Reg.No : | | | | | | | | | | | |

D.K.M. COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE – 1

SEMESTER EXAMINATIONS

JUNE – 2022 19CPCH4A

PHOTOCHEMISTRY, HETEROCYCLES AND NATURAL PRODUCTS

Time: 3 Hrs **Max. Marks: 75**

SECTION – A (5 X 6 =30)

Answer ALL the questions.

1. (a) Explain the photochemistry of santonin.
   (Or)
   (b) Describe in detail the Norrish type I reactions of carbonyl compounds and discuss the products obtained at low and high temperatures with an example.
2. (a) What are sigmatropic rearrangements? How are they classified?
   (Or)
   (b)Account for the following with the help of FMO approach:
   i. Dimerization of ethylene to cyclobutane is a photochemically allowed process.
   ii. Cyclobutene to 1,3- butadiene inter conversion under thermal condition is a conrotatory process.
3. (a) Give any two methods for the synthesis of following heterocycles. i) Pyrazine ii) Pyrimidine
   (Or)
   (b) Give the synthesis and reactions of quinoline.
4. (a) Give the synthesis of oxepines and thiepines.
   (Or)
   (b) Discuss the reactions of azepines.
5. (a) Elucidate the structure of zingiberene.
   (Or)
   (b) Discuss the structure and synthesis of camphor.

SECTION – B (3 X 15 =45)

Answer any THREE of the following questions.

6. Discuss the following reactions in detail.
   a. Norrish type II reactions of carbonyl compounds. (5)
   b. Paterno-Buchi reaction. (5)
   c. Di-pi methane rearrangement. (5)
7. a. Give an account on Diel-Alder reaction and explain whether the endo or exo products are formed and substantiate. (5)
   b. Write a note on fluxional isomerism. (5)
   c. Explain Claisen rearrangement with mechanism. (5)
8. a Discuss the various methods of formation of pyrazole and imidazole. What are the important chemical reactions of pyrazole and imidazole? (8)
   b. Discuss the aromaticity of pyrrole, pyridine and furan. (7)
9. a. Explain the synthesis of diazepines. (8)
   b. Discuss the synthesis and reactions of tetrazines. (7)
10. Discuss the following:
    a. Isoprene rule. (5)
    b. Bio synthesis of logonin. (5)
    c. Structural determination of abietic acid. (5)

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