Reg. No ..... Name **21P2020**

M. Sc DEGREE END SEMESTER EXAMINATION - JULY 2021

SEMESTER 2 : CHEMISTRY / PHARMACEUTICAL CHEMISTRY

COURSE : **16P2CHET06 / 16P2CPHT06 : ORGANIC REACTION MECHANISM**

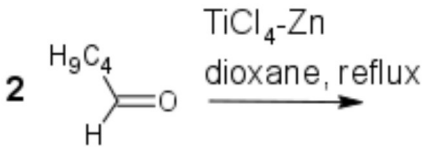
(For Regular - 2020 Admission and Supplementary 2019/2018/2017/2016 Admissions)

Time : Three Hours Max. Marks: 75

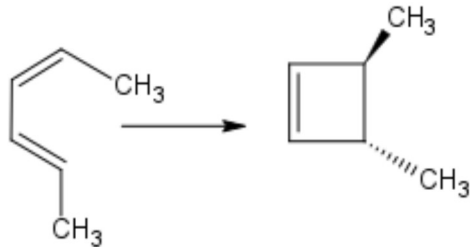
PART A

Answer any 10 (2 marks each)

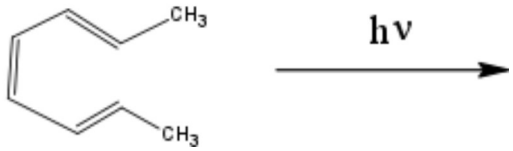
1. Discuss S_N2 reaction.
2. Alkyl bromides or chlorides give a precipitate of sodium bromide or sodium chloride when treated with sodium iodide in acetone. Explain.
3. CH_2=$CHCH_2CH_2Cl$ is less reactive than CH_3CH=$CHCH_2Cl$ towards alcoholic Ag NO_3 under the conditions of S_N1 process. Justify.
4. What is cine- substitution? Explain with an example.
5. Give any two examples of hydroboration reactions.
6. Explain Dienone-phenol rearrangement.
7. What are Nitrenes? Give an example.
8. Predict the structure and stereochemistry of the product.



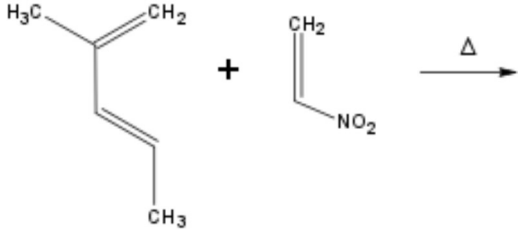
9. Predict the reaction condition for the following reaction. Explain



10. Rationalise the stereochemistry of the product formed in the following reaction.

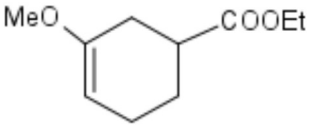


11. Predict the major product in the reaction given below. Rationalise your answer.



12. Complete the following reaction sequence. Rationalise your answer.

13. Give structure of a diene and a dienophile to give each of the following compound by a Diels-Alder reaction.



(2 x 10 = 20)

PART B

Answer any 3 (5 marks each)

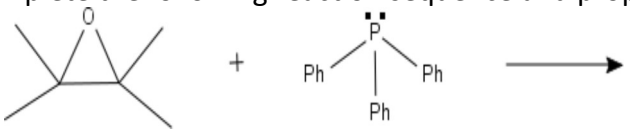
14. Write briefly on Gatterman-Koch and Jacobsen reactions.
15. Give an account of benzynes emphasizing on their structure and any two reactions.
16. Explain Lossen rearrangement with mechanism. Give any one synthetic application.
17. Using symmetry correlation method, show that Diels Alder reaction is favoured thermally.
18. Using PMO approach show that Diels Alder reaction is photochemically forbidden.

(5 x 3 = 15)

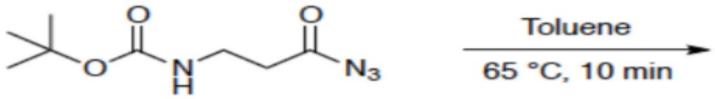
PART C

Answer any 2 (5 marks each)

19. Bimolecular substitution of pyridine/ 2-methyl pyridine/ 4-methyl pyridine with CH_3I is faster? Explain.
20. Complete the following reaction sequence and propose a mechanism for this reaction.

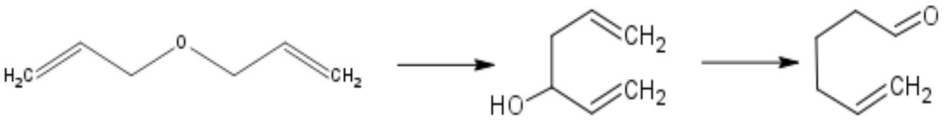


21. Write the product and the mechanism of the following reaction.



Acyl azide

22. Complete the following reaction sequence and explain the steps involved.



(5 x 2 = 10)

PART D

Answer any 2 (15 marks each)

23. Compare and contrast Wittig reaction and Peterson olefination. Explain their mechanism giving emphasis on the stereoselectivity of these reactions. Give a brief account of their synthetic applications.
24. Discuss the formation, structure and stability of carbocations and list any four synthetic applications.
25. Write briefly on the mechanism and synthetic applications of McMurry coupling, autoxidation and Barton de oxygenation.
26. Discuss the mechanisms of pericyclic reactions such as Wittig, Mislow-Evans and Sommelet-Hauser rearrangements. Show how these reactions are useful in organic synthesis.

(15 x 2 = 30)