Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **17CH3005** | **Duration :** | **3hrs** |
| **Sub. Name :** | **COORDINATION CHEMISTRY** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Explain Werner’s theory of Coordination complexes with examples. State its advantages and disadvantages. | CO1 | 10 |
| b. | Discuss the various factors affecting the 10Dq value. | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | Explain valence bond theory of metal complexes with examples. State its advantages and disadvantages. | CO1 | 10 |
| b. | With clear diagrams, discuss the consequences of crystal field theory. | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | Draw the Molecular Orbital diagram of coordination complex having sigma bond only and explain. | CO1 | 10 |
| b. | Draw the Orgel diagrams for the following configuratiuons in octahedral and tetrahedral environments and explain.   1. d1  (ii) d2 | CO2 | 10 |
| **(OR)** | | | | |
| 4. | a. | Explain the Molecular Orbital theory of metal complexes having pi bond. | CO1 | 10 |
| b. | What are the various types of transitions possible in transition metal complexes? State the selection rules for transitions in coordination complexes. | CO2 | 10 |
|  |  |  |  |  |
| 5. | a. | Explain Cotton effect with examples. | CO1 | 10 |
| b. | Discuss the factors affecting the stability constant in metal complexes. | CO4 | 10 |
| **(OR)** | | | | |
| 6. | a. | Derive the relationship between stepwise stability constant and overall stability constant. | CO4 | 10 |
| b. | With a clean diagram, discuss a method for the determaination of magnetic susceptibility in metal complexes. | CO3 | 10 |
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| 7. | a. | Explain chelate effect and macrocyclic effect with examples. | CO4 | 10 |
| b. | Write trans effect series. What are the applications of Trans effect? | CO5 | 10 |
| **(OR)** | | | | |
| 8. | a. | Define: Labile and inert complexes. Explain with examples. | CO5 | 10 |
| b. | Discuss the SN1(CB) mechanism with examples. | CO5 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | What is meant by lanthanide contraction? What are its consequences? | CO6 | 8 |
| b. | Explain outer sphere electron transfer reactions and inner sphere electron transfer reactions with examples. | CO5 | 12 |