LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIFTH SEMESTER – **APRIL 2023**

16/17/18UCH5ES01 – BIOCHEMISTRY AND NATURAL PRODUCTS

Date: 11-05-2023 Dept. No. Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

PART-A

Answer ALL questions **(10 x 2 = 20 Marks)**

1. Distinguish between anabolism and catabolism.
2. Mention any two biological importance of amino acids.
3. What are lipids?
4. Differentiate between prosthetic group and co-factor in enzymes.
5. Give an example for reducing and non-reducing sugars.
6. How is RNA classified?
7. Illustrate the structure of papaverine.
8. State special isoprene rule.
9. Illustrate the basic structure of anthocyanins.
10. Indicate the biological function of steroids.

PART-B

Answer any EIGHT questions **(8 x 5 = 40 Marks)**

11. Draw the structure of animal cell and mention its parts.
12. Assess any two methods used for protein structural determination.
13. Examine the lock and key mechanism in interpreting an enzyme action.
14. Delineate the salient features of an enzyme.
15. Investigate the steps involved in the biosynthesis of lipids.
16. Write a note on the classification of lipids.
17. Compare the structural features of DNA and RNA with illustrations.
18. Analyse the principles involved in bioenergetics and oxidative phosphorylation.
19. Elucidate the structure of coniine.
20. Systematically deduce the structure of menthol.
21. Explain the biological functions of flavonoids.
22. Write a note on the biosynthesis of cholesterol.

PART-C

Answer any FOUR questions **(4 x 10 = 40 Marks)**

23a. Discuss the advantages and limitations of any one technique used to separate and purify proteins. (5)

b. Rationalise the classification of proteins based on their structure. (5)

24a. Examine the different types of mechanisms of enzyme inhibition. (5)

b. Write a note on the properties of lipids. (5)

25a. Investigate the significance of citric acid cycle in glucose metabolism. (5)

b. Write a note on DNA polymorphism. (5)

26a. Elucidate the structure of nicotine. (5)

b. Describe the methods used for the separation of terpenes. (5)

27a. Discuss the general methods used for the synthesis of anthocyanins. (5)

b. Outline Robinson's synthesis of flavonoids. (5)

28a. Assess the significance of acid number, saponification number and iodine value in determining the nature of a fatty acid. (5)

b. Write a note on the catabolism of amino acids. (5)

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