

Programme	Exam Code	Course Code
Bachelor of Science (Medical)	121305	BSMM-5084 (I)
Bachelor of Science (Non-Medical)	121305	BSNM-5084 (I)

Semester- V

Course Title: Chemistry (Inorganic Chemistry)
(40)

Time Allowed: 3 Hours

Max Marks: 40

Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section. Each question carries 8 marks.

Section-A

1. (a) What do you mean by crystal field "splitting energy"? Compare the crystal field splitting energy of octahedral and tetrahedral complexes along with suitable reason. 5
(b) Outline the limitations of valence bond theory. 3
2. (a) Describe the postulates of crystal field theory. Explain and show diagrammatically the crystal field splitting in octahedral complexes. 5

(b) How does crystal field splitting depend on the nature of ligand? 3

Section B

3. (a) Explain in detail the mechanism of substitution reactions of square planar complexes. Also, discuss the role of solvent in these reactions. 5
(b) Calculate the spin only magnetic moment of Ti^{2+} and Co^{2+} ions. 3
4. (a) What do you mean by orbital contribution to magnetic moment? Under what conditions do the electrons generate the orbital magnetic moment. 5
(b) Write a short note on L-S coupling. 3

Section-C

5. (a) Discuss different types of electronic transitions along with suitable examples. 5
(b) Draw the Orgel diagram for d^2 system in octahedral and tetrahedral fields. 3
6. (a) What are term symbols? Determine the term symbols for d^2 system. 5
(b) Write the spectroscopic ground state for d^5 and d^7 electronic configuration. 3

Section-D

7. (a) Discuss the preparation, properties and applications of alkyls and aryls of aluminium. 5
(b) Define EAN rule. Show whether $\text{Cr}(\text{CO})_6$ and ferrocene follow the EAN rule or not. 3
8. (a) Describe the bonding in metal ethylene complexes with special reference to Zeise salt. Also, discuss the role of back bonding in such complexes. 5
(b) Classify the organometallic compounds on the basis of hapticity of ligands. Give suitable examples. 3