


Name:			
Enrolment No:			
UPES End Semester Examination, December 2023			
Course: M. Sc Chemistry Program: Coordination Chemistry & Group Theory Course Code: CHEM 7046		Semester: Time: 03 hrs. Max. Marks: 100	
SECTION A (5Qx4M=20Marks)			
S. No.		Marks	CO
Q 1	Draw the chemical structure of the following complexes: a. triamminechlorocyanonitrocobalt(III) b. lithium tetrahydridoaluminate(III)		CO3
Q2	Provide energy level diagrams and discuss the occupancy of the orbitals in the following complexes: a. d^6 , tetrahedral b. d^9 , octahedral with tetragonal distortion		CO1
Q3	Draw a graph between magnetic susceptibility and temperature for diamagnetic, paramagnetic, ferromagnetic, and antiferromagnetic substances.		CO2
Q4	What are the common ligands that stabilize square planar geometry, and how do they influence the substitution reactions?		CO1
Q5	Explain the preparation, structure and uses of NaBH_4 .		CO4
SECTION B (4Qx10M= 40 Marks)			
Q 6	Define symmetry elements and symmetry operations in the context of molecular symmetry.		CO3
Q7	How does the electronic configuration of transition metal ions contribute to the occurrence of the John-Teller distortions?		CO2
Q8	Define the trans effect in transition metal complexes. How does it influence the substitution reactions in these complexes?		CO1
Q9	Ni complexes are observed to undergo substitution much faster than Pt complexes. Why?		CO3
SECTION-C (2Qx20M=40 Marks)			

