

**B.Sc. DEGREE EXAMINATION, APRIL 2020**  
**III Year VI Semester**  
**Inorganic Chemistry - II**

**Time : 3 Hours**

**Max.marks :60**

**Section A** ( $10 \times 1 = 10$ ) Marks

Answer any **TEN** questions

1. Explain ionisation isomerism with an example.
2. Calculate the EAN of Co in  $[\text{Co}(\text{en})_3]^{3+}$ .
3. Explain the magnetic property of  $[\text{Co}(\text{NH}_3)_6]^{3+}$  complex.
4. Explain 18 electron rule with an example.
5. Write the preparation and structure of  $\text{Ni}(\text{CO})_4$ .
6. What are high spin complexes? Give an example.
7. What is spectrochemical series?
8. Why  $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$  violet in colour?
9. What is trans effect?
10. What is meant by  $\text{S}_{\text{N}}1$  reaction? Give an example.
11. Define the terms eluent and eluate in chromatography.
12. What is the principle of paper chromatography?

**Section B** ( $5 \times 4 = 20$ ) Marks

Answer any **FIVE** questions

13. What are optical isomers? Explain optical isomerism in four coordination complexes.
14. Explain the factors affecting the stability of the complexes.
15. Write the preparation and structure of  $\text{Mn}_2(\text{CO})_{10}$ .
16. Explain the mechanism of  $\text{S}_{\text{N}}2$  in octahedral complexes.
17. Compare VBT and CFT.
18. Write a note on electrophoresis.
19. Explain how ion – exchange chromatography is used to separate  $\text{Zn}^{2+}$ ,  $\text{Mg}^{2+}$  - ions.

**Section C** ( $3 \times 10 = 30$ ) MarksAnswer any **THREE** questions

20. (a) Based on VBT explain the geometry and magnetic properties of  $[NiCl_4]^{2-}$  and  $[Fe(CN)_6]^{3-}$   
(b) Explain the Geometrical isomerism of six coordinated complexes.
21. Explain the synthesis, structure and bonding of the following metal carbonyls  
(i)  $Cr(CO)_6$  (ii)  $Fe_2(CO)_9$ .
22. (a) What are postulates of CFT? Discuss the splitting of d orbitals in octahedral complex.  
(b) calculate CFSE for the  $d^4$  low spin octahedral complex.
23. What is trans effect? Discuss the electrostatic polarisation theory and  $\pi$ - bonding theory of trans effect.
24. Describe briefly the principle and instrumentation and applications of HPLC.

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