

20001118



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Reg. No.....

Name.....

**M.Sc. DEGREE (C.S.S.) EXAMINATION, NOVEMBER 2020**

**Second Semester**

Faculty of Science

Branch : Chemistry

AN2C06/AP2C06/CH2C06/PH2C06/POH2C06—ORGANIC REACTION MECHANISM

(2012—2018 Admissions)

[Common to all Branches of Chemistry]

Time : Three Hours

Maximum Weight : 30

**Section A**

*Answer any ten questions.*

*Each question carries weight 1.*

1. What are ambident nucleophiles ? Give an example.
2. Why the backside attack of  $S_N2$  reactions is favoured ?
3. Discuss two methods of formation of carbanions.
4. What are ylides ? Where are they used ?
5. What are classical carbocations ? Give two examples.
6. Distinguish between singlet and triplet carbenes.
7. What are the factors that stabilize a carbon free radical ?
8. What is autooxidation ?
9. Discuss the stereochemistry of addition of cyanide ion to a carbonyl compound.
10. With suitable example distinguish between conrotatory and disrotatory motions.
11. What are the products of concerted cycloaddition of ethylene and cis-2-butene ?
12. Why thermal [1, 3] sigmatropic migrations of hydrogens are unknown ?
13. What is metalla ene reaction ? Give one example.

(10 × 1 = 10)

**Turn over**





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### Section B

Answer any **five** questions by attempting not more than three questions from each bunch.  
Each question carries weight 2.

#### BUNCH 1

14. Discuss the effect of leaving group on the rate of E1 and E2 reactions.
15. Discuss the mechanism of Knoevenagel reaction.
16. Explain the mechanism of the semipinacol rearrangement.
17. Discuss the mechanism of formation of an ylide by carbenoid decomposition.

#### BUNCH 2

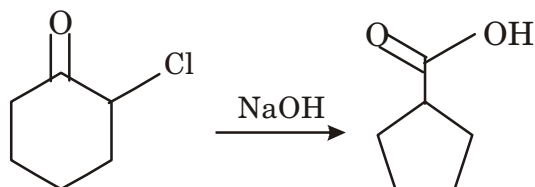
18. Briefly explain the various formation methods of carbon free radicals.
19. Explain the mechanism of Wolf-Kishner reduction.
20. With the help of PMO and FMO methods, show that [2 + 2] cycloaddition reaction is photochemically allowed reaction.
21. Explain the mechanism of Mislow-Evans reaction.

(5 × 2 = 10)

### Section C

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

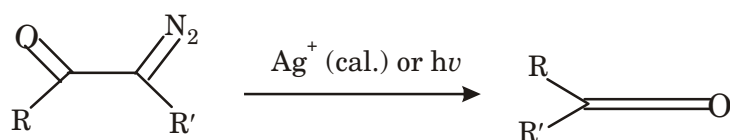
22. (a) Discuss the ion pair mechanistic approach of S<sub>N</sub>1 reaction.  
(b) Explain the mechanism of the following reaction :





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23. (a) Discuss the mechanism of Noyori annulations.  
(b) Discuss the mechanism of the following rearrangement.



24. (a) Explain the formation and rearrangement reactions of hydroperoxide.  
(b) Discuss the mechanism of Robinson annulations.
25. Explain Diels-Alder reaction. Describe its mechanism and stereochemical aspects. What are its applications.

(2 × 5 = 10)

