A-0566

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MCH–603

M.Sc. CHEMISTRY (MSCCH)

(Natural Product/Enzyme & Biogenesis)

3rd Semester Examination, Session December 2024

Time : 2:00 Hrs. Max. Marks : 35

Note* :–** This paper is of Thirty Five (35) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given therein. ***Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

Section–A

Long Answer Type Questions 2×9½=19

***Note* :–** Section 'A' contains Five (05) Long-answer type questions of Nine and Half (9½) marks each. Learners are required to answer any *two* (02) questions only.

1. (a) Formulate the synthesis of Morphine.

   (b) Write down the steps involved in urea cycle.

2. Write notes on the followings :

   (a) Diels hydrocarbon

   (b) Porphyrins

3. How will you confirm the structure of $PGE_3\alpha$ by Infra-red (IR) and ^1H NMR Spectral data ?

4. Write notes on the following :

   (a) Importance of prostaglandins

   (b) Prove the position of angular methyl group in cholesterol

5. (a) Discuss briefly the structure elucidation of rotenone.

   (b) How the monoterpenoids are biosynthesised ?

Section–B

Short Answer Type Questions 4×4=16

***Note* :–** Section 'B' contains Eight (08) Short-answer type questions of Four (04) marks each. Learners are required to answer any *four* (04) questions only.

1. Formulate the synthesis of testosterone.
2. Write a short note on structure determination of Reserpine.
3. Outline the general biosynthesis of the prostaglandins.
4. What are the skeleton structure and applications of the following vitamins :
   (a) Vitamin A group
   (b) Vitamin C group
   (c) Vitamin E group
5. Discuss with examples the region, enantio-, and diastereoselectivity of enzymes.
6. Describe the steps involved in Krebs cycle.
7. Write down the steps involved in fatty acid metabolism.
8. How the spectral methods are useful for the determination of position of labels in the labelled natural product ?

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