17/10/25

TM25S544N

Reg. No :

Name :

MASTER'S DEGREE (C.B.S) EXAMINATION, OCTOBER 2025

2024 ADMISSIONS REGULAR

SEMESTER III - CORE COURSE

CHSC10TM20 - Synthetic Organic Chemistry

Time : 3 Hours

Maximum Weight : 30

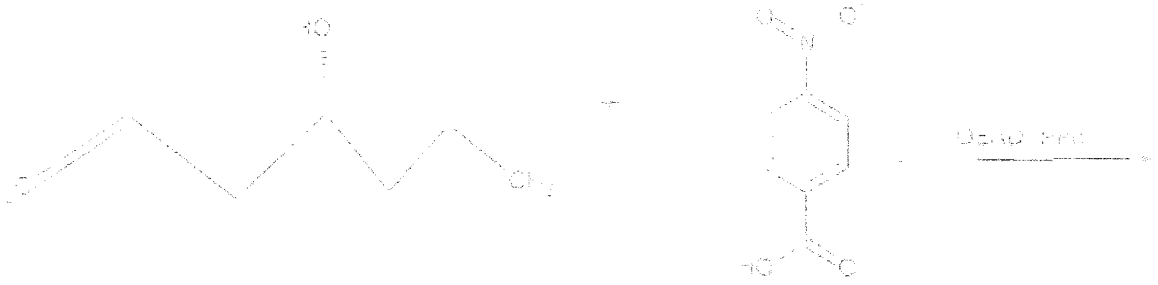
Part A

I. Answer any Eight questions. Each question carries 1 weight. (8x1=8)

1. Give two examples of conversion of ketones to lactones using peracids.
2. Describe Wacker oxidation. Name the catalyst and co-catalyst used in Wacker oxidation.
3. Explain the primary function of DABCO within the Baylis-Hillman (MBH) reaction mechanism. [CO1,Understand]
4. Identify the reagent employed for allylic or benzylic bromination and illustrate the steps involved in generating the bromine radical species.
5. Explain the reduction of carbonyl compounds using $NaBH_4$.
6. Discuss the formation of acetal and ketal from carbonyl compounds.
7. Identify the diene which undergo Diels Alder reaction and explain the reason.



8. Predict and explain the product of the following reaction.



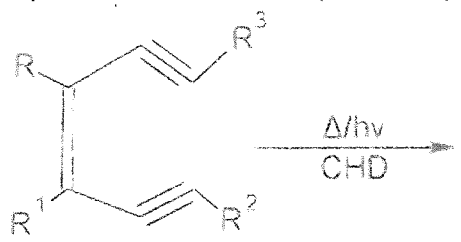
9. Discuss on the retrosynthetic aspects of Robinson annelation.
10. Explain the retrosynthetic aspect of Michael addition.

Part B

II. Answer any SIX questions. Each question carries 2 weight. (6x2=12)

11. Explain the oxidation of alkenes to diols using (a) Mn (b) Os.
12. Describe the following reactions with mechanism (a) Ozonolysis (b) Heterogeneous catalytic hydrogenation.
13. Explain the mechanism of Henry reaction used to prepare a C-C bond.
14. Discuss the mechanism of Negishi coupling by giving its importance.
15. Discuss the preparation and reactions of (a) Gilmann reagent (b) DDQ (c) DCC.

16. Explain the mechanism and predict the product of the following reaction.



17. Explain different methods for the preparation of thiophene and imidazole.
18. Explain ring closing metathesis.

Part C

III. Answer any Two questions. Each question carries 5 weight **(2x5=10)**

19. Illustrate the mechanism of following reactions (a) Oppenauer oxidation (b) Pinacol reaction (c) Se and Cr based allylic oxidation.
20. Explain the mechanism for each of the following reactions, providing an example for each: (a) Glaser coupling
    (b) Sonogashira coupling
    (c) Brook rearrangement
21. Explain (a) Chemo and regio selective protection and deprotection (b) Protection and deprotection of hydroxy group.
22. Discuss (a) the important disconnections in α, β- unsaturated carbonyl compounds and 1,5 difunctionalised compounds (b) the following terms with suitable examples i) Synthons ii) synthetic equivalent iii) FGI iv) target molecule v) RASM .