PRABHAT KUMAR COLLEGE, CONTAI

M.A. 4TH Semester Examinations 2021
(Under CBCS pattern)

Subject : Chemistry

PAPER/COURSE – CHEM (INORG): 403
ADVANCED INORGANIC CHEMISTRY-II

FULL MARKS : 50

TIME : 02 Hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the right-hand margin indicate full marks.

Attempt any Four (04) of the following: ***4 x 10***

1. Explain the dissociative and interchange substitution mechanism in octahedral complex. (5+5)

2. Explain the mechanism and characteristics of the outer sphere electron transfer mechanism. (5+5)

3. What do you mean by the complementary and noncomplementary electron transfer?What are the requirements of the inner sphere and outer sphere electron transfer mechanism?(5+5)

4. Write a short note Berry pseudo rotation of an octahedral complex. Explain the Intimate Mechanism for Substitution at Square Planar Complexes (4 +6)

5. Write the basic principle of the cyclic Voltametry and Polarography. (5+5)

6. Write the basic principle of Ilkovic-Heyrovsky equationand derive from Ilkovic equation. Explain the Significance ofIlkovic equation.
(7+3)

7. What is inert and labile complexes and explain the different types of mechanisms ('D', 'A'and 'I'). (4+6)

8. Write the basic principle of Differential Thermal Analysis and Thermo Gravimetric Analysis. Explain the use of these two methods in coordination chemistry. (5+5)

(Internal Assessment - 10)

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Subject : Chemistry

PAPER/COURSE – CHEM (ORG): 403
Advanced Spectroscopy-IV
FULL MARKS : 50

TIME : 02 Hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the right-hand margin indicate full marks.

Attempt any Four (04) of the following: ***4 x 10***

1. Describe various conditions of Curtin- Hammett principle. 10

2. What is Circular Birefringence? Describe the application of ORD and CD spectroscopy. 5+5

3. Why is *trans*-Decalin more stable than *cis*-Decalin? Draw all possible isomers of 1-decalone. 5+5

4. Draw all possible diastereomers of perhydroanthracene and comment on its chirality and number of gauche butane interactions. 5+5

5. Describe different types of ORD curves. 10

6. Describe Felkin-Anh model. How this model different from Cram's model. 7+3

7. What are terpene? What is isoprene rule? Mention some limitation of this rule. What are triterpene? What is Bürgi-Dunitz trajectory? 2+2+2+2+2

8. Draw the 3d structures for the following conformers and show in them different steric interactions. 10

(i) 9.10-dimethyl - cis-Decalin

(ii) *cis-cisoid-cis*-Perhydrodiphenic acid

(iii) tras-cisoid-trans perhydroanthracene

(Internal Assessment - 10)