22P313 (Pages: 2) Name: .....

Reg.No: .....

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2023

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19P CHE3 E01 - 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. Explain TEMPO oxidation with example.
2. What is Birch reduction? Discus the synthetic applications.
3. What happens when ethyl acetate is boiled with aqueous NaOH solution? Explain.
4. How will you distinguish between formic acid and acetic acid?
5. When methyl ketone react rapidly with Br_2 in the presence of alkali to form a product. Identify the product with mechanism.
6. Give the mechanism of addition of HCN to propanal.
7. Draw the catalytic cycle of stille coupling reaction.
8. Draw the catalyic cycle of suzuki-miyaura coupling reaction and explain.
9. Write a note on protection and deprotection of amines.
10. Write a note on two group C-X disconnections.
11. Write a note on carbonyl protection and deprotection.
12. Explain Kumada reaction with example.

(8 × 1 = 8 Weightage)

Section B

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

13. Discuss the mechanism of decarboxylation of monocarboxylic acids with lead tetraacetate and based on mechanism explain the formation of alkane, acetate and alkene during the reaction.
14. Write a note on the synthetic use of silicon and palladium based organometallics compounds.
15. Write the product formed with mechanism from the reaction of acetophenone with benzaldehyde under basic condition. Explain.

16. Write mechanism and synthetic applications of Pd catalyzed amine arylation reaction.

17. Name the coupling reactions and find the product of given reactions using suitable mechanism. (a) 4-iodoanisole + Ph-Si$(OMe)_3$ in the presence of $Pd(OAc)_2$. (b) Ar-I + Ph-ZnCl using $Pd(PPh_3)_2$ catalyst

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

19. What is the importance of retrosynthetic analysis in Total synthesis? How will you synthesis benzocain from toluene?

(4 × 3 = 12 Weightage)

Section C

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

20. Explain important applications of the following synthetic reagents (a) Metal hydrides (b) Hydrazine

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

22. Write notes on the following reaction with mechanism. (a) Perkin reaction (b) Prins reaction (c) Darzen reaction (d) Claisen reaction

23. Describe the retrosynthetic analysis and total Synthesis of Corey lactone.

(2 × 5 = 10 Weightage)

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