



Date:

Registration number:

ST. JOSEPH'S COLLEGE (AUTONOMOUS), BENGALURU-27  
MSc CHEMISTRY - II SEMESTER

SEMESTER EXAMINATION: APRIL 2022

(Examination conducted in July 2022)

**CH8221/8218 -ORGANIC CHEMISTRY – II**

Time- 2 ½ hrs

Max Marks-70

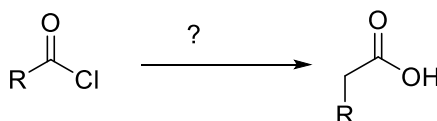
This question paper contains three printed pages and three parts

**Part A**

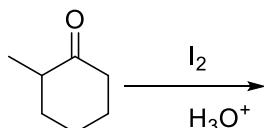
Answer any SIX questions

2X6 = 12

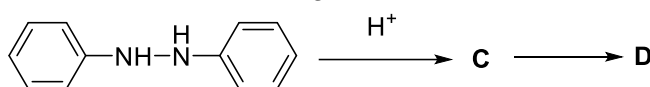
1. What are the characteristics of a photosensitiser?
2. Predict the structure of the 2,4-heptadiene produced by thermal ring opening of cis-3-ethyl-4-methylcyclobutene.
3. Define decarboxylation reaction. Which substrate readily undergoes decarboxylation?
4. Identify the reagents for the following reaction.



5. What is cheletropic reaction? Give an example.
6. Identify the major and minor product for the following reaction.



7. What is Claisen rearrangement. Give an example.
8. Predict the structure of **C** and **D** for following reaction.

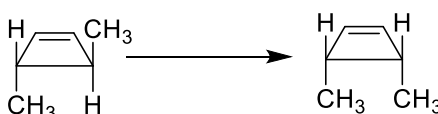


**Part B**

Answer any FOUR questions

12X4 = 48

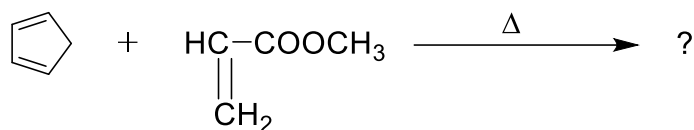
9. (a) The stereochemistry of the photochemical cyclization of 1,3-butadiene to cyclobutene is opposite to that of the thermal reaction. Explain.  
(b) How do you carry out the following conversion?



- (c) With the help of FMO method show that [2+2] cycloaddition reaction is photochemically allowed. (4+4+4)

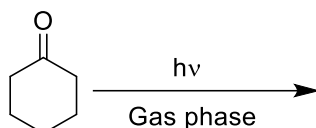
CH 8221\_A\_22

10. (a) Write the major product of the following reaction with correct stereochemistry. Explain your answer. (6+6)



(b) With the help of correlation diagram show that [4+2] cycloaddition reaction is thermally allowed reaction.

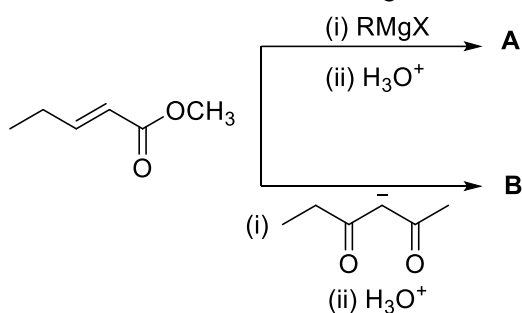
11. (a) Complete the following reaction with mechanism.



(b) What is Norrish type-II process? Give any one evidence for the reaction.  
 (c) What is Paterno-Büchi reaction? Discuss the mechanism.

(4+4+4)

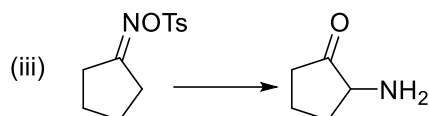
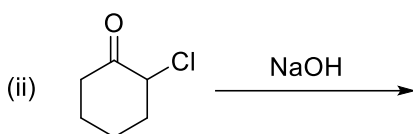
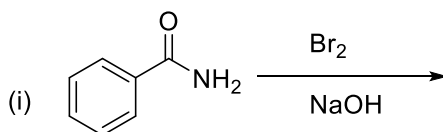
12. (a) What are the structures of **A** and **B** for the following reaction with mechanism.



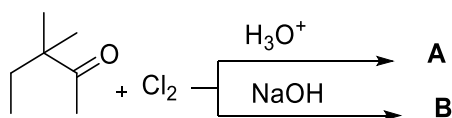
(b) Draw the structure of the major and minor product for hydroboration–oxidation reaction of the given compounds. (i) 1-butyne, (ii) 2-butyne, (iii) 1-methylcyclohexene.

(6+6)

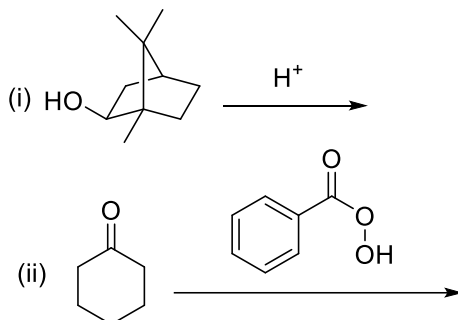
13. (a) Write the products of the following reaction with mechanism



14. (a) Acid catalyzed halogenation of carbonyl compound produces mono halogenated carbonyl whereas base catalyzed reaction produces haloform. Explain this observation for the following reaction with a suitable mechanism.



(b) Complete the following reactions with mechanism.



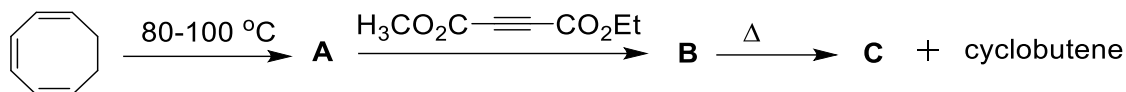
(6+6)

### Part C

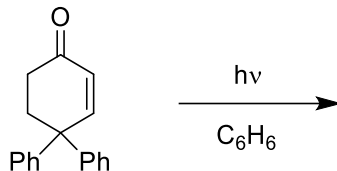
**Answer any two questions**

**5X2 = 10**

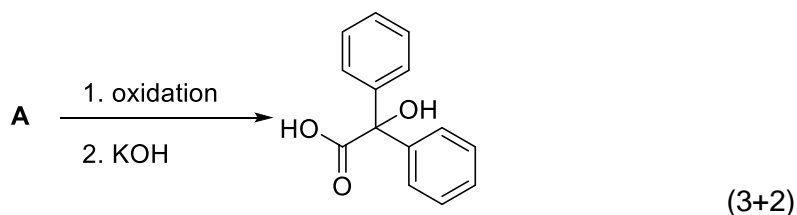
15. Complete the following reaction by identifying A, B and C. Name any two steps of the reaction.



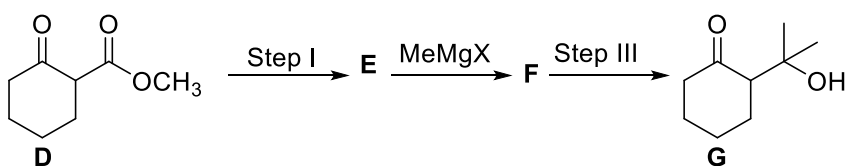
16. (a) Complete the following reaction with mechanism.



(b) Write the structure of the starting material **A** and the intermediate for the following reaction.



17. Compound **D** can be transformed to compound **G** by the following sequence of reactions. Identify the reagents required for each step and the intermediates **E** and **F**.



-----End of questions-----