

Code No. 3700

FACULTY OF SCIENCE
M.Sc. III - Semester Examination, December 2014

Subject: Organic Chemistry
Paper - IV: Spectroscopy and Photo Chemistry

Time: 3 hours

Max. Marks: 80

Note: Answer all questions from Part - A and Part - B.
Each question carries 4 marks in Part - A and 12 marks in Part - B.

PART - A (4 x 8 = 32 Marks)
(Short Answer Type)

- 1 a) Write the principle and application of INEPT.
b) Explain the factors that effect ^{13}C NMR spectroscopy.
- 2 a) Write a short notes on NOESY.
b) Discuss the Hyperfine splitting in ESR spectroscopy.
- 3 a) Explained the de- π -mettan rearrangement.
b) Write notes on cis-trans isomerism in photochemistry.
- 4 a) Explain Paterno-Buchi reaction.
b) Write notes on inter molecular abstraction of hydrogen with examples.

PART - B (4 x 12 = 48 Marks)
(Essay Answer Type)

- 5 a) Discuss the application of ^{13}C NMR spectroscopy.
b) Explain briefly the α , β and ' γ ' effect in ^{13}C NMR spectroscopy.
OR
c) Discuss in details the principles involved in APT.
d) The proton-de coupled ^{13}C NMR spectrum of an unknown compound shown resonances at δ 126.3, 128.2, 128.4, 132.9, 137.1 and 197.6. Which of the following structure is consistent with the data. Explain.



- 6 a) Explain in detail homo cosy with two examples.
b) Describe in brief principles of ESR spectroscopy.
OR
c) Discuss the ESR spectra of P-benzoquinone, 1, 4 - naphthaquinone.
d) Discuss any two application of ^1H NMR spectroscopy.
- 7 a) Write notes on [3, 3] sigmatropic rearrangement with suitable examples.
b) Explain the photo-isomerisation of benzene.
OR
c) Explain i) Photo dimerization ii) Photo conjugated olefins
d) Write a note on photo substitutions reactions in photochemistry.
- 8 a) Write a note on Norrish-Type-II reactions.
b) Explain the photoreduction with suitable examples.
OR
c) Discuss in brief chemiluminscent reactions.
d) Explain the Ene reactions with two examples.
