



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – CHEMISTRY

SECOND SEMESTER – APRIL 2024

PCH2ME01 – BIOMOLECULES AND NATURAL PRODUCTS

Date: 15-04-2024

Dept. No.

Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

SECTION A – K1 (CO1)

Answer ALL the questions

(5 x 1 = 5)

1 Fill in the blanks

- a) The food containing carbohydrates are converted into _____ during the process of digestion.
- b) Adrenaline is secreted in the _____.
- c) The components of nucleosides are _____.
- d) True alkaloids are always present in plants as _____.
- e) _____ is the building block of terpenes.

SECTION A – K2 (CO1)

Answer ALL the questions

(5 x 1 = 5)

2 Match the following

- a) Glucose -- Caffiene
- b) Oestrogen -- Protein purification method
- c) Dialysis -- steroidal hormone
- d) Pseudoalkaloid – Tilden's reagent
- e) Nitrosyl chloride -- Aldose

SECTION B – K3 (CO2)

Answer any THREE of the following

(3 x 10 = 30)

- 3 a) Illustrate Mannose and ribose structure using Fischer Projection and Haworth formula. (5 marks)
b) Examine any two reactions utilized to identify reducing sugars. (5 marks)
- 4 Draw the molecular structures of adrenaline, thyroxine, estrogen and mention their biological functions.
- 5 Construct the urea cycle and explain the nature of ammonia excretion from the body.
- 6 a) Explain the medicinal uses of alkaloids. (5)
b) Discuss the synthesis of cadinene. (5)
- 7 Recognize the importance of combining different techniques in structure determination of zinziberene.

SECTION C – K4 (CO3)**Answer any TWO of the following****(2 x 12.5 = 25)**

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| 8 | a) Demonstrate the energy generation aspect of glycolysis. (6.5)
b) Write a note on the classification of hormones. (6) |
| 9 | a) Outline the biological importance of steroids. (6.5)
b) Examine the steps involved in the De novo synthesis of nucleosides. (6) |
| 10 | Explain the process and purpose of chemical degradation in determining the constitution of terpenoids. |
| 11 | Analyze the evidences supporting the structure of camphor. |

SECTION D – K5 (CO4)**Answer any ONE of the following****(1 x 15 = 15)**

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| 12 | a) Compare the physical and chemical properties of glucose and fructose. (7)
b) How are the carbon skeletons obtained from amino acids catabolism utilised? (8) |
| 13 | Discuss the synthetic and degradative evidences leading to the structure of papaverine. |

SECTION E – K6 (CO5)**Answer any ONE of the following****(1 x 20 = 20)**

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| 14 | a) Document the structural aspects of DNA and RNA. (8)
b) Formulate the biosynthesis of cholesterol from squalene. (6)
c) Discuss the properties and applications of starch and Cellulose. (6) |
| 15 | Illustrate the structural analysis of tropine and tropic acid |
