



MBV-003-1104016 Seat No. _____

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

April / May - 2018

C (I) 404 : Inorganic Chemistry

(Coordination 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

- Give Associative mechanism for nucleophilic substitution reaction in octahedral metal complexes.
- Give the reaction pathway for conversion of trans- $[Co(en)_2Cl_2]$ to cis- $[Co(en)_2Cl_2]$.
- Explain isomerism reactions of aquo and hydroxo complexes of cobalt.
- Discuss complementary two electron transfer reaction with example.
- Define formation function and fraction of complex formation.
- Discuss theories of trans effect.
- Give principle of jobs method.
- What is Spectrochemical series?
- Discuss the application of mole ratio method and its limitations.
- Explain formation curves.

- 2** Answer the following : (Any **Two**) **14**
- (a) Discuss the theoretical approach to the substitution reaction and factors affecting the rate of substitution reaction.
 - (b) Explain the replacement of coordination water molecule by SN^2 mechanism.
 - (c) Explain following order of trans effect of the ligands :
 - (i) $F^- < Cl^- < Br^- < I^-$
 - (ii) Pyridine $< Co$
- 3** Answer the following : (Any **Two**) **14**
- (a) Explain the terms (i) ligand exponential (ii) Bjerrums formation function. How are these related with stepwise stability constant ?
 - (b) Explain Molecular Rearrangement process proceeds by SN^1 mechanism.
 - (c) Explain Correction method.
- 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 Job's method with advantages and limitations.
 - (b) Show the relation between stepwise & overall stability Constant.