

M.Sc. - II (Chemistry) (NEP Pattern) Semester-III
STPG03CHE01 - Special Paper-I : Organic Chemistry

P. Pages : 3

Time : Three Hours



GUG/S/25/15960

Max. Marks : 80

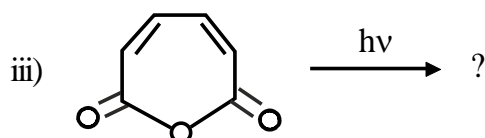
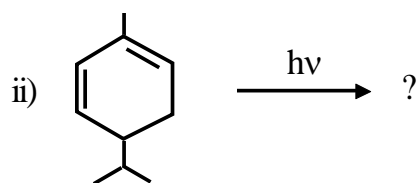
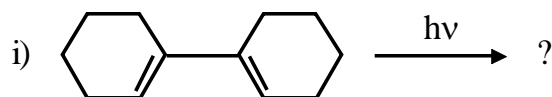
1. a) Explain the following. 8
i) Norrish type – II reaction.
ii) Paterno-Buchi Reaction.
- b) Explain photochemistry of aromatic compound with reference to isomerisation addition and substitution reaction. 8

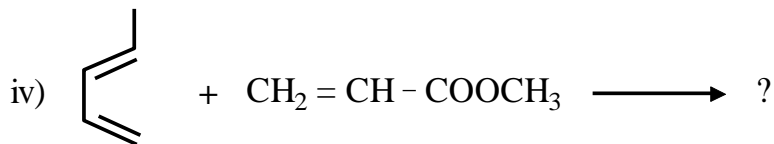
OR

- c) Discuss photochemistry of enones. 4
d) Explain photochemistry of parabenzoquinone. 4
e) Discuss the mechanism of photo-Fries rearrangement reaction. 4
f) Discuss Hoffmann-Loefer Freytag reaction. 4
2. a) Discuss the following. 8
i) [3, 5] sigmatropic rearrangement reaction.
ii) [2+2] cycloaddition reaction.
- b) Discuss electrocyclic reaction of $(4n + 2) \pi$ system in thermal and photochemical mode. 8

OR

- c) Explain Sommelet-Hauser rearrangement reaction. 4
d) Predict the product of the given reactions. 4





e) Discuss (4+2) cycloaddition reaction in thermal mode. 4

f) Discuss Claisen rearrangement reaction. 4

3. a) i) Discuss the mechanism of Baeyer-Villiger oxidation. 8

ii) Explain Woodward and Prevost dihydroxylation.

b) Explain the following. 8

i) Wilkinson catalyst.

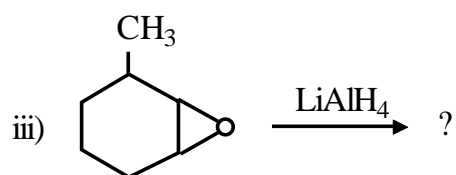
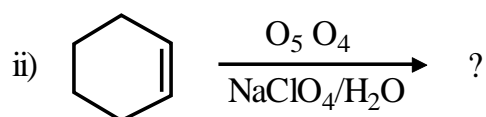
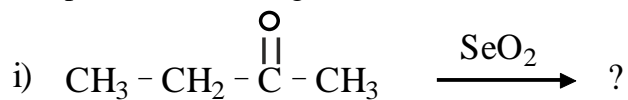
ii) Birch reduction.

OR

c) Explain Sharpless asymmetric epoxidation. 4

d) Discuss mechanism of Meerwein-Ponndorf-Verley reduction. 4

e) Complete the following reactions. 4



f) Discuss Birch reduction. 4

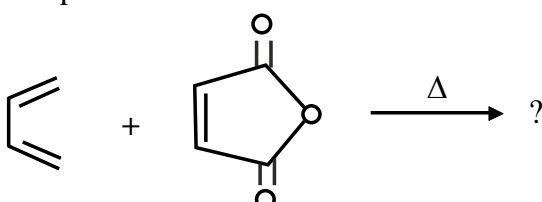
4. a) Discuss preparation and synthetic application of sulphur ylide. 8

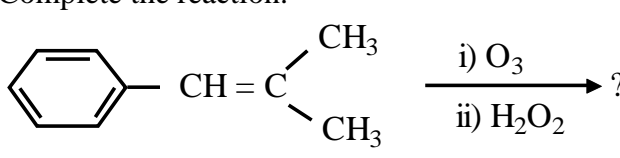
b) Discuss preparation and properties of 8

i) 9-BBN

ii) Catechol borane

OR

- c) Write synthetic applications of 1, 3- dithiane umpolung. 4
- d) Write a note on Paterson synthesis. 4
- e) Discuss synthetic methodologies based on titanium compound. 4
- f) Discuss the role of Me_3SiCl in organic synthesis. 4
5. a) Define Quantum yield. 2
- b) What is Barton reaction? 2
- c) What is Suprafacial and Antarafacial shift? 2
- d) Complete the reaction 2
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The reaction shows 1,3-butadiene reacting with maleic anhydride (a five-membered ring with two carbonyl groups and a double bond) under heat (Δ) to form an unknown product.
- e) What is mean by Adam catalyst? 2
- f) Complete the reaction. 2
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The reaction shows 1-phenyl-2-methylpropene (a benzene ring attached to a $\text{CH}=\text{C}(\text{CH}_3)_2$ group) reacting with O_3 followed by H_2O_2 to form an unknown product.
- g) Write the structure of hexyl borane. 2
- h) What are umpolung? 2
