

Roll No.

Total Pages : 4

239406

May 2019

M.Sc. IVth Semester

ORGANIC CHEMISTRY SPECIAL-II

(CH-412 A)

Time : 3 Hours]

[Max. Marks : 75

Instructions :

- (i) *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
- (ii) *Answer any four questions from Part-B in detail.*
- (iii) *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. (a) Draw molecular orbital diagram for 1,3 butadiene and explain the symmetry of HOMO and LUMO with respect to mirror plane and C_2 -axis of rotation. (1.5)
- (b) Give Paterno Buchi reaction and explain with suitable example. (1.5)
- (c) What do you understand by quantum efficiency? (1.5)

239406/50/111/185

[P.T.O.
18/5

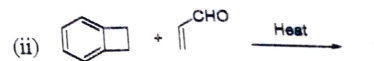
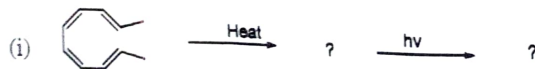
- (d) Give the green synthesis of BHC. (1.5)
- (e) Briefly explain antarafacial mode of cycloaddition reaction giving its stereochemical consequences. (1.5)
- (f) What are sigmatropic reaction? Name the sigmatropic shift in the following reaction : (1.5)



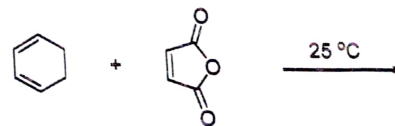
- (g) What are nanotubes? Give their atleast two applications. (1.5)
- (h) What are the selection rules in photochemistry? (1.5)
- (i) State frank condon principle. (1.5)
- (j) Give cis-trans isomerization in photochemistry. (1.5)

PART-B

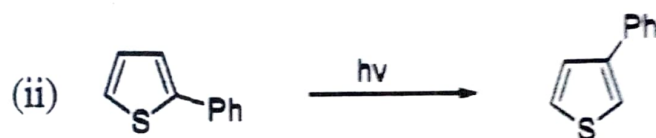
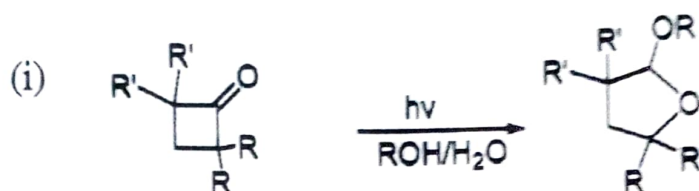
2. (a) Explain Woodward Hoffmann correlation diagram for electrocyclic reaction for $4n$ system . (6)
- (b) Complete the following reactions giving a brief reason for each. (9)



3. (a) Define green chemistry. Explain the principles of green chemistry. (10)
- (b) Why (2+2) cycloaddition reactions are not thermally allowed? (5)
4. (a) Explain the following :
 (i) Norrish type I and II reactions.
 (ii) Di- π methane rearrangement.
 (iii) Quantum yield and quantum efficiency. (8.5.2)
5. (a) Write short note on the following :
 (i) Fullerenes.
 (ii) Graphenes.
 (iii) Phase transfer catalyst. (3×3=9)
- (b) Draw the product of following reaction with proper stereochemistry using any of the approach. (6)



6. (a) Explain the following :
- (i) Barton reaction. (4,4)
- (ii) Jablonski Diagram. (7)
- (b) Explain the mechanism of following reaction given below :



7. (a) Discuss FMO approach for (4+2) cycloaddition reaction. (8)
- (b) Explain Sommelet Hauser reaction with detailed mechanism. (7)
-