

2022

M.Sc.

2nd Semester Examination (CCAЕ)

CHEMISTRY

PAPER—СЕМ-202

ORGANIC CHEMISTRY-II

Full Marks : 40

Time : 2 Hours

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*Illustrate the answers wherever necessary.*

**Group—A**

Answer any four questions.

4×2

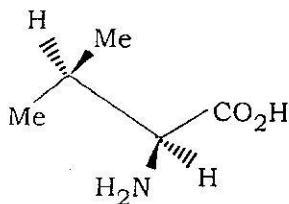
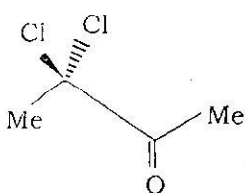
1. Give the retrosynthetic analysis as well as the forward synthesis for the following compound:



2. State and explain the endo rule with reference to Diels-Alder reactions.

(Turn Over)

3. What is cycloreversion reaction? Give an example.
4. What is atropisomerism? Explain with example.
5. How peptide can be synthesized using Merrifield resin?
6. Assign Pro-R and Pro-S configurations to the ligands as attached to the pro-stereogenic centre. Also determine their topicity (enantio/diastereo).

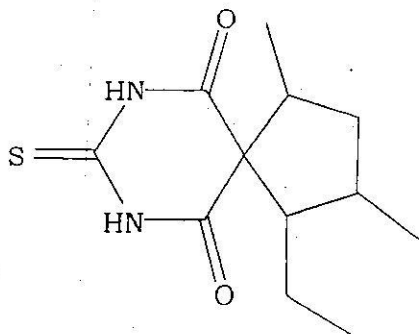


### Group—B

Answer any four questions.

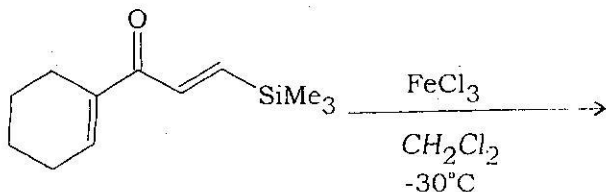
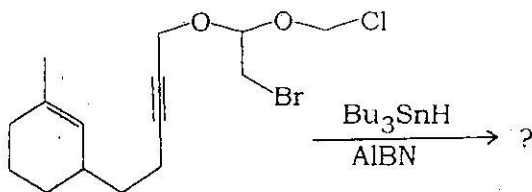
4×4

7. Using correlation diagram show that Diels Alder reactions are thermally allowed.
8. Discuss the Woodward Hoffmann rules for cycloaddition reactions.
9. Give the retrosynthetic analysis and the forward synthesis for the following compounds:

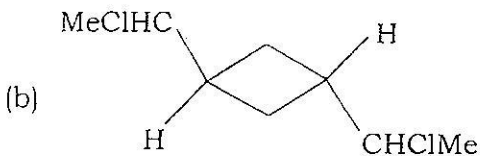
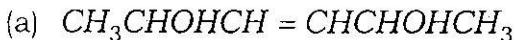


10. How many chiral centres are there in 9,10-dimethyldecalins? Write 3D structures of those conformers and show in them the gauche-butane interactions.

11. Predict the product(s) with mechanism.



12. How many stereoisomers are possible with the following constitutional structure? Comment on the symmetry elements present in each and the chirality of each isomer.

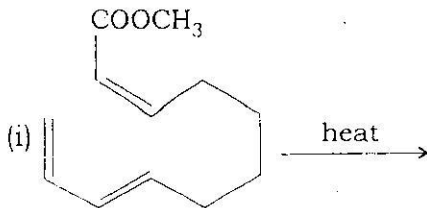


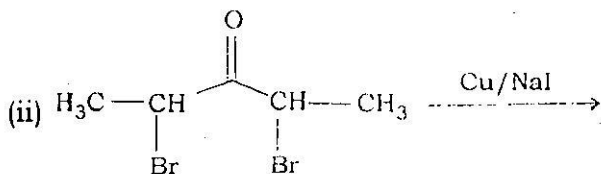
### Group—C

Answer any *two* questions. 2×8

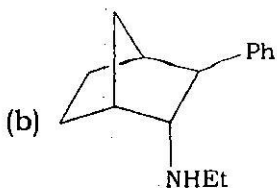
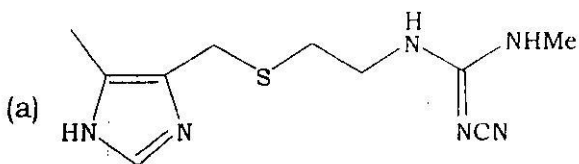
13. (a) What is 1,3-dipolar cycloaddition reaction? Using FMO approach show that the 1,3-dipolar cycloaddition between diazomethane and ethylene is symmetry allowed. 4

- (b) Predict the product(s) with plausible mechanism for the following reactions: 2+2





14. Using retrosynthetic approach how will you synthesize the following molecules: 5+3



15. Explain with suitable examples

4+4

(a) 2-alkyl ketone effect

(b) 3-alkyl ketone effect.

## 16. Identify A to I

