D 31106

(Pages : 4)

Name.....

Reg. No.....

THIRD SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, NOVEMBER 2022

(CBCSS)

Chemistry

CHE 3C 11—REAGENTS AND TRANSFORMATIONS IN ORGANIC CHEMISTRY

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

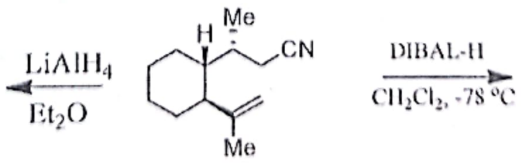
Section A

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

1. How will you effect the following conversion ?

2. Suggest reagents and conditions to effect the following conversion in high yields :

3. Predict the products in the following transformations :



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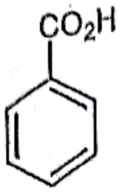
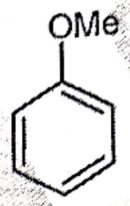
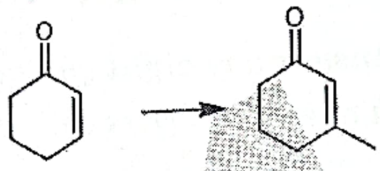
4. Write down the structure of the major Birch reduction products of the following compou

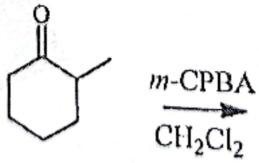




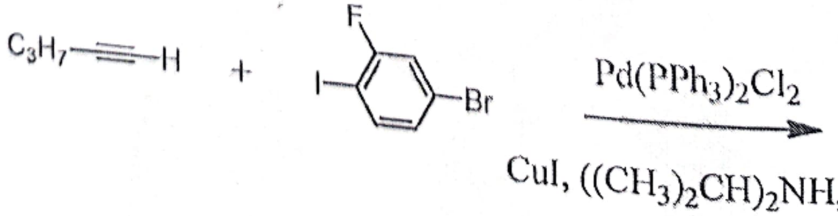
5. How will you effect the following transformation ?



6. Write down the mechanism of the reaction of 1,2-diols with $Pb(OAc)_4$.
7. What are the major amino protecting groups used in solid phase peptide synthesis ?
8. Write down the structure of the following heterocyclic compounds : a) Uracil ; and b) T
9. Predict the product in the following reaction :



10. Write down the structure of the major cross coupling product obtained in the following

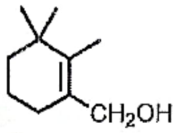


(8 × 1 = 8 W

Section B

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

11. Name the oxidant and catalyst in Sharpless asymmetric epoxidation ? Write down the structure of the product in the epoxidation of the following substrate in presence of (+)-DET.



12. Indicate the mechanism of Swern oxidation.

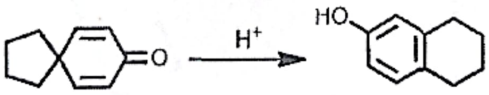
13. Discuss the applications of homogenous hydrogenation catalysts in organic synthesis.

14. Illustrate the use of hydroboration followed by oxidation as a synthetic strategy to get carbonyl compounds.

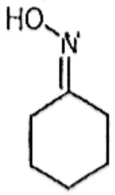
15. Suggest suitable reagents for allylic and benzylic bromination. Explain the selectivity of the reaction with mechanism. Give examples.

16. Give the structure of cellulose and starch and highlight the differences.

17. Write a plausible mechanism for the following transformation:



18. Predict the major product obtained in Beckmann rearrangement of the following compounds. Justify.



(6 × 2 = 12 weightage)

Turn over

Section C

Answer any **two** *questions.*

Each question carries a weight of 5.

19. Write a brief note on : a) Jacobsen epoxidation ; and b) MPV reduction.

20. Explain the application of the following with suitable examples:

    a) Reduction of carbonyl group with hydrazine and *p*-tosylhydrazine.

    b) Clemmensen reduction.

21. Illustrate the synthetic application of the following reagents with appropriate example

    a) DCC ; and b) 9-BBN

22. Give a short account of : a) Molecular recognition ; and b) Self-assembly in supramolecular

$(2 \times 5 = 10$