



UTTARAKHAND OPEN UNIVERSITY, HALDWANI (NAINITAL)

**M.Sc. Second Year Chemistry***Last Date of Submission:*

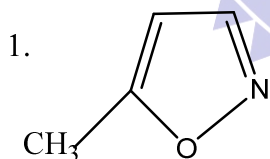
15 May, 2015

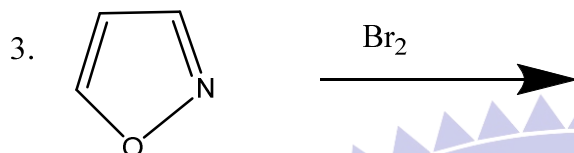
**Course Title: Natural Products, Heterocycles and Spectroscopy****Course Code: CHE553****Year: 2014-15****Maximum Marks: 40 Marks****Section 'A'**

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

Briefly discuss the following:

1. What are the different feeding experiments?
2. What are water soluble and fat soluble vitamins? Explain the origin of the term vitamin.
3. Write a brief note on the followings:
  - i. Porphyrins
  - ii. Rotenone
4. Give the chemical degradation method and its use in biosynthesis.
5. Discuss the advantage and disadvantages of  $^{13}\text{C}$  NMR spectroscopy.
6. Complete the following reactions:





7. An organic compound having molecular formula  $\text{C}_3\text{H}_4\text{O}_2$  gives the following  $^{13}\text{C}$ NMR data.

- i.  $\delta$  173.6 (s)
- ii.  $\delta$  40.4 (d)
- iii.  $\delta$  28.8 (t)

Find the structure of compound?

8. Write a short on steroids and hormones?

### Section 'B'

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

1. (a) Give the biosynthesis of acetyl coenzyme A.  
(b) Explain briefly the structure of Chlorophyll.
2. Write brief on the following.
  - i. Spin-Spin coupling
  - ii. DEPT  $\text{C}^{13}$  spectra
  - iii. N.O.S.Y
  - iv. Homonuclear couplings.
  - v. Morphine
3. a. Discuss the classification and nomenclature of enzymes.  
b. Formulate TCA or citric acid cycle.
4. (a) Outline the general biosynthesis of the prostaglandins.  
(b) Discuss briefly about the factors affecting chemical shift of carbon in  $^{13}\text{C}$  NMR spectra.