

2025

M.Sc.

4th Semester Examination

CHEMISTRY PAPER – CEM-402

Full Marks: 50 Time: 2 Hours

(CEM 402-Advanced Organic Chemistry-III)

Group A

Answer any *four* bits:

2×4 = 8

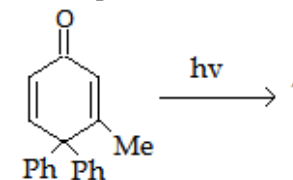
1. What do you mean by quencher in photochemical reaction? Give example.
2. Give an example of photosensitized reaction?
3. Write down the reasons of high quantum yield of a photochemical reaction?
4. Which has higher boiling point between pyridazine and pyrimidine? Explain.
5. Discuss the function of Thiamine.
6. Why is pyrimidine weaker base than pyridine?

Group B

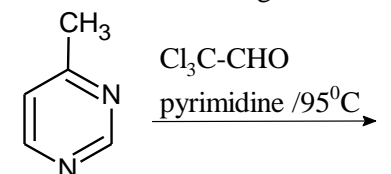
Answer any *four* bits:

4×4 = 16

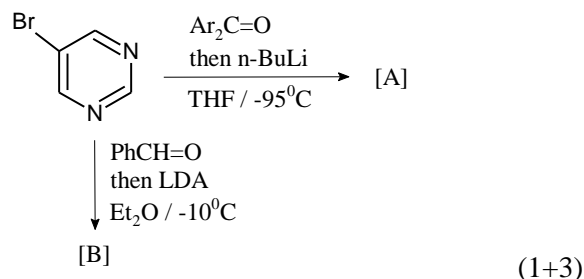
7. Indicate all the mechanistic steps of the following reaction.



- Does this reaction follow the mechanism of di- π -methane rearrangement? 4
8. Draw Jablonoski Diagram and show the different transitions of excited states of molecules. 4
 9. (i) Write down the product of the following reaction with mechanism.

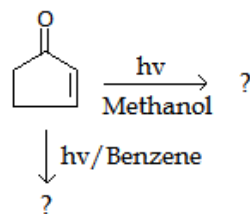


- (ii) Why is unsaturated 1,4-diketone used in place of saturated one to prepare pyridazine derivative? (2+2)
10. (i) What is vibrational cascade?
(ii) Identify [A] and [B] in the reaction. Show the mechanism.



(1+3)

11. What is Parteno-Buchi reaction? Give an example of intramolecular Parteno-Buchi reaction. (2+2)
12. What is molecular dipole interaction? How does it play in the following reaction with respect methanol and benzene medium separately? Write the product/s in each case.

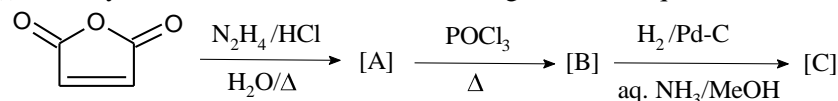


(1+3)

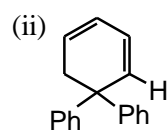
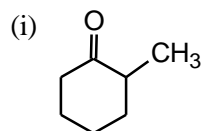
Group C

Answer any *two* bits:

13. (i) Identify [A], [B], and [C] in the following reaction sequence.



- (ii) Define Norrish type-II reaction with example.
(iii) What is Barton reaction? Explain with suitable mechanism. (3+2+3)
14. (i) What are coenzymes? Write down the function of NAD. (3+5)
(ii) Write a note on cis-trans isomerism.
 15. (i) Describe the mechanism of action of Penicillin.
(ii) Describe structure activity relationship (SAR) of different functional group of Penicillins. (4+4)
 16. Predict the product of the following reactions with plausible mechanism.



(4+4)

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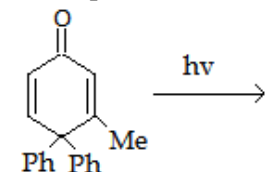
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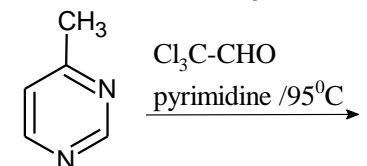
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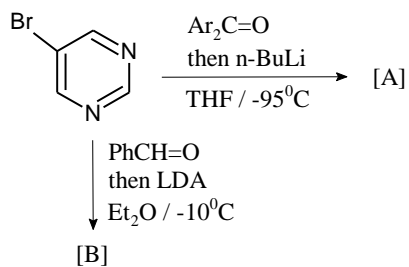
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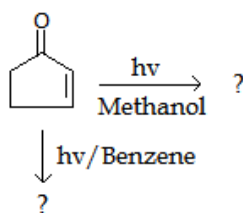


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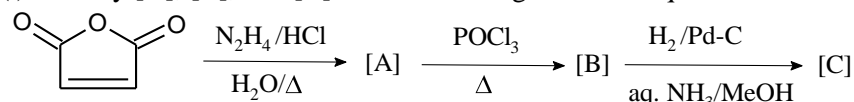


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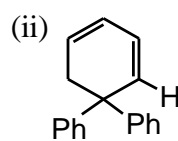
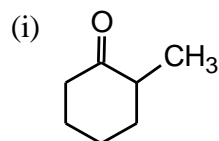
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