



ST JOSEPH'S UNIVERSITY, BENGALURU -27
M.Sc (CHEMISTRY) – 2nd SEMESTER
SEMESTER EXAMINATION: APRIL 2024
(Examination conducted in May / June 2024)
CH 8222 – ORGANIC CHEMISTRY II
(For current batch students only)

Registration Number:

Date & session:

Time: 2 Hours

Max Marks: 50

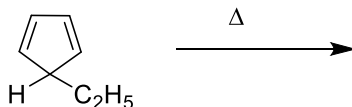
This paper contains **THREE** printed pages and **THREE** parts

PART-A

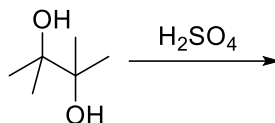
Answer any **EIGHT** questions

(8x2 = 16)

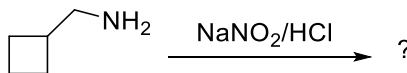
1. Define torquoselectivity in electrocyclic reactions with an example.
2. Using transition state aromaticity, show that supra – supra addition of two ethene molecules is symmetry forbidden under thermal condition.
3. Explain the ketene-alkene cycloaddition with the help of the frontier molecular orbital (FMO) approach.
4. Write the major product of the following reaction. Name the reaction.



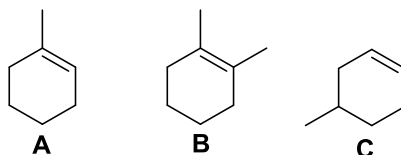
5. Show di- π methane rearrangement with an example.
6. What is benzidine rearrangement? Which medium is used for this rearrangement?
7. Draw the structure of the product for the following reaction. What is the name of the reaction?



8. Give an example of Wittig rearrangement.
9. Draw the structure of the product of the following reaction.



10. Arrange the following compounds with respect to the rate of hydrogenation reaction using Pd/C and H₂.



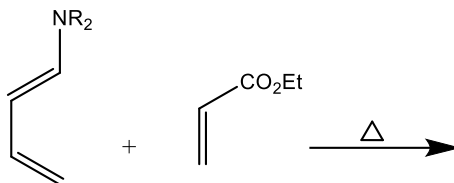
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PART-B

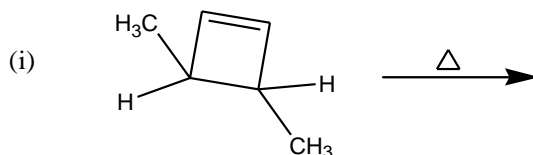
Answer any **TWO** questions

(2x12 = 24)

11. (a) Predict the major and minor products for the following reaction.



(b) Give the products and indicate their stereochemistry. Explain the mechanism based on FMO approach.



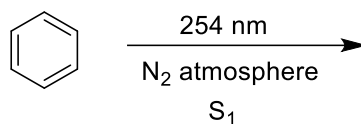
(c) Draw the mechanism of Fischer indole synthesis.

(3+4+5)

12. (a) What are the possible products formed when acetone reacts with 1,3-butadiene under photochemical conditions? Explain your answer with a suitable mechanism.

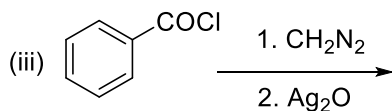
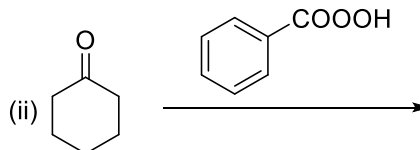
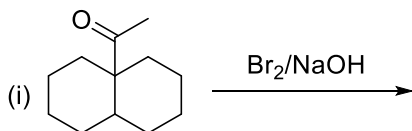
(b) Write the mechanism to show the product(s) formed when cyclohexanone undergoes photochemical reaction in vapour phase.

(c) Complete the following reaction and write the mechanism for the same.



(4+4+4)

13. Complete the following reactions with mechanisms.

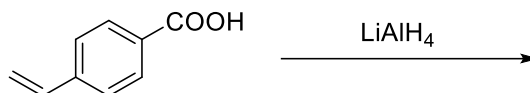


PART-C

Answer any **TWO** questions

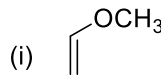
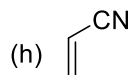
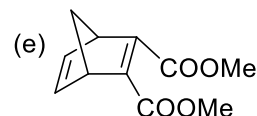
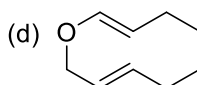
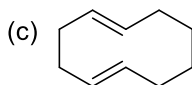
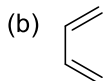
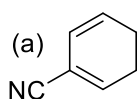
(2x5 = 10)

14. (a) Suggest three carbonyl compounds which on reaction with phenyl magnesium bromide would give triphenyl methanol after aqueous work up.
(b) Write the product for the following reaction



(3+2)

15. From the library of compounds given below,



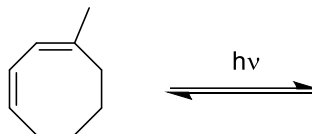
plan the following experiments:

- (i) Retro-Diels-Alder reaction, (ii) Cheletropic reaction, (iii) Alder ene reaction and
(iv) Cope rearrangement

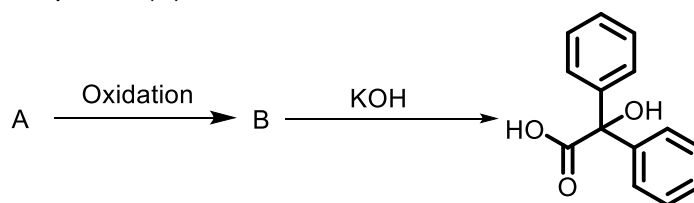
Note: (i) You should draw the structures of starting materials and major products in each case with appropriate reaction conditions.

(ii) You cannot use the same compound twice.

16. (a) Complete the photochemical reaction.



- (b) One compound (A) on oxidation gave compound (B) which upon treatment with strong base produced the following compound. Draw the structure of the starting material (A) and the intermediate compound (B).



(2+3)