

Code No.: 8957

**FACULTY OF SCIENCE**  
**M.Sc. III Semester Examination, May/June 2012**  
**ORGANIC CHEMISTRY**  
**Paper IV**  
(Spectroscopy and Photo Chemistry)

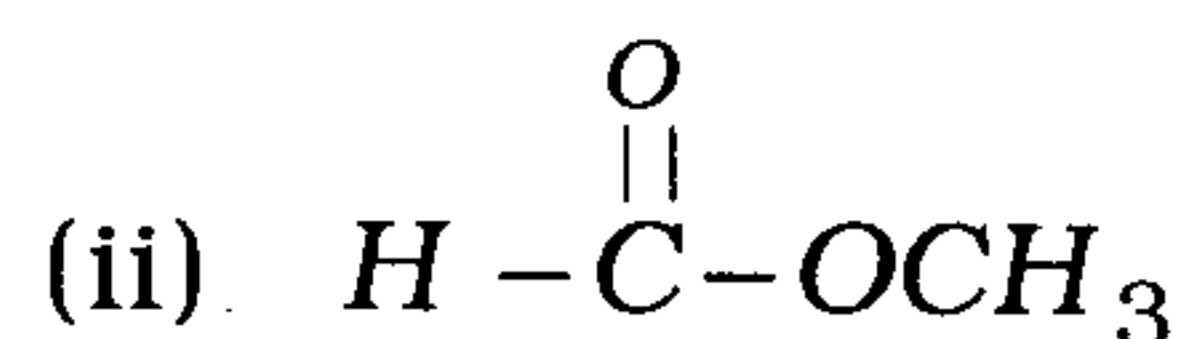
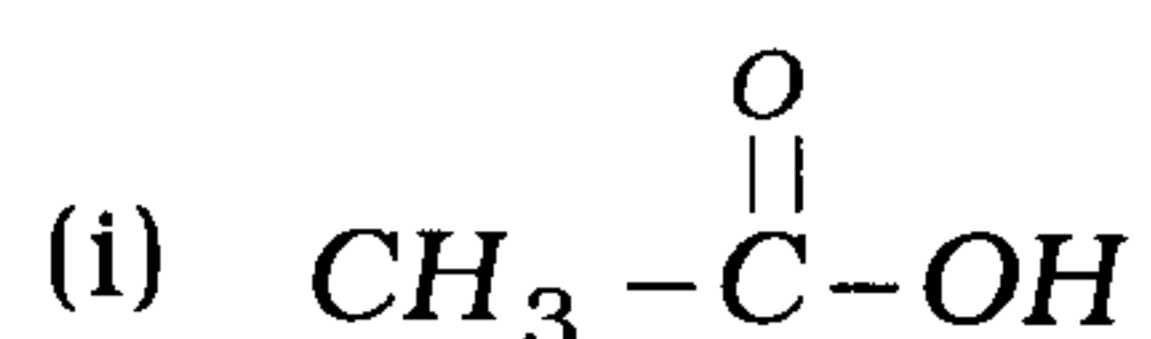
Time : 3 Hours]

[Max. Marks : 80

*Answer all questions.*

**Part A** — (Marks : 4 × 8 = 32)

1. (a) Write a note on DEPT in <sup>1</sup>H NMR Spectroscopy.
- (b) Distinguish the below functional isomers by using <sup>13</sup>C NMR Spectroscopy.



2. (a) In <sup>13</sup>C NMR Spectroscopy carbon-carbon coupling are not observed. Explain.
- (b) Discuss in detail on hyperfine splitting in ESR spectra.
3. (a) Write a note on cis-trans isomerisation in photochemistry.
- (b) Explain briefly on photocyclo addition reactions.
4. (a) Write a note on Norrish type-II reactions
- (b) Explain two reactions involving singlet oxygen.

**Part B** — (Marks : 4 × 12 = 48)

5. (a) Discuss about types of <sup>13</sup>C NMR spectra with suitable examples.
- (b) Explain briefly the α, β γ substituent effects on <sup>13</sup>C chemical shifts.

Or

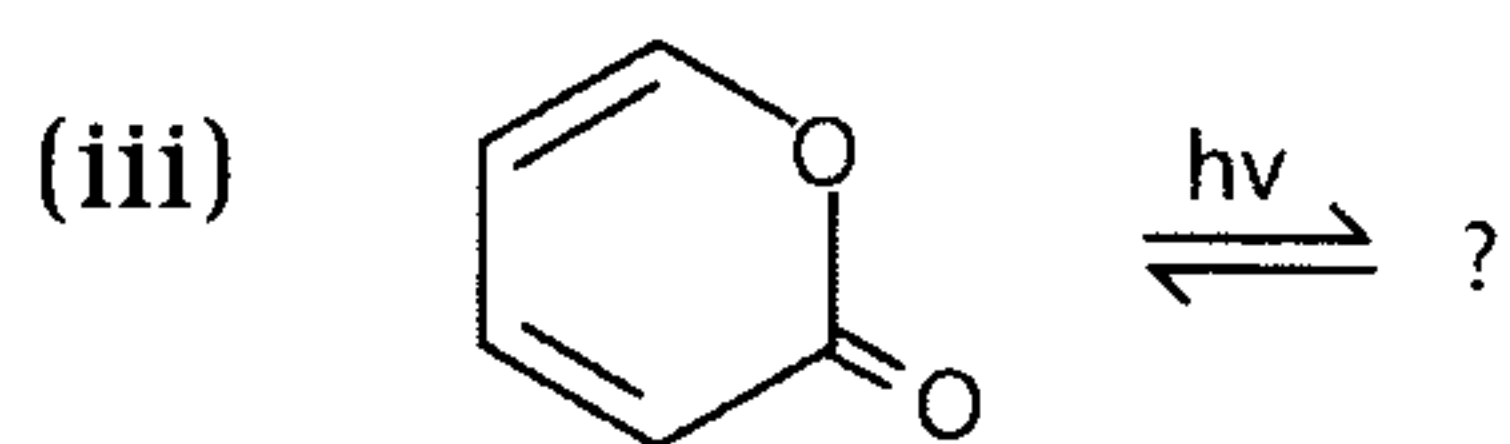
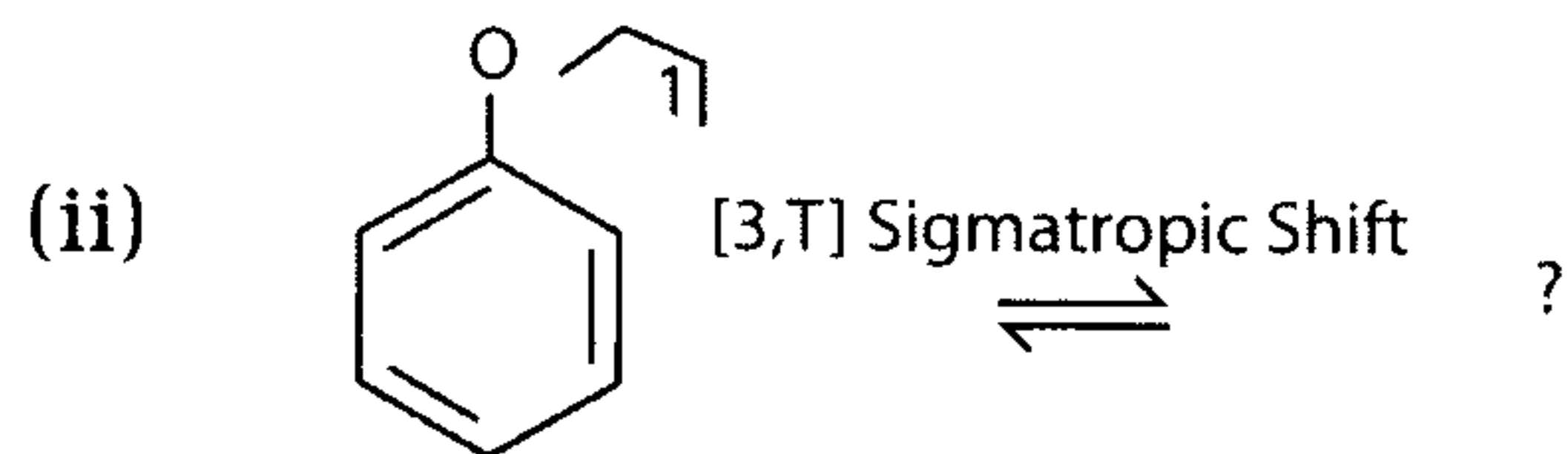
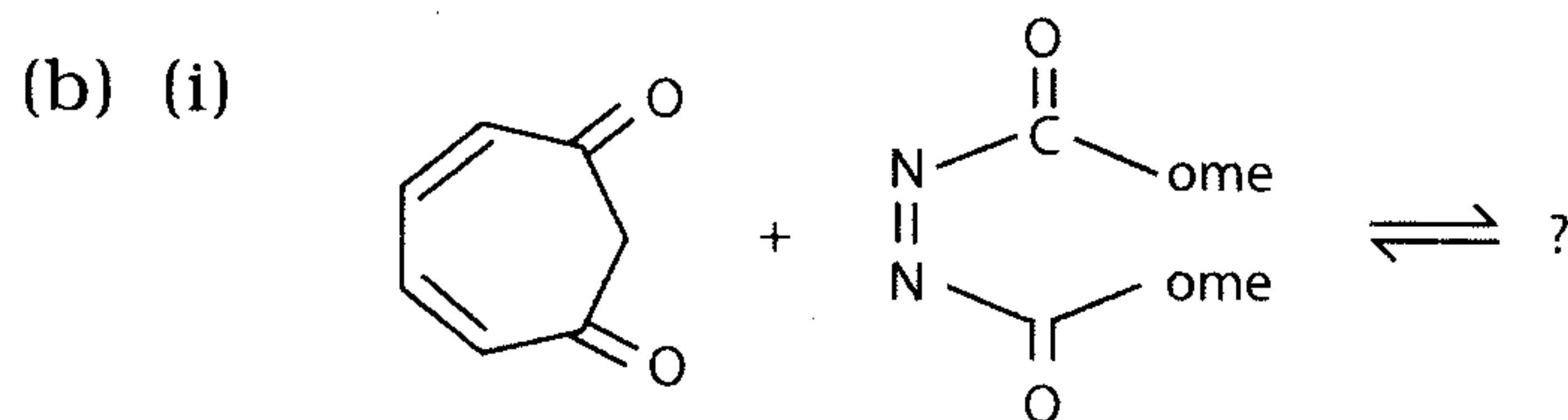
- (c) Give and account of application of <sup>13</sup>C NMR spectroscopy in structural elucidation.
- (d) In CMR spectra the Quaternary carbon signal intensity will be very less Explain.

[P.T.O.]

6. (a) Write a note on TOCSY with suitable example.  
 (b) What is 2D-INADEQUATE technique? Explain with one example

Or

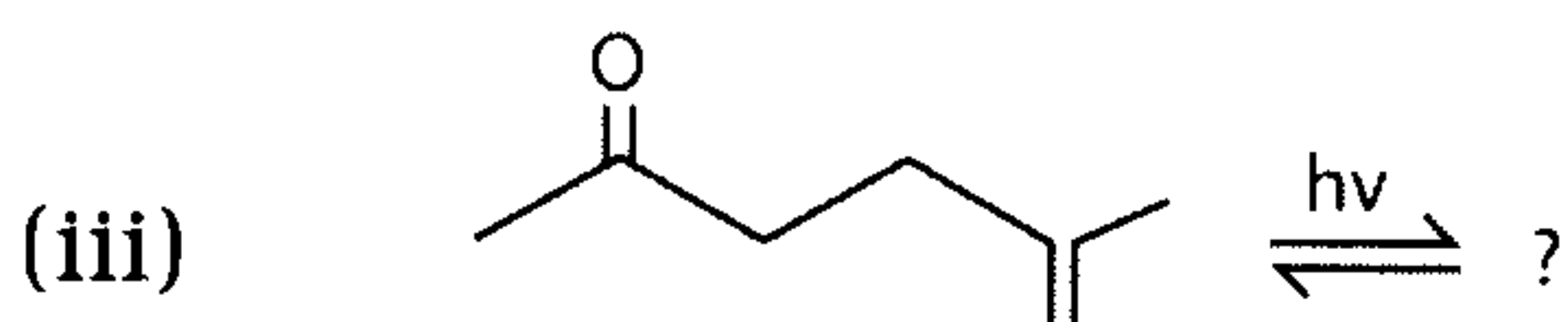
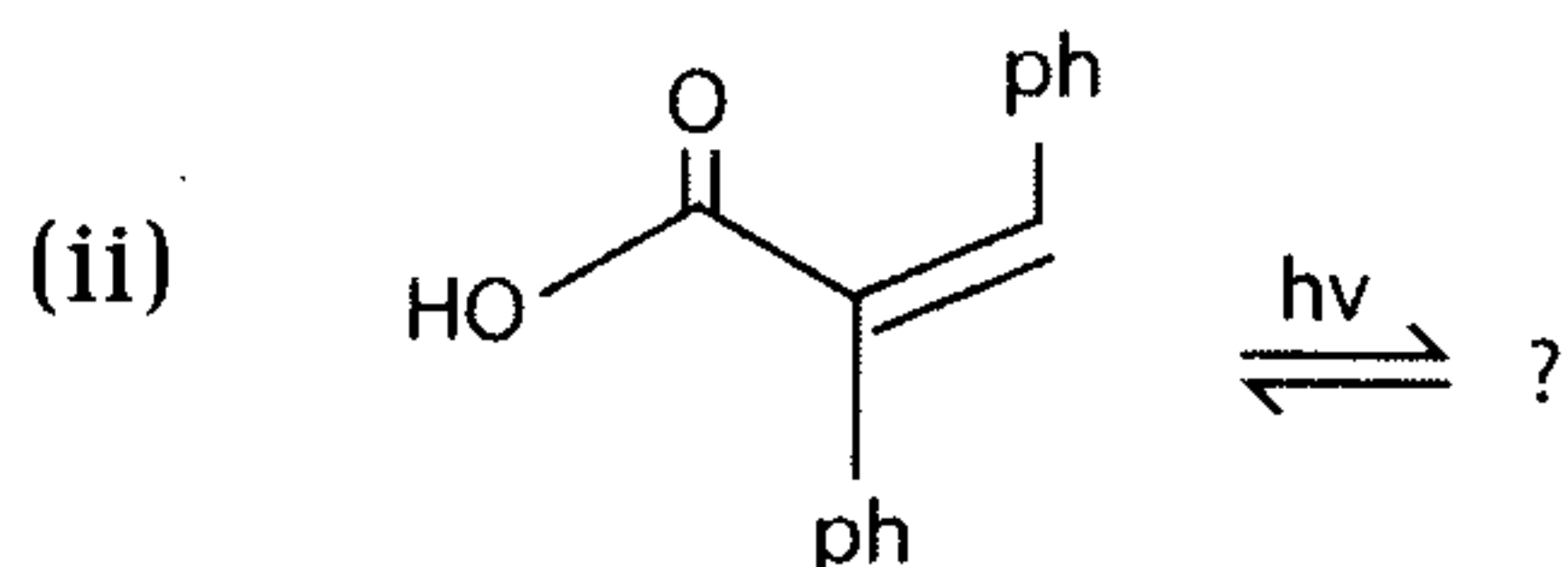
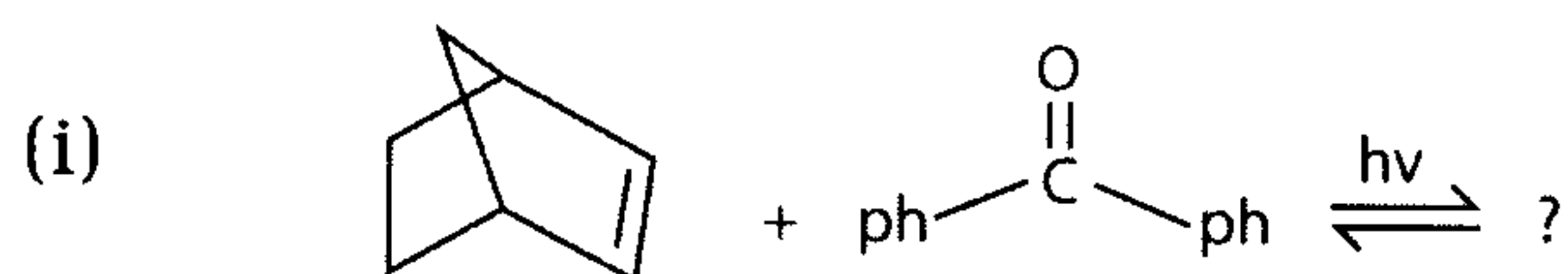
- (c) Explain the difference between 1D NMR and 2D NMR spectra.  
 (d) Draw the ESR spectra of P-Benzoquinone radical ion and benzene radical ion.
7. (a) Discuss about Barton reaction with mechanism complete the following reactions and give mechanism.



Or

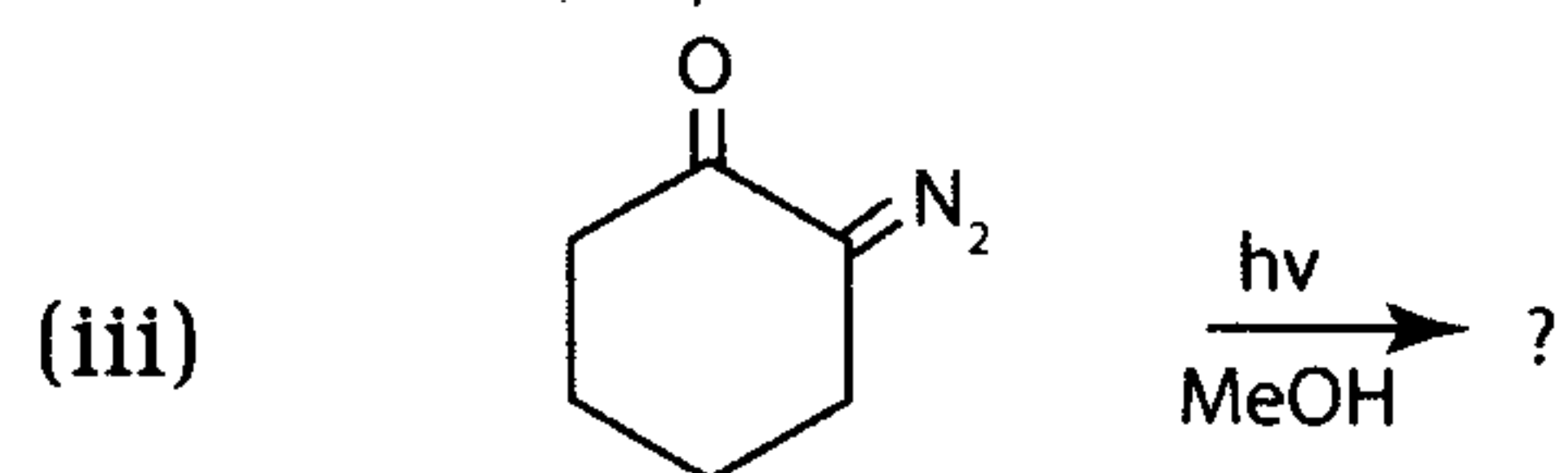
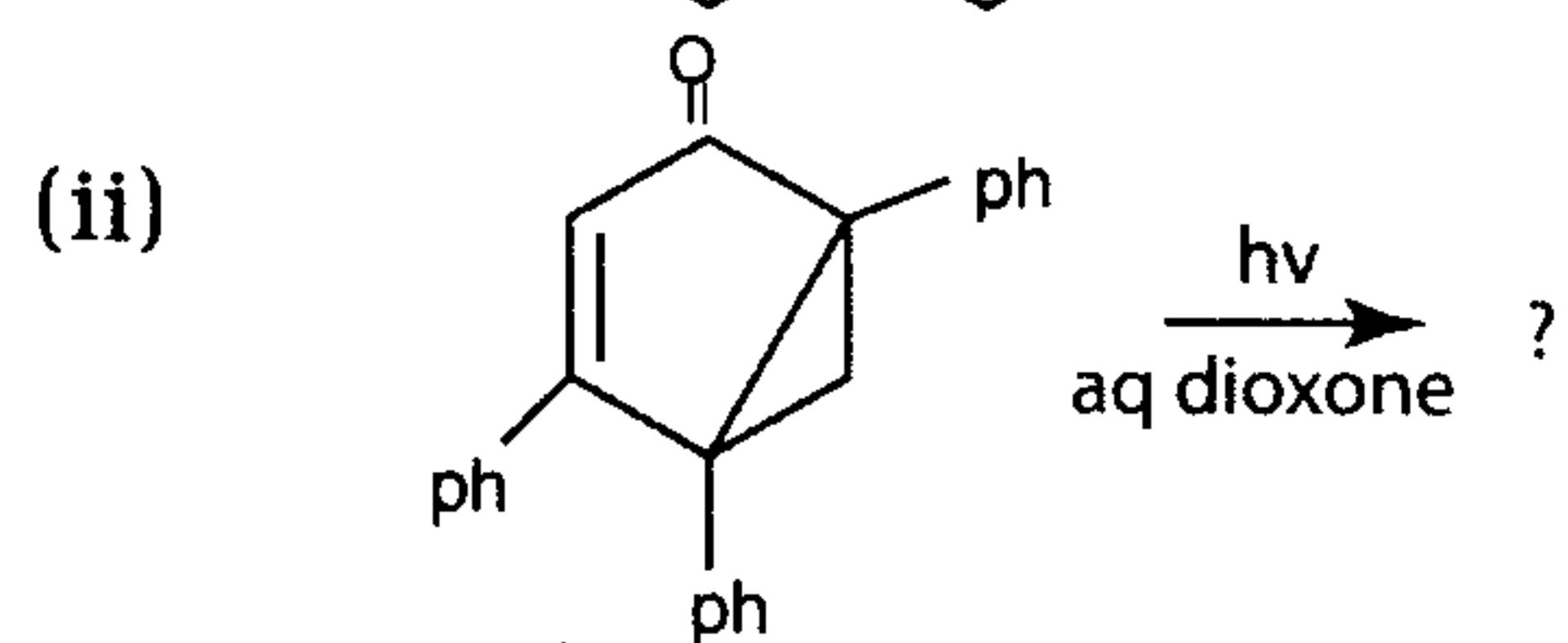
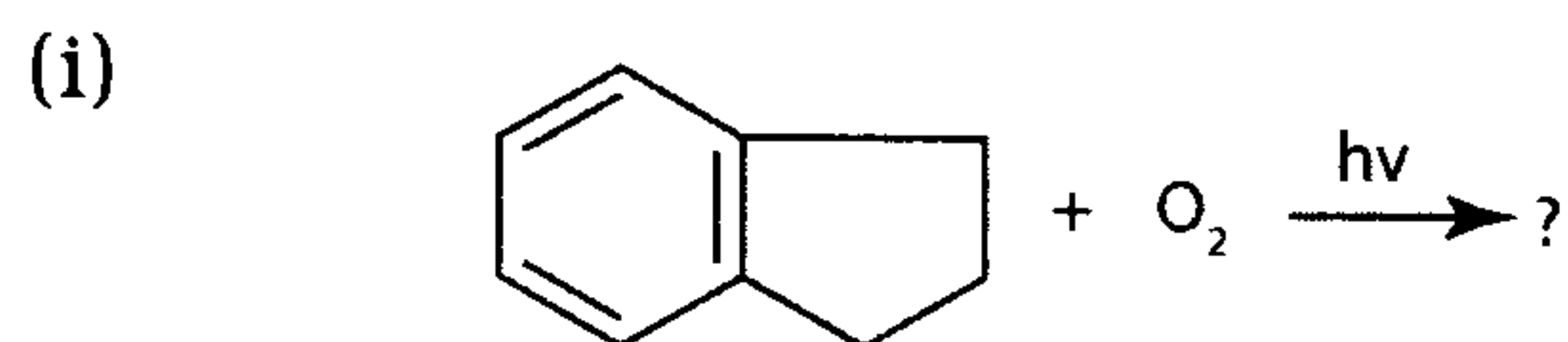
- (c) Write a note on sigmatropic rearrangement.

- (d) Complete the following with mechanism.



8. (a) Write a note on Norrish type I reaction.

(b) Explain the following reactions with mechanisms



Or

(c) Discuss briefly on chemiluminent reactions and oxidative coupling reaction.

(d) Complete the following reactions and explain the reaction mechanisms.

