



**BBD-003-1104016**

Seat No. \_\_\_\_\_

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

**July - 2021**

**C(I)-404 : Inorganic Chemistry**

*(Coordinationa Chemistry)*

**Faculty Code : 003**

**Subject Code : 1104016**

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

[Total Marks : 70

**Instructions :** (1) Answer any five questions from all  
(2) All Questions carry equal Marks

- 1** Answer the following. **14**
- (a) What is complementary two electron transfer reaction.
  - (b) Define formation function and fraction of complex formation.
  - (c) What is trans effect theory ?
  - (d) Give the principle of jobs method
  - (e) Write a short note on Spectrochemical series?
  - (f) Give the applications of mole ratio method
  - (g) What is Formation curves ?
- 2** Answer the following. **14**
- (a) Define stability of complex
  - (b) Give the principle of Mole ratio method
  - (c) Name different methods to determine stability constant
  - (d) what do you mean by stepwise stability constant?
  - (e) Write a note on Optical isomerism
  - (f) Give the difference between labile and inert complexes
  - (g) Define the term  $\bar{n}$  and  $\bar{nH}$
- 3** Answer the following. **14**
- (a) Discuss ligand substitution reaction with suitable example
  - (b) Explain the outer sphere electron transfer reaction in coordination compound.

- 4 Answer the following. 14  
(a) Explain vosburgh and Copper correction to the Job's method.  
(b) Define step wise and overall stability constant and obtain the reaction between them.
- 5 Answer the following. 14  
(a) Explain Molecular Rearrangement process by  $SN^1$  mechanism  
(b) Explain half integral method to obtain the stepwise stability constant for  $ML_2$  system.
- 6 Answer the following. 14  
(a) Explain Correction methods.  
(b) Explain Bjerrum's formation functions.
- 7 Answer the following. 14  
(a) Explain the replacement mechanism of coordinate water in octahedral complex.  
(b) Explain isomerism reactions of aquo and hydroxo complexes of cobalt.
- 8 Answer the following. 14  
(a) Explain slop ration method.  
(b) Discuss job's method of continuous variation when more than one complex is present in solution.
- 9 Answer the following. 14  
(a) Discuss acid catalyzed reaction in octahedral complex with suitable example.  
(b) Discuss the base hydrolysis of octahedral complexes of  $Co(II)$  in solution, highlighting the importance of various factors which control & affect the reaction rate
- 10 Answer the following 14  
(a) Discuss the Laboratory method for pH titration technique to find out the Stepwise stability constant.  
(b) Give Associative mechanism for nucleophilic substitution reaction in octahedral metal complexes.
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