LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **CHEMISTRY**

FIFTH SEMESTER – **APRIL 2025**

UCH 5601 – BIOCHEMISTRY AND NATURAL PRODUCTS

Date: 08-05-2025 Dept. No. Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

SECTION A

Answer ANY FOUR of the following **(4 x 10 = 40)**

1. What are essential amino acids? Explain the terms zwitter ion and isoelectric point with suitable examples.
2. Discuss the primary and secondary structure of proteins.
3. Illustrate the salient characteristics of enzymes.
4. Define the following terms:

   (i) Acid value (ii) Iodine value (iii) Polenske number (iv) Reichert-Meissl value
5. How are carbohydrates classified? Give an example for each class.
6. Explain the general methods of structure determination of alkaloids by chemical methods.
7. State isoprene rule. How are terpenoids classified based on it?
8. Describe any one method of synthesis of flavone. Highlight their functions.

SECTION B

Answer ANY THREE of the following **(3 x 20 = 60)**

9. (a) Explain the preparation of α-amino acids by Gabriel's phthalimide and Strecker's synthesis. (10)

   (b) Outline the C- and N-terminal residue analysis by Sanger's and Edman's method. (10)
10. (a) Discuss the mode of enzyme action by Lock and Key and induced fit models. (10)

    (b) Illustrate the factors influencing enzyme action in detail. (10)
11. (a) Write the differences between DNA and RNA. (10)

    (b) Explain the types and functions of RNA. (10)
12. Discuss the methods of structural elucidation of papaverine with any one method of synthesis.
13. Give any one method of synthesis for vitamin A and β-carotene.
14. List the biological functions of anthocyanins. Explain its colour and constitution.
