
- (ii). Write notes on reductive elimination reaction. **4 marks**
