UTTARAKHAND OPEN UNIVERSITY, HALDWANI (NAINITAL)

M.Sc. Second Year Chemistry

Last Date of Submission: **15 May, 2015**

Course Title: Reaction Mechanism, Pericyclic Reaction, Photochemistry and Stereochemistry
Course Code: CHE551
Year: 2014-15   **Maximum Marks: 40 Marks**

Section 'A'

Section 'A' contains 08 short answer type questions of 5 marks each. Learners are required to answers 4 questions only. Answers of short answer-type questions must be restricted to 250 words approximately.

1. Explain Norrish type-I and Norrish type II reactions with suitable examples.

2. Explain E2 mechanism with a suitable example.

3. How are the free radicals generated from peroxide, nitrite and a carboxylate anion? Formulate the mechanismof bromination of cyclohexene by NBS.

4. Write a short note on:
   a. Carbenoid
   b. Triplet carbine
   c. Hofmann rule

5. Discuss the mechanism of the followings:
   a. Baeyer-Villiger rearrangement
   b. Pinacol-Pinacolone rearrangement

6. Define cycloaddition reaction, What are [m+n] cycloaddition? Explain with suitable examples.

7. Draw the π MO of allylic carbocation. What are the HOMO and LUMO in its ground state and first excited state?

8. Explain the following with suitable examples:
   a. Kinetic isotope reaction
   b. Deconjugation
   c. Phosphorescence

Section 'B'

Section 'B' contains 04 long answer-type questions of 10 marks each. Learners are required to answers 02 questions only.

1. a. Explain the stereochemistry of [3,3] shift by PMO method.

   b. Discuss the boat confermations of cyclohexane. Why the boat confermation of cyclohexane is less stable then the chair confermation.

2. Write a short note on:

   i. Di-π Methane rearrangement
   ii. Paterno-Buchi reaction
   iii. Fries Rearrangement Reaction
   iv. Lossen Rearrangement

3. Write down the mechanism of the following name reactions.
   a. Crutius Rearangement
   b. Lossen Rearrangement
   c. Hofmann Rearrangement

4. Discuss the stability of carbanions. Formulate the mechanism of an addition reaction of a carbanian.