

23P312

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Name:

Reg.No:

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19P CHE3 C11 - REAGENTS AND TRANSFORMATIONS IN ORGANIC CHEMISTRY

(Chemistry)

(2019 Admission onwards)

Time : 3 Hours

Maximum : 30 Weightage

Section A

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

1. Explain a suitable method for the preparation of enantioselective diols from prochiral olefins.
2. How do you carry out following conversions? 1) Benzyl bromide to benzaldehyde. 2) 2-hydroxy propanoic acid to acetaldehyde.
3. What is Pinacol coupling? Explain with examples.
4. Briefly explain Shapiro reaction.
5. Why LiAlH_4 is more reactive than NaBH_4 ? Give the equation for the reaction between cyclohexanone and NaBH_4 in methanol.
6. Write down the structure of DMAP. Give any one of its synthetic application.
7. What products are expected from (a) complete and (b) partial hydrolysis of the tetra peptide, Met-Gly-Ala-Val?
8. What is Fries rearrangements ?
9. Discuss the basicity of indole.
10. What are supramolecular devices? Cite examples.
11. What is Schmidt rearrangement?
12. What is Gilman's reagent? How does it react with ethyl iodide?

(8 × 1 = 8 Weightage)

Section B

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

13. Explain in detail about Prévost and Woodward dihydroxylations reactions
14. Describe in detail oxidation of alkene by peracids
15. Briefly explain the reduction reactions using Diimide reagent.

16. Identify the organic product of each reaction 1) Propanal with LiAlH_4 2) Acetone with NaBH_4 3) Ethylbenzoate with LiAlH_4 4) Ethyl nitrile with LiAlH_4
17. Give any five uses of LiAlH_4 in organic synthesis.
18. What is natural rubber? What are its drawbacks? How vulcanization improves its quality?
19. Describe the mechanism of Bayer-Villiger rearrangement with suitable example.

(4 × 3 = 12 Weightage)

Section C

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

20. (a) What is a phase transfer catalyst? Give examples with the role that such a catalyst plays.
(b) Illustrate the application of phase transfer catalyst by writing equations for the reaction between NaCN and $n\text{-C}_8\text{H}_{17}\text{Cl}$ with the catalyst $n\text{-Bu}_4\text{N}^+\text{Cl}^-$
21. What are the protecting agents employed in the peptide synthesis? Illustrate their role in the synthesis of peptides.
22. Suggest the suitable mechanism of conversion of phenolic ester to ortho or para-hydroxy ketone. Which product is predominant? Explain with suitable mechanism.
23. Acetophenone oxime (CH_3 , Syn) when subjected to Bechmann rearrangement produce acetanilide, while its geometrical isomer produce N-methyl benzamide, explain with suitable mechanism.

(2 × 5 = 10 Weightage)
