

Roll No.

51201

B. Sc. (Pass Course) 5th Semester
(Regular/Re-Appear/Improvement)
Examination – December 2022

CHEMISTRY - I

(Inorganic Chemistry)

Paper : CH-501

Time : Three hours] [Maximum Marks : 29

Before answering the questions candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory.

1. (a) Define Curie Point. 1
(b) Calculate spin only magnetic moment in Cr^{3+} . 1

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- (c) What are labile complexes? 1
(d) Define molar magnetic susceptibility. 1
(e) Name two powerful trans directing ligands. 1

UNIT - I

2. (a) On basis of CFT, calculate magnetic moment of $[\text{Fe}(\text{CN}_6)]^{4-}$ & $[\text{Cr}(\text{NH}_3)_6]^{3+}$. 3
(b) Give limitations of Valence Bond Theory. 3

3. (a) Discuss the factors on which CFSE depends. 3
(b) Discuss splitting of d-orbitals in tetrahedral field. 3

UNIT - II

4. (a) What is $\log \beta$? How is it related to stability of metal complexes? 3
(b) Describe substitution reaction in square planar complexes. 3

(2)

- 5. (a) How nature of ligand and chelates affect the stability of complexes? 3
- (b) Explain trans effect with the help of an example. 3

UNIT - III

- 6. (a) Derive a relation between magnetic moment and magnetic susceptibility. 3
- (b) What is magnetic susceptibility and how does it vary with temperature? <https://www.iguonline.com> 3
- 7. (a) What do you mean by spin & orbital contribution to the magnetic moment? 3
- (b) Differentiate between Diamagnetism and Paramagnetism. 2

UNIT - IV

- 8. (a) What do you mean by vibronic coupling? Explain with example. 3
- (b) Calculate the number of microstates for d^1, d^3 and d^6 . 3

(3) P. T. O.

- 9. (a) Determine the ground terms for low spin and high spin for d^6 octahedral configurations. 3
- (b) Discuss various types of electronic transitions. 3

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