

Registration Number:

Date & session:



ST JOSEPH'S UNIVERSITY, BENGALURU -27
M.Sc CHEMISTRY – II SEMESTER
SEMESTER EXAMINATION: APRIL 2023
(Examination conducted in May 2023)
CH 8221: ORGANIC CHEMISTRY II
(For regular students only)

Time: 2 Hours

Max Marks: 50

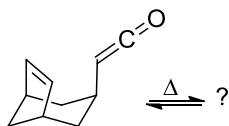
Note: This paper contains 3 printed pages and 3 parts

PART-A

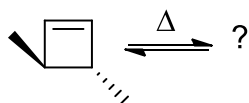
Answer any **EIGHT** of the following

(8 x 2= 16)

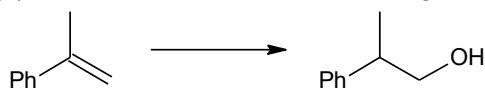
1. What are the characteristics of a photosensitizer?
2. Explain photochemical [2+2] cycloaddition using FMO approach.
3. Name a [2,3]-sigmatropic rearrangement and show a representative reaction.
4. Predict the product of the following thermal reaction:



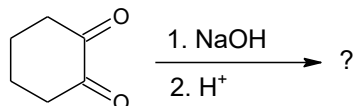
5. Predict the major product of the following reaction:



6. What reagent(s) is/are required for the following conversion?



7. Write the acid catalyzed mechanism for keto-enol tautomerism.
8. Give an example of Japp-Klingemann reaction
9. Write the product of the following reaction



10. Write the steps involved in Arndt-Eistert synthesis.

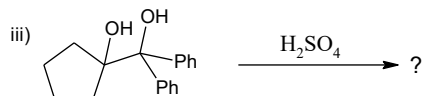
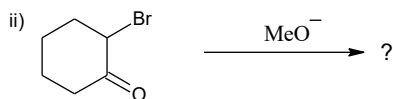
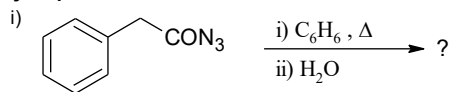
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PART-B

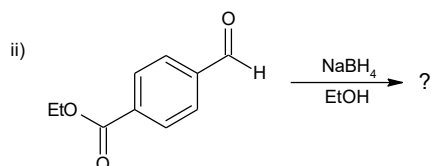
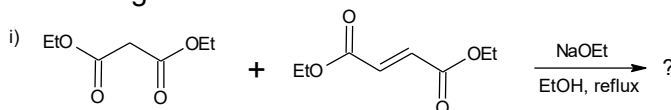
Answer any **TWO** of the following

(2 x 12= 24)

11. a) Write the major product formed in each case along with the mechanism of the reaction.



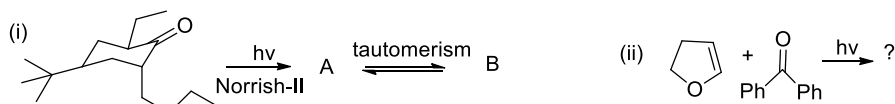
b) Complete the following reactions:



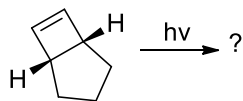
(9+3)

12. a) Apply orbital symmetry correlation diagram to explain the stereochemical outcome of Diels-Alder reaction.

b) Predict the major product for each of the following reactions:



c) Predict the major product of the following reaction based on Woodward-Hoffmann selection rules.



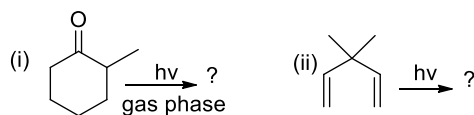
(5+4+3)

13. a) Write the mechanism of i) Baeyer-Villiger rearrangement ii) Neber rearrangement.

b) Explain photostationary state and *cis-trans* isomerization of stilbene under photochemical conditions.

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c) Predict the products for the following reactions:



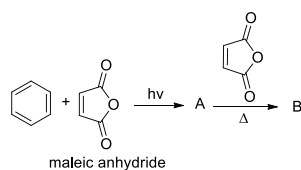
(5+4+3)

PART-C

Answer any **TWO** of the following

(2 x 5= 10)

14. a) Benzene reacts with maleic anhydride to form compound **A** under photochemical condition. Compound **A** undergoes a thermal pericyclic reaction with another molecule of maleic anhydride to form compound **B**. Identify the types of pericyclic reactions and compounds **A** and **B**.

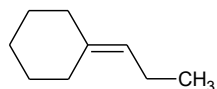


b) Design the synthesis of the following compound by concerted thermal reaction:

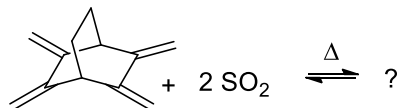


(3+2)

15. a) What two sets of reagents (each consisting of a carbonyl compound and phosphonium ylide) can be used for the synthesis of the following alkene? What would be the best set of reagents to use for the syntheses?

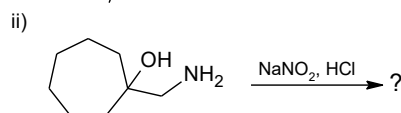
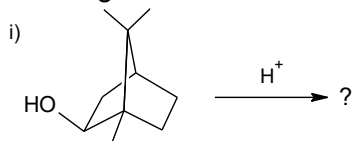


b) Predict the product of the following reaction:



(3+2)

16. Complete the following reactions.



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