QP CODE: 25022454

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Reg No : .....

Name : .....

M.Sc DEGREE (CSS) SPECIAL REAPPEARANCE EXAMINATION, APRIL 2025

Third Semester

CORE - CH500302 - ORGANIC SYNTHESES

M.Sc CHEMISTRY, M.Sc ANALYTICAL CHEMISTRY

2019 ADMISSION ONWARDS

8E2A4234

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. What is Moffatt–Pfitzner oxidation?
2. Write a note on Sharpless asymmetric epoxidation.
3. Explain ozonolysis?
4. Write a note on Nef reaction.
5. Illustrate Tebbe olefination?
6. What is DIBAL-H? What is its synthetic use?
7. Briefly explain the utility of Grubb's catalyst in organic synthesis.
8. List out two important protecting groups utilized in peptide synthesis.
9. What is the difference between a synthon and a reagent?
10. What is umpolung? Give its significance.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

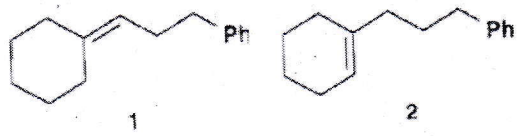
*Weight **2** each.*

11. Explain the mechanism of Baeyer- Villiger Oxidation.
12. Write a note on Birch reduction.
13. Discuss the impact and advantages of click reactions in organic synthesis. Explain the mechanism of Huisgen 1,3-dipolar addition.
14. Give an account of Ugi reaction.
15. Discuss the synthetic utility of Gilmann reagent in organic synthesis

16. Suggest one method each for the synthesis of the following heterocyclic compounds thiophene and oxazole.

17. Name two different methodologies to protect 1,2 diols? Explain with appropriate examples?

18. Suggest a retrosynthetic analysis and a synthetic methodolgy for the isomeric alkenes given below



1 2

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Discuss various transition metal-mediated cross-coupling reactions that create the C-X bonds with a detailed mechanism in each case.

20. a) Illustrate the utility of trialkyl stannanes and trialkyl silanes as important organic reagents.
    b) Describe the properties and reactions facilitated by Gilmann Reagent .

21. a) Discuss the protocols adopted for simultaneous ring expansion and ring contraction with reaction mechanism.
    b) Explain olefiin metathesis and its applications in current organic synthetic landscape.
    c) Explain the mechanism and industrial importance of Reformatsky reaction

22. Explain in detail the protecting groups utilized in solution-phase and solid-phase peptide synthesis (SPPS). Elaborate on the scope, challenges, and advantages of both methodologies.

(2×5=10 weightage)