Roll.No. | 22PCHCT3007

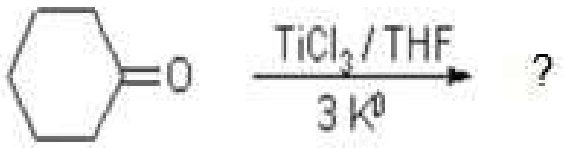
SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
M.Sc.Chemistry - END SEMESTER EXAMINATIONS - NOVEMBER 2025
SEMESTER - III
22PCHCT3007 - Retrosynthetic Analysis and Pericyclic Reactions

Total Duration : 2 Hrs. 30 Mins. | Total Marks : 60

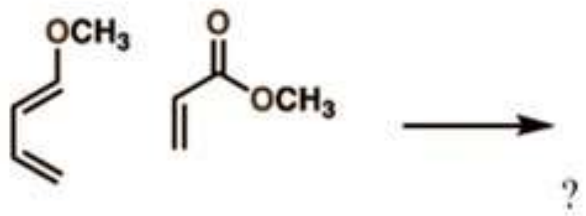
Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Explain the purpose of a Functional Group Interconversion (FGI) in a retrosynthetic analysis.
2. Predict the product and explain the reaction.



3. Discuss Cheletropic reaction with an example.
4. Explain Frank-Condon principle.
5. Predict the major product of the following reaction and explain.



6. Write a note on Gilman reagent and any one of its application.
7. Show both conrotatory processes for the thermal electrocyclic conversion of (2E,4E)-2,4 hexadiene into 3,4-dimethylcyclobutene. Explain why are the two processes equally alike?
8. Brief on photochemistry of cyclohexadienones.

Contd...

Section C

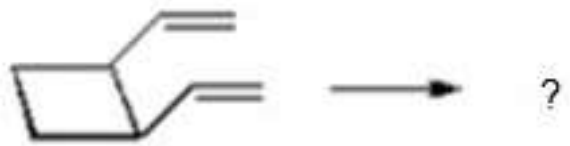
I - Answer any **TWO** questions $(2 \times 10 = 20$ Marks)

9. Illustrate the retrosynthetic strategy for a 1,3-difunctionalized compound, and identify the key named reaction that corresponds to this disconnection in the forward synthesis.

10. a. Outline a common protecting group strategy for the hydroxyl group and the carboxyl group, specifying the reagents used for protection and deprotection for each.
    b. Define the term Umpolung in the context of organic synthesis and explain

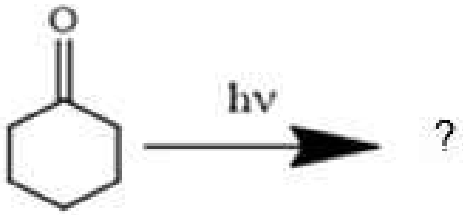
11. Describe the general mechanism of the Heck reaction and outline its main synthetic applications in building complex molecular structures.

12. a.Explain Woodward and Hoffmann selection rules for cycloaddition reactions of 4n and $(4n + 2)\pi$ electron system.
    b. Draw the product of following [3,3] suprafacial shift.

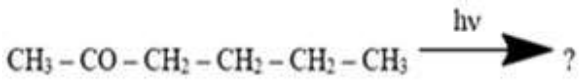


II - Compulsory question $(1 \times 10 = 10$ Marks)

13. (a)



(b)



Predict the products and explain the above reactions.

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