



PU-003-1104016

Seat No. _____

M. Sc. (Sem. IV) (CBCS) Examination

August - 2020

C(I) - 404 : Coordination Chemistry

(Inorganic Chemistry)

Faculty Code : 003

Subject Code : 1104016

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) All questions are compulsory.
(2) All questions carry equal marks.

- 1 Answer the following : (Any Seven) 14**
- (a) Explain Formation curves.
 - (b) Discuss the application of mole ratio method and its limitations.
 - (c) Explain isomerism reactions of aquo and hydroxo complexes of cobalt.
 - (d) Discuss complementary two electron transfer reaction with example.
 - (e) Define formation function and fraction of complex formation.
 - (f) Discuss theories of trans effect
 - (g) Give principle of jobs method
 - (h) What is Spectrochemical series?
 - (i) Give the reaction pathway for conversion of
trans- $[Co(en)_2Cl_2]$ to cis- $[Co(en)_2Cl_2]$.
 - (j) Give Associative mechanism for nucleophilic substitution reaction in octahedral metal complexes.
- 2 Answer the following : (Any Two) 14**
- (a) Explain Correction method.
 - (b) Explain the replacement of coordination water molecule by SN^2 mechanism
 - (c) Explain Job's method with advantages and limitations.

- 3** Answer the following : (Any Two) **14**
- (a) Explain the terms :
- (i) Ligand exponential
 - (ii) Bjerrums formation function.
- How these are related with stepwise stability constant ?
- (b) Explain Molecular Rearrangement process proceeds by SN^1 mechanism.
- (c) Discuss the theoretical approach to the substitution reaction and factors affecting the rate of substitution reaction

- 4** Answer the following : **14**
- (a) Explain slop ration method.
- (b) Write about acid catalysed reaction in octahedral complex with suitable example.

- 5** Answer the following : **14**
- Discuss the Laboratory method for pH titration technique to find out the Stepwise stability constant.

OR

- 5** Answer the following : **14**
- (a) Explain following order of trans effect of the ligands
- (i) $F^- < Cl^- < Br^- < I^-$
 - (ii) Pyridine $< Co$
- (b) Show the relation between stepwise and overall stability Constant.