

M.Sc. Examination 2019

Semester-IV

Chemistry

Optional Course: CH-1020

(Organic Chemistry)

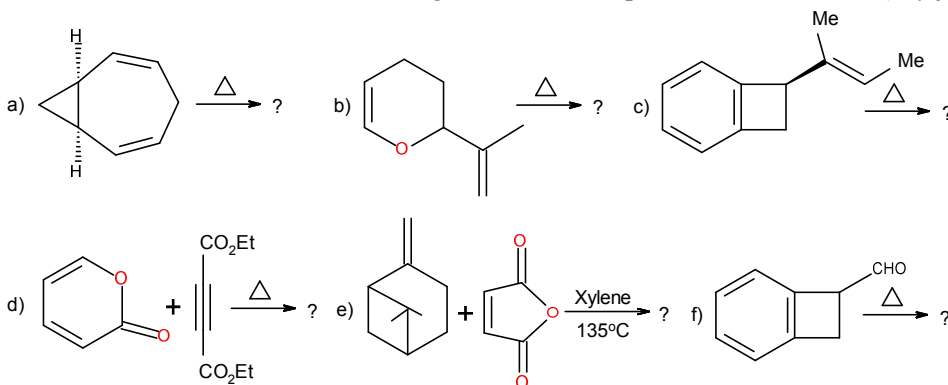
Time: Three Hours

Full Marks: 40

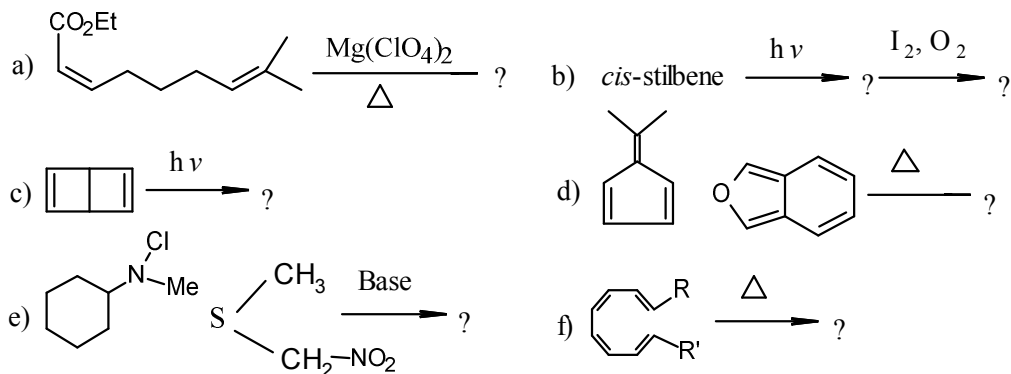
Questions are of equal value or as indicated in the margin.

Answer **any two** questions from **Question No. 1-3** and another **two** questions from **Question No. 3-6**.

1. Discuss the outcome of the following reactions with plausible mechanism (**any five**): 2x5



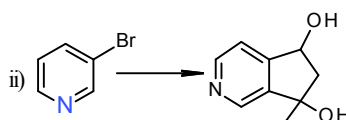
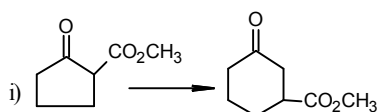
2. a) Explain why concerted 1,5-sigmatropic shift of hydrogen is thermally allowed by FMO approach. 2
b) Define 'periselectivity' in pericyclic reaction with suitable example. 2
c) Explain why the endo-adduct is obtained as major product during reaction between cyclopentadiene and maleic anhydride. 2.5
d) What is 'torquoselection' in electrocyclic ring opening reaction? Give an example. 1.5
e) Disrotatory ring closure of 1,3,5-hexatriene is thermally allowed. Justify the statement. 2
3. Predict the major product with plausible mechanism (**any five**): 2x5



4. a) What is photosensitization? Explain schematically the energy transfer process involved in an organic photosensitized reaction. Name two organic dyes used as photosensitizer. 5
b) What is photoredox catalysis? Explain with suitable example. 3

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- c) Give examples of σ (sigma) and π (pi) radicals. Compare their reactivity with suitable examples. 2
5. a) Show the orbital interactions between carbon-centered radicals (electron-rich and – deficient) and olefins. 3
- b) Show the typical generation methods of radicals. 2
- c) Give an example of commercially available stable free radical. 1
- d) Carry out the following conversions: 2x2



6. Predict the product(s) in each case and justify your answer on the basis of suitable mechanism: 2x5

