

EXPRESS WAY  
JABI - ABUJA.  
FACULTY OF SCIENCES  
DEPARTMENT OF CHEMISTRY  
2024 1 EXAMINATION-

**COURSE CODE: CHM 423**

**COURSE TITLE: COORDINATION CHEMISTRY**

**COURSE UNIT: 2**

**TIME: 2 HOURS**

**INSTRUCTION: Answer question one and any other two questions.**

*Question 1 scores 30 marks with the other two scoring 20marks each*

**QUESTION 1**

1(a) Discuss infrared spectroscopy as an example of vibrational spectroscopy that are useful in the investigation of complexes ( 7 marks)

( b ) What is thermodynamic stability of a complex ? ( 3 marks)

( c ) Explain magnetism as a characteristic property of electrically charged particles ( 3 marks)

( d ) Highlight two different metal salts, with suitable anions that can act as ligands, as well as having the ability to combine to form a complex in such a manner that the anion will behave as a ligand ( 3 marks)

1(e) What is stability of a complex ? ( 2 marks)

( f ) What Causes the Spin magnetic moment ? ( 3 marks)

( g ) If a complex is formed from reactions involving N -steps, write an expression for the overall formation equilibrium constant (6 marks)

( h ) What is the resultant effects of the combination of spin and orbital magnetic moments ( 3 marks) **30 MARKS**

**QUESTION 2**

( a ) State the reason for the paramagnetic nature of many transition metals ( 2 marks)