



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – CHEMISTRY

SECOND SEMESTER – APRIL 2017

16PCH2ES01- BIOMOLECULES AND NATURAL PRODUCTS

Date: 28-04-2017
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

Part-A

Answer ALL questions.

(10 x 2= 20)

1. Mention the biological importance of cellulose.
2. How is the fatty acid oxidation switched off when the active synthesis of fatty acid is in process?
3. Differentiate between miRNA and siRNA?
4. What is single nucleotide polymorphism?
5. What is the active form of thiamine? Give the coenzyme role of thiamine.
6. Name any two nutrients that play antioxidant role.
7. Briefly write notes on the use of NMR technique in the characterization of N- Methyl groups in Belladine.
8. How does atropine undergo hydrolysis with mild alkali?
9. Identify the product of dehydrogenation of cadinene with sulphur.
10. Predict the Product:



Part-B

Answer any EIGHT questions.

(8 x 5= 40)

11. Discuss the synthesis of sucrose.
12. Why does maltose undergo mutarotation and reduce Tollen's reagent but sucrose does not?
13. Enumerate the steps involved in the β -oxidation of fatty acids.
14. Explain the chemical synthesis of DNA by phosphoramidite method.
15. Describe the components of nucleic acid.
16. What are epinephrine and nor-epinephrine? Draw their structure and mention their hormonal activity.
17. How are free radicals formed in a biological system?
18. Write a note on the electronic structure and stability of singlet oxygen.
19. Explain the stereochemistry of cocaine.
20. Describe Zerewitinoff method of determination of active hydrogen.
21. How are the positions of double bonds in cadinene determined using Ruzicka's method?
22. Using Wagner-Meerwein rearrangement, establish the position of carboxyl group in Abietic acid.

Part-C

Answer any FOUR questions.

(4 x 10= 40)

23. Describe the steps involved in TCA cycle. Calculate the energetics of TCA cycle.
24. Write a short note on the following. (5+5)
a. catalytic RNA b. fluorescently labeled nucleotides
- 25 a. Discuss the mechanism of hormonal activity on biological functions. (6)
b. How is vitamin D produced in the body? (4)
- 26 a. Describe uric acid cycle. (5)
b. Convert the following
27. Illustrate the relationship between the chemical structure of organic substances and their pharmacological actions.
- 28 a. How are terpenoids classified? Give an example for each type. (5)
b. Describe the synthesis of Zingiberine. (5)

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