24P313 (Pages: 2) Name: .....

Reg.No: .....

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19PCHE3E01 - SYNTHETIC ORGANIC CHEMISTRY

(Chemistry)

(2019 Admission onwards)

Time : 3 Hours Maximum : 30 Weightage

Section A

Answer any ***eight*** questions. Each question carries 1 weightage.

1. Give two methods for generating singlet oxygen
2. Write a note on reduction of multiple bond in the presence of Lindlar's catalyst.
3. How will you distinguish between formaldehyde and acetaldehyde?
4. When formaldehyde gas is allowed to stand at room temperature, it slowly undergoes polymerization and forms white solid product? Identify the product and give its structure.
5. What happens when acetyl chloride is treated with ammonia? Explain.
6. Methyl ketone react rapidly with Br_2 in the presence of alkali to form a product. Identify the product with mechanism.
7. Draw the catalytic cycle of stille coupling reaction.
8. What is Hiyama coupling?
9. What do you mean by synthons and synthetic equivalents.
10. How will you synthesis paracetamol from phenol?
11. What is Gilmans reagent? How does it reacts with ethyl iodide?
12. Give two synthetic applications of $Pb(OAc)_4$.

(8 × 1 = 8 Weightage)

Section B

Answer any ***four*** questions. Each question carries 3 weightage.

13. Write a note on oxidation using lead tetra acetate.
14. Suggest a route to the synthesis of 3-ethyl cyclohexan-1-one starting from Cyclohex-2-en-1-one. Explain.

15. (a) Acetone reacts with a saturated aqueous solution of sodium bisulfite to form a solid addition compound. Identify the product with mechanism.
    (b) Give the mechanism of addition of HCN to acetone.

16. Discuss Buchwald-Hartwig amination with an example.

17. Distinguish between hiyama coupling and suzuki coupling reactions in terms of C-C bond formation.

18. Discuss the importance of (i) FGI (ii) Catalysts (iii) Solvents in organic synthesis.

19. Describe in detail about one group and two group C-X disconnections.

(4 × 3 = 12 Weightage)

Section C

Answer any ***two*** questions. Each question carries 5 weightage.

20. Explain the reagents used for Cis and trans hydroxylation. Breifly describe the mechanism of each reaction.

21. What is hydroboration oxidation reaction? Discuss this reaction with mechanism. Give any five of its syntetic applications.

22. What are the protecting agents employed in the peptide synthesis? Illustrate their role in the synthesis of peptides.

23. Describe the retrosynthetic analysis and total Synthesis of Djerassi Prelog lactone.

(2 × 5 = 10 Weightage)

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