



UTTARAKHAND OPEN UNIVERSITY, HALDWANI (NAINITAL)  
उत्तराखण्ड मुक्त विश्वविद्यालय, हल्द्वानी (नैनीताल)

**M.Sc. Second Year Chemistry**

*Last Date of Submission:*

15 May, 2014

**Course Title: Reaction mechanisms, Pericyclic Reactions, Photochemistry and stereochemistry**

**Course Code: CHE551**

**Year: 2013-14**

**Maximum Marks: 40 Marks**

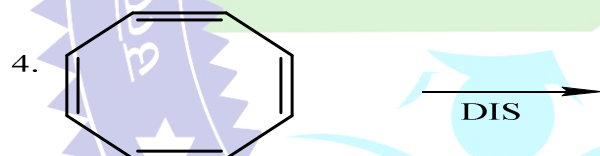
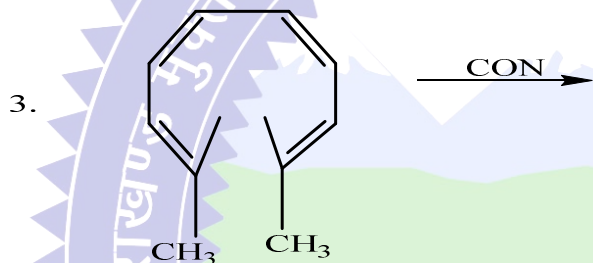
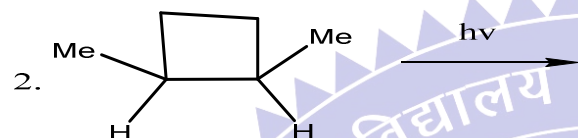
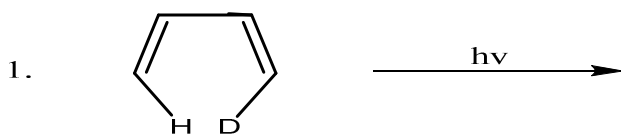
**Section 'A'**

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

Briefly discuss the following:

1. What is Carbene reaction intermediate? Give any two methods for their preparation? Write any two chemical reactions.
2. Discuss the mechanism of the Fries rearrangement, with a suitable example. How is Intermolecular nature of Fries rearrangement established.
3. Write a short note on the following:
  - (a) Hofmann rule
  - (b)  $\beta$ -elimination reaction
  - (c) Cope rearrangement reaction
4. Discuss the mechanism of the following reactions:
  - i. Baeyer –Villiger oxidation
  - ii. Wolff rearrangement
5. What is stereospecific reaction? Discuss the E2 reaction with suitable reaction.
6. What are con and dis electrocyclic reaction? Explain two reactions.
7. Discuss the Photochemical reactions of diazo compounds.

8. Complete the following reactions:



**Section 'B'**

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

1. Write a short note on:

- Barton reaction.
- Fluorescence
- Phosphorescence
- Oxidation of alcohols
- Kinetic isotope effect

2. (a) Explain Norrish type-I and type-II reactions with suitable examples.

(b) Discuss briefly the conformations of n-butane.

3. What are cycloaddition reactions? What are  $[m+n]$  cycloadditions? Explain with suitable examples.
4. (a) What are the selection rules for Electrocyclic reaction.  
(b) State Woodward-Hoffman generalized rule for Pericyclic reaction and apply it to  $[4\pi+2\pi]$  cycloaddition.

