647510 **MSC3OrgC302x** **Seat No :_____**

M.Sc.(Chem.) Semester - 3 (*CBCS*) Examination
OCT/NOV-2025 (AS PER SYLLABUS YEAR JUNE-2019)
Advanced Organic Chemistry (Core (New))

Time: 2:30 Hours **Marks:70**

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Q.1 (A) **Answer the following** **(04)**

(1) What is Pericyclic reaction? Give one example of electrocylic, cycloaddition, 1,3-dipolar-cycloaddion and group transfer reactions.

Q.1 (B) **Answer any two question out of three.** **(10)**

(1) Explain electrocyclic ring closing of suitable hexadiene system using PMO theory.
(2) Discuss HOMO, LUMO and symmetry criteria for pentadienyl system under thermal and photochemical reaction condition.
(3) Draw Woodward Hoffmann correlation diagram for the cyclization of 1,3,5-hexatriene system.

Q.2 (A) **Answer the following** **(04)**

(1) Explain any two Retro-Diels alder reaction with example.

Q.2 (B) **Answer any two question out of three.** **(10)**

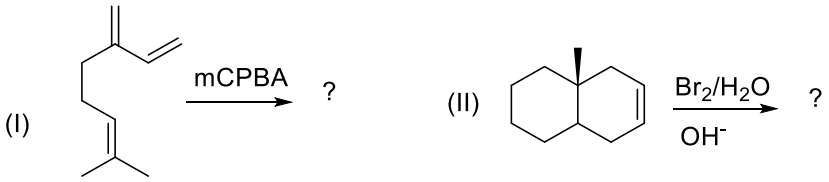
(1) Discuss regioselectivity & stereoselectivity of Diels-alder reaction with suitable examples.
(2) Discuss click reaction with two examples.
(3) Write a note on [5,5] & [2,3] Sigmatropic shift with examples.

Q.3 (A) **Answer the following** **(04)**

(1) Discuss stereoselectivity of Sharpless epoxidation.

Q.3 (B) **Answer any two question out of three.** **(10)**

(1) What is asymmetric synthesis? Explain application of Evans oxazolidinones auxiliary in the asymmetric synthesis with example.
(2) Write the appropriate product of following reactions sequence (I & II) with mechanism:



(3) Write a note on asymmetric ring opening of epoxides with examples.

Q.4 (A) **Answer the following** **(04)**

(1) Explain the term (a) True alkaloids and (b) Rotoalkaloids.

Q.4 (B) **Answer any two question out of three.** **(10)**

DESCRIBE THE TOTAL SYNTHESIS OF FOLLOWING:

(1) Tropic acid
(2) Reserpine
(3) Quinine

Q.5 (A) **Answer the following** **(04)**

(1) Give the synthesis of 5-methyluracil.

Q.5 (B) **Answer any two question out of three.** **(10)**

(1) Explain the term (a) Nucleoside (b) Nucleotide with examples
(2) Which sugars and Bases are present in DNA and RNA? Give their structure.
(3) Write the total synthesis of 2,6-dihydroxypurine

****