QP CODE: 22002452

22002452

Reg No : .....

Name : .....

MSc DEGREE (CSS) EXAMINATION , NOVEMBER 2022

Second Semester

CORE - CH500202 - ORGANIC REACTION MECHANISMS

M Sc ANALYTICAL CHEMISTRY,M Sc APPLIED CHEMISTRY ,M Sc CHEMISTRY,M Sc PHARMACEUTICAL CHEMISTRY,M Sc POLYMER CHEMISTRY

2019 Admission Onwards

037ED721

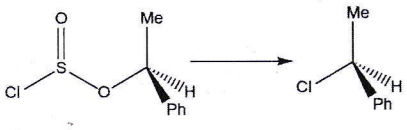
Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. 

   Draw the mechanism for the reaction.

2. Draw the mechanism for the formation and a reaction of a boron enolate.
3. Write a short note on the formation of carbocations.
4. Draw the mechanism of oxy-mercuration reaction.
5. How will you convert benzophenone to 1,1-diphenylethene?
6. Chlorobenzene reacts with sodamide to give aniline via, benzyne formation. However, 2,6-dimethylchlorobenzene does not react. Explain why?
7. Discuss Barton deoxygenation.
8. Write two examples of oxidation reactions of aldehydes and ketones.
9. What are the characteristics of 1, 3-dipolar species in 1, 3-dipolar cycloaddition reactions?
10. What is Cope elimination? Illustrate with an example.

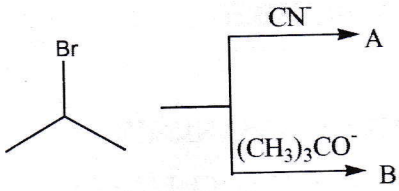
(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11.



Predict the products A and B. Justify your answer.

12. Draw the mechanism of Claisen and acyloin condensations .Write salient features of both reactions.

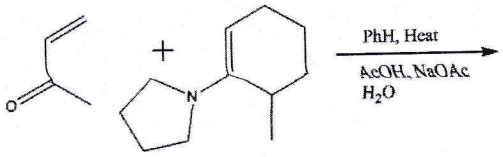
13. Draw the mechanism of Wagner-Meerwein and dienone-phenol rearrangements. Write salient features of both reactions.

14. Outline the methods for the generations of nitrenes.

15. Write a short note on Baldwin's rule.

16. Explain the mechanisms of the following reactions.

a]



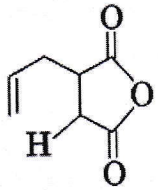
b) CH_2=CH-CHO + $CH_2(COOC_2H_5)_2$ $\xrightarrow{C_2H_5ONa}$

17. Give the mechanism of the chelotropic cycloaddition reactions between
    (i) alkene and carbene.
    (ii) alkene and SO_2.

18. How would you employ pericyclic reactions in the synthesis of the following compounds?

(a)

(b)



(6×2=12 weightage)

Part C (Essay Type Questions)

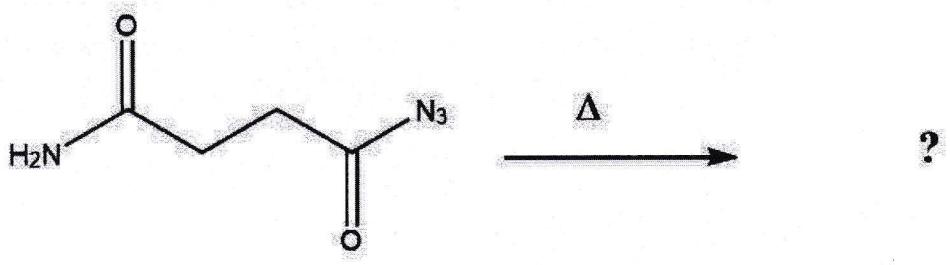
*Answer any **two** questions.*

*Weight **5** each.*

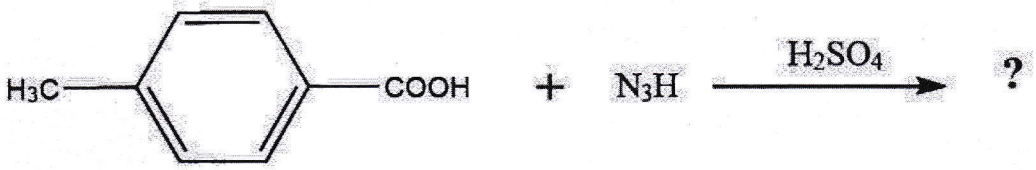
19. Write a brief account of the effect of substrate, reagent, leaving group, solvent, and neighbouring group on S_N1 and S_N2.

20. Predict the products and mechanism of the following reactions.

a)



b)



21. Discuss briefly a)Aldol condensation b)Cannizzaro reaction, c)Grignard reagent addition to carbonyl compounds with examples and applications

22. Predict the feasibility of thermal and photochemical closure of E,Z,E-1,6-dimethyl hexa-1,3,5-triene to 5,6-dimethyl cyclohexa-1,3-diene on the basis of FMO method and correlation approach

(2×5=10 weightage)