



16UCH6MC03 – SYNTHETIC ORGANIC CHEMISTRY AND HETEROCYCLIC COMPOUNDS

Date: 20-06-2022

Dept. No.

Max. : 100 Marks

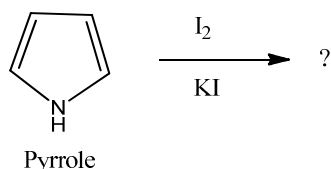
Time: 01:00 PM - 04:00 PM

PART-A

Answer ALL the questions:

(10 × 2 = 20)

1. What is retrosynthesis?
2. List the synthons and synthetic equivalents involved in the retrosynthesis of daminozide.
3. Mention any two synthetic uses of DIBAL.
4. How will you convert propylene to 1-propanol using hydroboration-oxidation method?
5. Write any four important characteristics of pericyclic reactions.
6. What are called group transfer reactions? Give an example.
7. Why pyridine is more basic than pyrrole?
8. Write any one method of preparation of isoindole.
9. Draw the structure of quinoline and isoquinoline.
10. Complete the reaction.

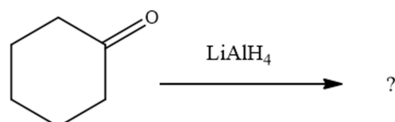


PART-B

Answer ANY EIGHT questions

(8 × 5 = 40)

11. Describe the advantages of convergent synthesis over linear synthesis.
12. Explain the importance of protecting groups in retrosynthesis.
13. Discuss the retrosynthesis of Ofornine.
14. Explain the mechanism of Birch reduction.
15. Outline the significance of homogeneous catalytic hydrogenation reaction.
16. Predict the product with mechanism.



17. Justify the following statement using FMO approach. [4+2]-cycloaddition reaction is photochemically forbidden.
18. What are sigmatropic rearrangement reactions? How are they classified?
19. Write the preparation methods of thiophene.
20. How will you prepare quinoline by ring closure methods?
21. Write a note on the preparation and reactions of 1,2- and 1,4-dioxan.
22. Discuss the different synthetic methods of furan.

PART-C

Answer ANY FOUR questions

(4 × 10 = 40)

23. (a) Explain umpolung synthesis with an example. **(5)**
(b) List the synthons and synthetic equivalents involved in the retro synthesis of 2,4-dichlorophenoxyacetic acid and cetaben ethylester. **(5)**
24. (a) Predict the product formed in the oxidation of alkenes and alkynes in presence of KMnO_4 . **(5)**
(b) Describe the nucleophilic substitution reactions of benzothiophene. **(5)**
25. (a) Discuss the steps involved in the catalytic hydrogenation of Alkene using heterogenous catalyst. **(5)**
(b) Describe the FMO approach for thermal and photochemical [2+2]-cycloaddition reaction with an example for each. **(5)**
26. (a) Describe the thermal feasibility of $4n$ electrocyclic reaction using FMO approach. **(5)**
(b) How indole is prepared by Fischer Indole synthesis? **(5)**
27. (a) Compare the aromaticity of pyrrole, furan and thiophene. Give reasons. **(5)**
(b) Explain the oxidation and reduction reactions of quinoline. **(5)**
28. Mention the method of synthesis for the following compounds. **(2.5 x 4)**
(i) THF
(ii) Tetrahydrothiophene
(iii) Pyrrolidine
(iv) Piperidine.
