

Reg. No

Name

19P2020

MSc DEGREE END SEMESTER EXAMINATION - MARCH/APRIL 2019
SEMESTER 2 : CHEMISTRY / PHARMACEUTICAL CHEMISTRY
COURSE : 16P2CHET06 / 16P2CPHT06 : ORGANIC REACTION MECHANISM
(For Regular - 2018 Admission and Supplementary - 2017/2016 Admissions)

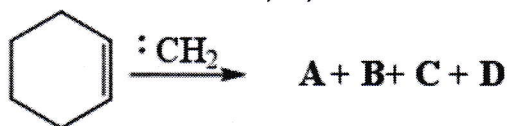
Time : Three Hours

Max. Marks: 75

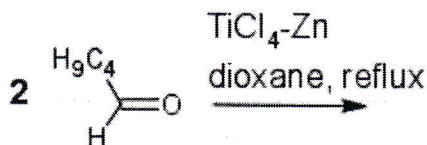
Section A

Answer any 10 (2 marks each)

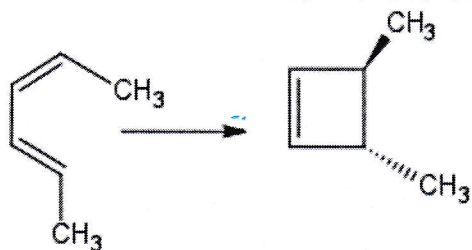
1. Explain S_N1 reaction.
2. Benzyl bromide is more reactive than cyclohexylmethyl bromide towards aqueous NaOH under conditions of S_N1 process. Why?
3. How Vilsmeier reaction is useful in the formylation of aromatic rings? Give an example.
4. Explain the importance of Stork-enamine reaction in alkylation.
5. Arrange the following molecules in the increasing order of nucleophilicity. Enol, enolate and enamine.
6. Write a note on the effect of substituents on reactivity in the electrophilic and nucleophilic additions to alkenes.
7. Give the structure of A, B, C and D



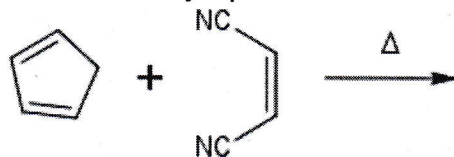
8. Predict the structure and stereochemistry of the product.



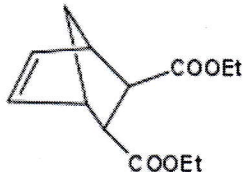
9. Explain group transfer reactions citing a suitable example.
10. What is the effect of Lewis acids on a Diels Alder reaction? Explain with an example.
11. Predict the reaction condition for the following reaction. Explain



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



13. How can the following molecule be synthesized by Diels Alder reaction?



(2 x 10 = 20)

Section B

Answer any 3 (5 marks each)

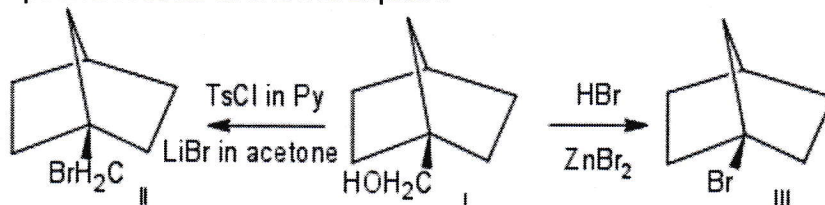
14. Suggest a plausible mechanism to account for the conversion of neopentyl alcohol into 2-iodo-2-methyl butane when treated with HI.
15. Give an account of nitrenes, their stability and classification.
16. Explain Schmidt rearrangement with mechanism. Give any one synthetic application.
17. Discuss briefly on Hückel-Möbius approach of cyclization of 1,3,5-hexatriene.
18. Write on a note on 2,3-Wittig Rearrangement citing the mechanism.

(5 x 3 = 15)

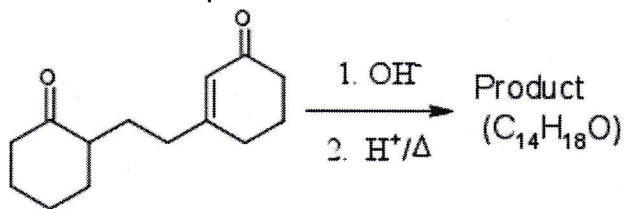
Section C

Answer any 2 (5 marks each)

19. Compound I reacts as shown. Explain.

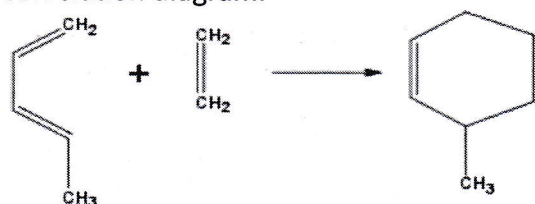


20. Predict which enone product would be formed in this intramolecular aldol condensation. Explain the mechanism of the reaction.



21. Starting with cyclohexene and using any other needed reagent outline the synthesis of 7,7-dibromobicyclo [4.1.0]heptane.

22. Analyse and suggest the reaction condition for the following reaction using orbital correlation diagram.

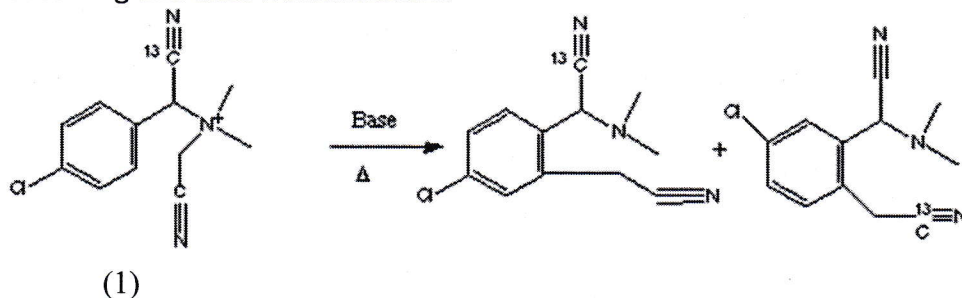


(5 x 2 = 10)

Section 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. Discuss the mechanism of radical fragmentation, radical addition and radical rearrangement reactions.
26. When compound (1) is treated with a base and heated, it rearranges to give the products shown. The ^{13}C isotope is distributed unequally between two products. Explain this result in mechanistic terms, and clearly indicate the type of reactions occurring and their nomenclature.



(15 x 2 = 30)