FACULTY OF SCIENCE
M.Sc. II – Semester (CBCS) Examination, May / June 2017
Subject: Chemistry
Paper – II
Organic Chemistry

Time: 3 Hours
Max. Marks: 80

Note: Answer all questions from Part-A and Part-B.
Each question carries 8 marks in Part-A and 12 marks in Part-B.

PART – A (4x8 = 32 Marks)
[Short Answer Type]

1 a) Among cis and trans 2-aceteylxy cyclohexyl tosylates which one undergoes faster acetolysis and why?

   b) Write a short note on non-classical carbocations.

2 a) Draw the molecular orbitals of 1,3-butadiene and label their symmetries.

   b) Write the selection rules for sigmatropic rearrangement of hydrogen by Huckel-Mobius method.

3 a) Write a short note on Barton reaction.

   b) What is photo stationary state? Explain in detail.

4 a) Describe the structure of carbanion and carbine.

   b) Outline the reaction mechanism for pinacol-pinacolone rearrangement.

PART – B (4x12 = 48 Marks)
[Essay Answer Type]

5 a) Explain the benzyne mechanism in aromatic nucleophilic substitution and discuss evidences for it.

   b) Give one example for each reaction involving neighbouring group participation of oxygen sulphur.

   c) Discuss Von Richter rearrangement.

   d) Explain the SET mechanism.

6 a) Explain the electrocyclisation of (2E, 4E)-2,4-hexadiene by FMO method.

   b) Draw the correlation diagram for the Diels-Alder reaction and explain.

   OR

   c) Explain in detail the sigmatropic cope rearrangement.

   d) According to Huckel, thermal reaction takes place through aromatic transition state. Explain with electrocyclisation of cis-1,3,5-hexatriene.
7 a) What are main differences between Norrish type-I and Norrish type-II reactions. Explain with suitable examples.

b) What are the factors influence on photo reduction? Explain in detail with examples.

OR
c) Discuss the stereochemistry in \(^1\[n-\pi^*\]\) and \(^3[n-\pi^*]\) states of Paterno-Buchi reactions.

d) Discuss on photochemistry of cis-trans isomerisation.

8 a) Write a short note on free radicals and nitrenes.

b) Discuss the reaction and mechanism for Schmidt and Saeyer-Villigar oxidation reaction.

OR
c) How do you confirm the retention of configuration by migrating group in Arndt-Eistert synthesis.

d) Explain the mechanism of Favorskii and Smiles rearrangement.