G 3507 (Pages : 3) Reg. No.....

Name.....

M.Sc. DEGREE (C.S.S.) EXAMINATION, AUGUST 2015

Second Semester

Faculty of Science

Branch : Chemistry

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

(Common to all branches of Chemistry)

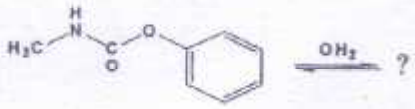
(2012 Admission onwards)

Time : Three Hours Maximum Weight : 30

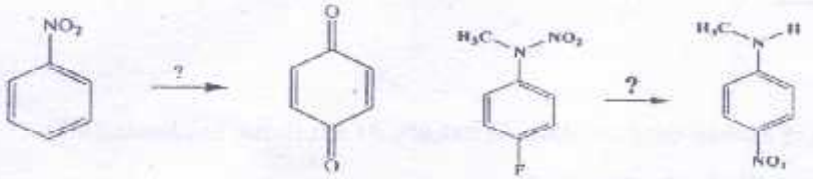
Section A

Answer any **ten** *questions.*
Each question carries a weight of 1.

1. What are free radicals? How are they prepared ?
2. What are the effects of leaving groups on the nucleophilic substitution reactions ?
3. Distinguish between singlet carbene and triplet carbine.
4. What are nitrenes ? Outline any *two* methods for their formation.
5. What are ylids ? Discuss the use of ylide in Peterson olefination.
6. Distinguish between classical and non-classical carbocations.
7. Discuss Baldwin's rules.
8. Briefly explain the Woodward Hoffmann rule.
9. Write down the product(s) and mechanism of the reaction.



10. Write down the reagents used for the following conversions.



11. What are the factors affecting the feasibility and rate of an organic reaction.

Turn over

12. "Amongst simple reagents, only cyanide ion catalyses the self condensation of Benzaldehyde". Why ?

13. Briefly explain oxymercuration.

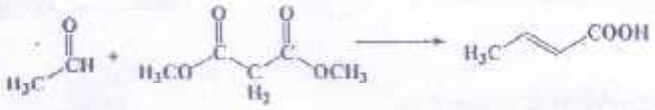
(10 × 1 = 10)

Section B

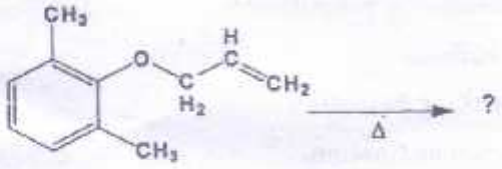
Answer any **five** *questions.*
Each question carries a weight of 2.

14. Discuss the anti Markovnikov's addition mechanism.

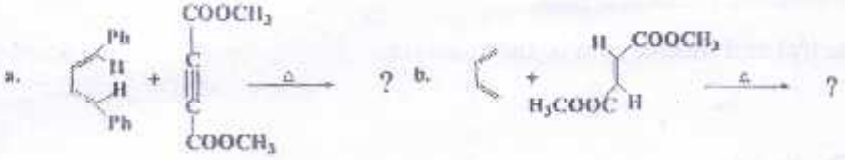
15. Sketch the mechanism of :



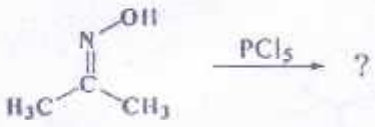
16. Write down the product(s) and explain the mechanism of the following :



17. Predict the product of the given reaction :



18. Predict the product(s) and write down the mechanism of :



19. Discuss the mechanism of Stobbe condensation. What are its synthetic applications ?

20. Explain the mechanism of Wolf rearrangement.

21. Discuss the Pinacole-pinacolone rearrangement. How is it differ than semi-pinacol rearrangement.

(5 × 2 = 10)

Section C

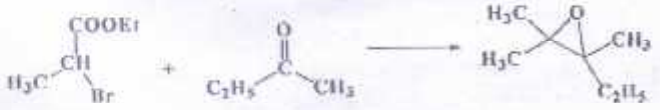
Answer any **two** *questions.*
Each question carries a weight of 5.

22. Write down the mechanisms of Lossen and Schmidt rearrangement reactions. What are the similarities observed ?

23. Discussthe Diels-Alder reaction with suitable example. What is the stereochemistry involved ?

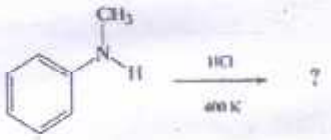
24. (a) What product would you obtain from a base catalyzed Michael Reaction of 2,4- pentanedione with each of the following α, β- unsaturated acceptors ? (i) Propenenitrile ; (ii) Ethyl-2-butenoate.

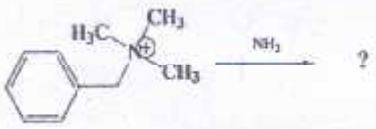
    (b) Explain the mechanism of the reaction :

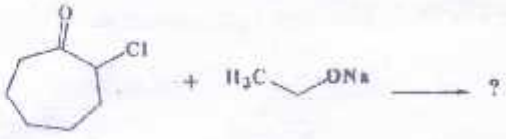


(2 + 3 = 5)

25. Give the structure of the product(s) and explain the mechanisms for the following reactions :

a)


b)


c)


(1.5 + 1.5 + 2 = 5)

(2 × 5 = 10)