

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-acetyloxy 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 carbene.
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.
- OR
- c) Discuss Von Richter rearrangement.
 - d) Explain the SET mechanism.
- 6 a) Explain the electrocycloisisation 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 electrocycloisisation 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 Baeyer-Villiger 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.

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