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PG (NEW) CBCS
M.Sc. Semester-II Examination, 2019
CHEMISTRY
PAPER: CEM-202
(ORGANIC CHEMISTRY - II)

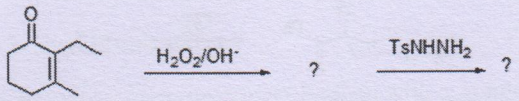
Full Marks: 40 **Time: 2 Hours**

Group-A

Answer any four questions of the following: **4×2=8**

1. What is chelotropic reaction? Give an example.

2. Predict the product of the following reaction sequences-



3. Describe schematically Woodward *cis*-dihydroxylation.

4. What is AD-mix-α ?

5. What is the difference between configurational and conformational isomers?

6. What are the most and least stable conformational isomers of cyclohexane?

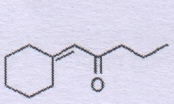
7. Define stereospecific and stereoselective reaction with examples.

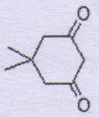
8. What is pro-stereogenic centre? Describe with example.

Group-B

Answer any four questions of the following: **4×4=16**

9. Propose the synthesis of the following compounds. (2+2)

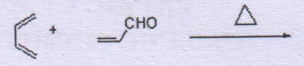


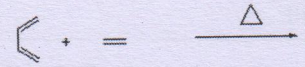


(Turn over)

10. Draw co-relation diagram of butadiene in photo-chemical condition. 4

11. Which reaction is faster and why? 4

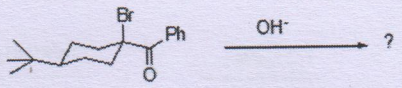
Reaction 1: 

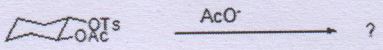
Reaction 2: 

12. Draw the Fischer projection for (2R, 3S) -2- chloro-3- fluoro pentane.

Convert this Fischer projection into Newman projection. (2+2)

13. Give the product and mechanism of each of the following reactions. (2+2)

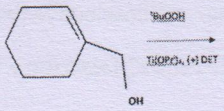




14. What is atropisomerism? Define buttressing effect with example. (2+2)

15. Will you utilise 1,2- dithiane instead of 1,3-dithiane for the protection of aldehyde in Corey-Seebach reaction? Explain in detail. 4

16. Find the product(s) of the following reaction with mechanism. 4

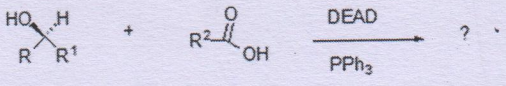


Group-C

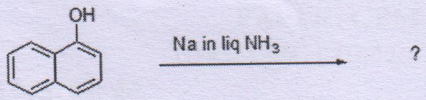
Answer any two questions of the following: **8×2=16**

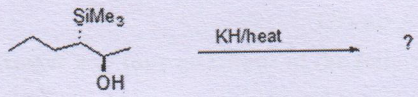
17. Explain the reaction between cyclopentadiene and maleic anhydride indicating Frontier orbital interaction. Define 'site selectivity' with example. Is it different from 'periselectivity'? (4+2+2)

18. (a) Describe the product and mechanism of the following reaction. (4+2+2)



(b) Predict the product(s) with mechanism.

(i) 

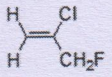
(ii) 

(c) What do you mean by pro-chirality? Illustrate with and example.

19. (a) What is 2- alkyl ketone effect ? 2+2+2+2 =8

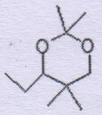
(b) What is pro- pseudoasymmetric center? Explain with example.

(c) Find pro-E and pro-Z atoms/groups of the following structure.

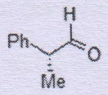


(d) Draw all conformations of 1,2–dimethyl cyclohexane and 1,3- dimethyl cyclohexane. Assign the preferred conformers.

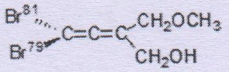
20. (a) Suggest a synthetic pathway for the following compound. (3+3+2)



(b) Discuss the nucleophilic attack to the carbonyl group of the following compound with the help of Cram and Felkin – Ann models. Are the two products same or different?



(c) Designate the absolute configuration (R_a/S_a) for the following structure.



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