



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – CHEMISTRY

THIRD SEMESTER – APRIL 2018

CH 3808- PHOTOCHEMISTRY AND ORGANIC SYNTHESIS

Date: 24-04-2018
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

Part-A

Answer ALL questions.

(10 × 2 = 20)

1. What is Mannich reaction?
2. What is 1,2-Michael addition reaction?
3. Why is convergent synthesis preferred over stepwise synthesis?
4. What are natural and unnatural synthons?
5. Give an example for Birch reduction.
6. Write on allylic epoxidation reaction.
7. What is the Woodward-Hoffman rule for cycloaddition?
8. Give an example for 1,5-sigmatropic rearrangement reaction.
9. What is Norrish type-I reaction? Give an example.
10. Draw Jablonskii diagram.

Part-B

Answer any EIGHT questions.

(8 × 5 = 40)

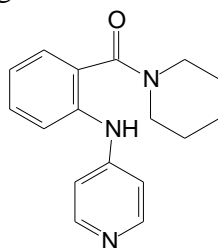
11. Explain 1,2- and 1,4-Michael addition reaction in conjugated dienes.
12. How are alkenes converted to alcohols by oxymercuration-demercuration reaction?
13. Write the synthesis of the following compounds.
(a) ethanolamine (b) 1,2-dichloroethane
14. What are protecting groups? How is amine protected and deprotected?
15. What is transposition? Give an example.
16. Compare Clemmensen reduction with Wolf Kishner reduction with suitable examples.
17. Draw correlation diagram for the cycloaddition of 1,3-butadiene with ethylene. Predict whether the reaction is thermally or photochemically allowed.
18. Explain the mechanism of 5,5-sigmatropic rearrangement reaction with an example.
19. Explain the synthesis of cubane.
20. How does Paterno-Buchi reaction take place in alkene compounds? Give an example.
21. Explain the photochemical rearrangement reaction of 4,4-diphenylcyclohexadienone.
22. How does photoreduction of 2-propanol take place? Write the mechanism of reaction.

Part-C

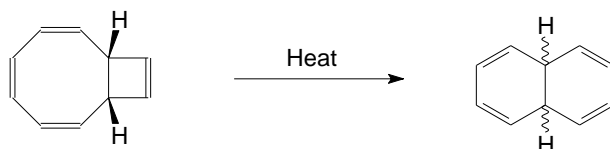
Answer any **FOUR** questions.

(4 × 10= 40)

- 23a. Write the mechanism of Simon-Smith reaction and Wittig reaction. (3+3)
b. Why is functional group interconversion considered as the best method of synthesis? (4)
- 24a. Explain any four guidelines for effective C-C disconnections. (6)
b. Perform retrosynthetic analysis and suggest a suitable method of synthesis of the following compound



- 25a. Write the mechanism of carbonyl reduction using LiAlH_4 . (4)
- b. Explain the mechanism of the following reactions with examples. (3+3)
i) ozonolysis ii) Knoevenagel reaction
- 26a. Describe the synthesis of Longifolene. (5)
b. Discuss electroreduction reactions with a suitable example. (5)
- 27a. Explain the mechanism of the following reaction and predict the stereochemistry of the mentioned H atoms in the product. (5)



- b. Propose a suitable mechanism for the following thermal reaction. (5)



- 28a. Write the mechanism of Barton reaction in steroids. (5)
b. Explain di- π -methane rearrangement reaction with an example. (5)

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