

FACULTY OF SCIENCE
M.Sc. III Semester Examination, March 2021

Subject: Chemistry (Organic chemistry)
Paper: I – SRA NMR, Conformational Analysis of ORD

Time: 2 Hours

Max. Marks: 80

PART – A**Note: Answer any five questions.****(5 x 7 = 35 Marks)**

- 1 Write briefly about the Rhodium based carbene complexes.
- 2 Write briefly about the protection of carbonyls by cyclic acetal/cyclic ketal formation.
- 3 Discuss the oxidative cleavage of 1,2- diols using the lead tetra acetate.
- 4 Write briefly about the use of tri-n-butyl tin hydride in radical reductions.
- 5 Explain the terms Homonuclear and Heteronuclear couplings in ^{13}C -NMR spectroscopy.
- 6 Write briefly about the NOESY spectra with examples.
- 7 Explain the terms cotton effect, plain curves and anomalous curves.
- 8 Write the conformational structures for N-Methylpiperidine and quinolizidine.

PART – B**Note: Answer any three questions.****(3 x 15 = 45 Marks)**

- 9 (a) Explain briefly about the phosphorousylide mediated olefination.
 (b) Explain briefly about the organic reactions involving β -carbocations of organosilicon reagents.
- 10 (a) How organoboranes are useful in C-C bond formation? Explain with suitable examples.
 (b) Write short notes on (1) Protection of alcohols as silyl ethers (2) Petasis reagent
- 11 (a) Write briefly about the reagents DMP, CAN with one example each.
 (b) Write short notes on (1) Wilkinson's catalytic reduction (2) Birch reduction.
- 12 (a) Explain briefly about the prevost oxidation.
 (b) Write short notes on (1) Use of NaBH_4 (2) PCC.
- 13 (a) Calculate the chemical shift value for the following compound.
 $\text{CH}_3\text{-CH}_2\text{-CH}=\text{[CH]-CH}_3$
 Increment values for α is + 10.6; α^1 is -7.9 and β^1 is - 1.8
 (b) How ^{13}C -NMR spectra is useful in the reaction mechanisms of organic molecules.
- 14 (a) Discuss in detail about the HETROCOSY using the example of 1-nitropropane.
 (b) Explain briefly about the HMQC spectra using an example.
- 15 (a) Discuss in detail about the stereo chemistry of decalines.
 (b) Write briefly about the conformational analysis of 1,3-disubstituted cyclohexanes.
- 16 (a) Mention the conformations of cyclohexane. Discuss in detail about the chair and boat conformations.
 (b) Explain the reaction of acid catalysed reaction of 1,2-dimethylcyclohexane-1,2-diols using cis isomer.

FACULTY OF SCIENCE
M.Sc. III Semester Examination, March 2021

Subject: Chemistry (Organic Chemistry)
Paper - II : Modern Organic Synthesis

Time: 2 Hours

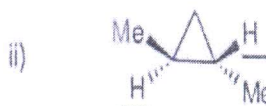
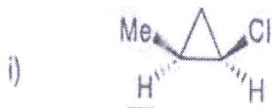
Max. Marks: 80

PART – A

Note: Answer any five questions.

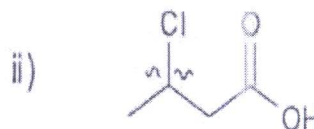
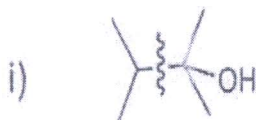
(5 x 7 = 35 Marks)

1 Predict the topicity of the underlined atoms in the following



2 Explain Cram's rule taking a suitable example.

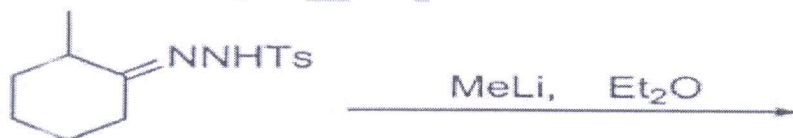
3 Give the synthons and synthetic equivalents for the following disconnections



4 What is FGI? Explain taking suitable example.

5 What is Michael reaction? Give its mechanism.

6 Complete the following reaction with mechanism.



7 Explain the mechanism of phase transfer catalysis.

8 Formulate the synthesis of S-ipsenol from S-leucine.

PART – B

Note: Answer any three questions.

(3 x 15 = 45 Marks)

- 9 (a) What is 1,4-asymmetric induction? Explain it with an example.
(b) Define % enantiomeric excess and explain its determination by using chiral derivatising agents.
- 10 (a) Explain the diastereoselective aldol reaction taking a suitable example.
(b) Write a brief note on methods of inducing enantioselectivity.

