



M.Sc. IV Semester Degree Examination, Sept./Oct. - 2024

CHEMISTRY

Modern Organic Synthesis

(NEP)

Time : 3 Hours

Maximum Marks : 70

Note : Answer **any five** of the following questions with question no. **1** is **compulsory**, each question carries **equal** marks.

1. (a) Outline the Fisher indole synthesis with mechanism. **5+5+4=14**
(b) Explain the functional group transformations of alcohols from isoxazodiolines.
(c) Explain the synthesis of benzofuran from coumarin.

2. (a) Explain the enantioselective synthesis with suitable examples. **5+5+4=14**
(b) Discuss the basic principles and terminologies in disconnection approach.
(c) Give the retrosynthetic analysis and synthesis of Benzocaine.

3. (a) Draw Jablonski diagram depicting various processes occurring in excited state. **5+5+4=14**
(b) What is quantum yield ? Give the causes of high and low quantum yield of photochemical reactions.
(c) What are photosensitized reaction ? Explain with the suitable example.

4. (a) Outline the steps involved in synthesis of Androsterone. **5+5+4=14**
(b) Sketch the synthesis of estrogens and their clinical applications.
(c) Discuss the synthesis and therapeutic applications of diethylstilbesterol.

5. (a) What is RNA ? Explain the role of various types of RNA. **5+5+4=14**
(b) Explain the various steps involved in DNA replication.
(c) Discuss Polymerase Chain Reaction (PCR).



6. (a) Explain the following : **5+5+4=14**
(i) Principle of Stereoselectivity and
(ii) Strategy of Stereoselective Synthesis
(b) Explain protecting and deprotecting groups for carboxylic acid.
(c) Discuss the photochemical reactions of cyclohexadienones.
7. (a) Explain the chemical methods used for the determination of configuration of geometrical isomerism. **5+5+4=14**
(b) With suitable examples, sketch the mechanism of
(i) Norrish Type I and
(ii) Norrish Type II cleavages of carbonyl compounds
(c) Give the retrosynthetic analysis and synthesis of 6-methyl quinoline.
8. (a) What are Steroids ? Discuss its classifications with suitable examples.
(b) Give Synthesis and Therapeutic applications of Progesterone. **5+5+4=14**
(c) Write a note on fluid mosaic model of cell membrane.

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