UUCMS No. | | | | | | | | | | | |

B.M.S. COLLEGE FOR WOMEN, AUTONOMOUS

BENGALURU-560004

SEMESTER END EXAMINATION-APRIL/MAY- 2023

M.Sc. in Chemistry- III Semester

ORGANIC REACTION MECHANISMS

Course code: MCH301T **QP Code: 13006**

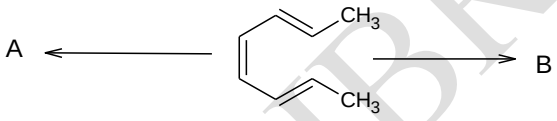
Time: 3 hrs **Max.Marks:70**

Instruction: *Answer Question No. **1** and any **FIVE** of the remaining.*

1. Answer any *TEN* questions **(2×10 =20)**

a) Draw the Jablonski diagram

b) Predict the products A and B



c) Write the fronties orbital's of 1,3,5-hexatriene. Indicate the HOMO and LUMO levels

d) What are sigmatropic rearrangement reactions? How are they classified?

e) Give an example for Gomberg-Bachman reaction.

f) Write the biochemical decarboxylation of α–ketoacids.

g) Illustrate the Kolbe reaction with suitable example.

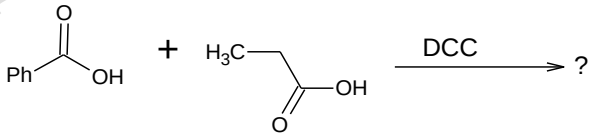
h) Highlight a method of free radical generation and its reaction.

i) Sketch the mechanism of SE_2 reaction.

j) What is Haller-Bauer reaction? Give an example.

k) Explain the terms quantum yield and quantum efficiency.

l) Predict the products and write the mechanism for the following reaction:

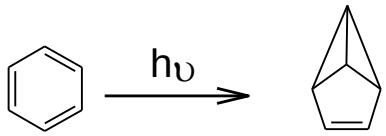


2. a) What is di-pi-methane rearrangement? Give any two examples.

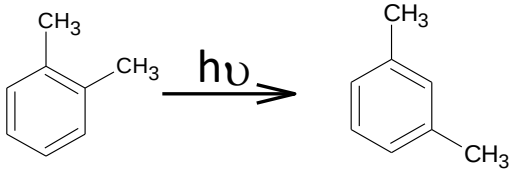
b) Using FMO approach, prove that [2+2] cycloaddition is a photochemically allowed and thermally forbidden process.

c) Formulate reasonable mechanisms for the following conversions:

i)



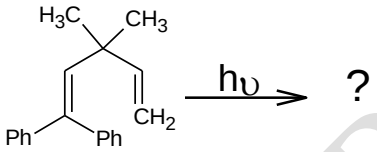
ii)



(3+3+4=10)

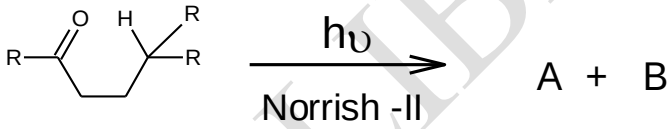
3. a) What is Paterno Buchi reaction? Explain the stereochemistry involved with suitable examples.

b) Write the mechanism for the following reaction:



c) Predict the products of the following reactions:

i)



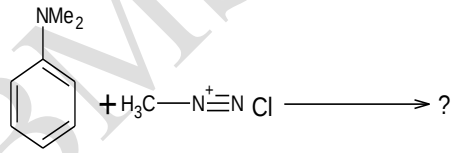
(3+3+4=10)

4. a) What are the conditions that favor E1cB mechanism in an elimination reaction. Illustrate with an example.

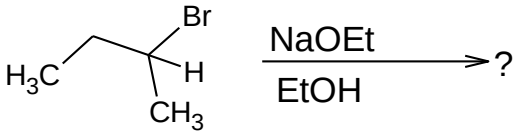
b) Illustrate SNi factor with suitable example and mechanism

c) Formulate the products with suitable mechanism for the following reactions:

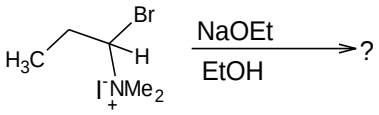
i)



ii)



iii)



(3+3+4=10)

5. a) What is neighboring group participation? Explain with proper examples.

b) Illustrate the haloform reaction citing suitable examples.

c) Write the generation and any two reactions of

i) nitrenes ii) carbenes **(3+3+4=10)**

6. a) What is Meerwein arylation? Suggest mechanism and example.

b) Illustrate the Sandmeyer reaction citing suitable example and mechanism

c) Explain the hydroxylation at an aromatic carbon. **(3+3+4=10)**

7. a) Discuss the role of pyridoxylphosphate (PLP) in decarboxylation reactions.

b) Illustrate the role of:

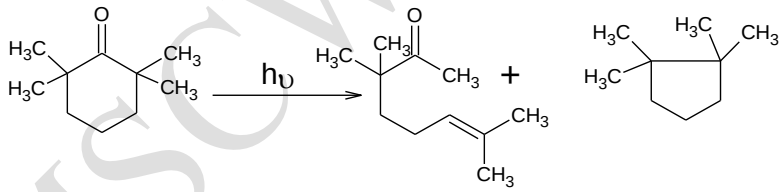
i) Nicotinamide and

ii) Flavin coenzymes in biological redox reactions. **(4+6=10)**

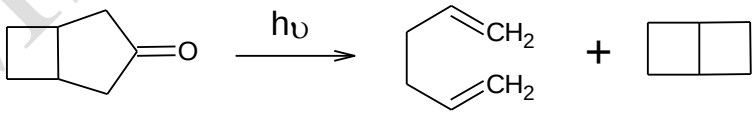
8. a) Explain the role of Coenzyme A (CoASH) in the transfer of acyl groups.

b) Propose suitable mechanisms for the following conversions:

i)



ii).



(4+6=10)

******