D3ACH2003 **(2 Pages)** **Name.....**
Reg.No.....

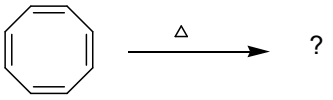
THIRD SEMESTER M. Sc. DEGREE EXAMINATION, NOVEMBER 2021
(Regular/Improvement/Supplementary)

CHEMISTRY
FCHE3C11 - PHOTOCHEMISTRY AND PERICYCLIC REACTIONS

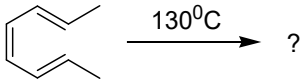
Time: Three Hours **Maximum Weightage: 30**

Section A: Short answer questions. *All* questions can be answered. Each carries *one* weightage (Ceiling 6 weightage).

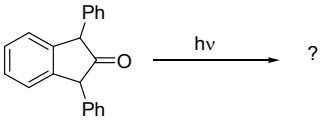
1. Suggest a synthetic method for the preparation of thiazole.
2. Predict the product in the following reaction.



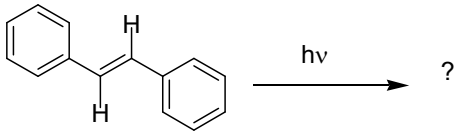
3. Sketch the Π MO diagram of ethylene and indicate the HOMO and LUMO.
4. Predict the product in the following reaction.



5. Give the structure of atropine.
6. Define quantum yield.
7. What is meant by bioluminecence?
8. Predict the stereo chemical product in the following reaction.



9. What is meant by di-pi methane rearrangement reaction?
10. Differentiate between nucleotide and nucleoside.
11. Predict the product in the following reaction.



12. What is meant by barton reaction?

(P. T. O.)

Section B: Short essay question. *All* questions can be answered. Each carries *four* weightage (Ceiling 12 weightage).

13. Discuss the conversion of Cholesterol to testosterone.
14. Discuss the following reaction with suitable mechanism.
    (a) Claisen rearrangement. (b) Cope rearrangement.
15. Discuss the mechanism of Norrish type I and Norrish type II reactions.
16. What is Diel's Alder reaction? Discuss any four of its synthetic applications.
17. Derive Stern-Volmer equation.
18. Discuss the synthesis of 1,2,3 triazole and 1,2,4 tetrazole.
19. Discuss the secondary and tertiary structure of proteins.

Section C: Essay questions. Answer *All* questions can be answered. Each carries *six* weightage (Ceiling 12 weightage).

20. Discuss the photochemical reaction of H_2-Br_2 with mechanism using steady state approximation method.
21. What is the structure of reserpine? How do you synthesize it?
22. Suggest a synthetic method towards the preparation of following heterocycles.
    (a) Oxazole (b) Isoxazole (c) Imidazole (d) Tetrazole
23. Discuss the following reactions with suitable mechanism.
    (a) Cheleotropic reaction. (b) Photo Fries rearrangement reaction
    (c) Paterno-Buchi reaction (d) Hoffmann-Loeffler reaction