(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2020-21 ONLY)

SUBJECT CODE 20 UCY 507

REG.NO.

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : DECEMBER – 2022

B.Sc. – CHEMISTRY **MAXIMUM MARKS: 70**

V SEMESTER **TIME : 3 HOURS**

PART - III

CO-ORDINATION & BIOINORGANIC CHEMISTRY

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS. (K1)

1. Which one of the following will exhibit optical isomerism?

   a) $[Ma_5b]$ b) $[M(AA)_3]$ c) $[Ma_6]$ d) [Mabcd]

2. State the number of primary valency in $[CoNO_2(NH_3)_2Cl]Br$?

   a) 3 b) 2 c) 1 d) 4

3. For a high spin d^4 octahedral complex the crystal field splitting energy will be…….

   a) $-1.6\ \Delta_o$ b) $-0.8\ \Delta_o$ c) $-0.6\ \Delta_o$ d) $-1.2\ \Delta_o$

4. Which of the following compounds is expected to be colored?

   a) Ag_2SO_4 b) CuF_2 c) MgF_2 d) CuCl

5. The ligand system present in vitamin B_{12} is ……

   a) porphyrin b) phthalocyanine c) corrin d) crown ether

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES. (K2)

6. Define ambidentate ligand.

7. Write any one limitation of VBT.

8. What is CFSE?

9. What are labile complexes?

10. Define metal carbonyls.

SECTION – B (5 X 4 = 20 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Describe the classification of structural isomerism.

(OR)

b) Show the IUPAC name of the following complexes.

(i) $NH_4[Pt\ Cl_2\ (H_2O)(SCN)\ en]$ (ii) $[CoCl(NH_3)_2(H_2O)_2OH]$

(iii) $Na[Pt(NH_3)\ Cl_3]$ (iv) $[Ni(CN)_4]^{2-}$

(v) $[Al(OH)(H_2O)_5]^{2+}$

12. a) Narrate Werner's theory.

(OR)

b) Calculate the EAN for $[Ni(CO)_4]$ and $[Pt(NH_3)_4]^{2+}$

13. a) List the limitations of crystal field theory.

(OR)

b) Describe the applications of Ca-EDTA in quantitative analysis.

14. a) List the factors affecting stability of the complexes.

(OR)

b) Give an account of S_N1 mechanism in complexes.

15. a) Draw the structure and explain biological role of myoglobin.

(OR)

b) Summarize biological functions and toxicity of iodine.

SECTION – C (4 X 10 = 40 MARKS)

ANSWER ANY FOUR OUT OF SIX QUESTIONS
(16th QUESTION IS COMPULSORY AND ANSWER ANY THREE QUESTIONS. (K4 / K5)

16. Discuss CFT in octahedral complexes.

17. Explain the classification and uses of chelate ligands.

18. Illustrate hybridization, geometry and magnetic properties of $[FeF_6]^{3-}$ and $K_4[Fe(CN)_6]$ by VBT.

19. Discuss John Teller distortion in octahedral complexes.

20. Determine the stability constant by Bjerum's method.

21. Discuss the synthesis, properties, structure and EAN of $Fe_2(CO)_9$.

ETHICAL PAPER

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