Code No. 8703

FACULTY OF SCIENCE

M.Sc. III-Semester Examination, December 2013

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 8 marks in Part-A and 12 marks in Part-B.

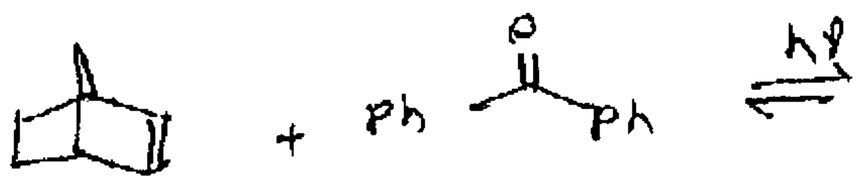
PART – A (4 x 8 = 32 Marks)

(Short Answer Type)

1.a) Write the principle and application of DEPT.
b) Write any four applications of ^{13}C NMR spectroscopy.

2.a) Write a short note on HOMO COSY.
b) Explain hyperfine splitting in ESR spectroscopy.

3.a) Explain the addition of olefins to α,β unsaturated carbonyl compounds.
b) Explain the mechanism for the following reaction and predict the product.



4.a) Explain the photochemistry of Barton reaction.
b) Discuss briefly oxidative coupling reactions.

PART – B (4 x 12 = 48 Marks)

(Essay Answer Type)

5.a) Discuss the factors effecting chemical shifts in ^{13}C NMR.
b) How can you distinguish the carbonyl isomers of molecular weight M.F.= C_4H_8O by using ^{13}C NMR spectroscopy.

OR

c) Explain the principle involved in INEPT.
d) Discuss in detail proton-decoupled ^{13}C NMR spectra.

6.a) Explain in detail Hetro COSY with applications.
b) Discuss the principle involved in ESR spectroscopy.

OR

c) Write the applications of ^{1}H-^{13}C-Cosy.
d) Write the biological applications of ESR spectroscopy.

7.a) Write a note on sigmatropic rearrangements.
b) Explain photo-Fries rearrangement.

OR

c) Explain :
i) Photo cyclo addition reaction ii) Photo dimerization of simple olefins.
d) Write a note on cis-trans isomerisation is photo chemistry.

8.a) Write a note on Norrish-Type-I reaction.
b) Discuss the photochemistry of diazo compounds.

OR

c) Explain di π-methane rearrangement with example.
d) Explain Paterno-Buchi reaction.

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