

1B1N25292

(Pages : 2)

Reg. No: .....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

First Semester M.Sc Degree Examination, November 2025

MZL1C01 - Biochemistry

(2022 Admission onwards )

Time: 3 hours

Max. weightage : 30

**I. Answer any eight questions. Each carry 1 weightage.**

1. What are heteropolysaccharides? Give any two examples.
2. Define iodine number and saponification number.
3. Mention the role of pK value in determining isoelectric point of amino acids.
4. Mention any two biological roles of nucleotides.
5. What are isoenzymes?
6. What is meant by standard free energy change?
7. What are ketone bodies?
8. Define mutarotation.
9. Brief the structural features of tRNA?
10. What is the role of vitamin B6 in metabolism?
11. Mention the inhibitors of Electron Transport Chain.

(8 × 1 = 8)

**II. Answer any four questions. Each carry 3 weightages.**

12. Explain the  $\beta$ -oxidation pathway of fatty acids and outline the major products formed.
13. Describe the biosynthesis and degradation of methionine.
14. Brief the biosynthesis and degradation of purine nucleotides.
15. Explain the Ramachandran plot and its significance in protein structure.
16. Describe the Michaelis-Menten equation and the significance of  $K_m$  and  $V_{max}$ .
17. Write a detailed note on reactions of monosaccharides.
18. Describe the classification of amino acids based on their side chain characteristics and give examples.

(4 × 3 = 12)

**III. Answer any two questions. Each carry 5 weightage.**

19. Describe glycolysis, fate of pyruvate and its regulation.
20. Write an essay on the classification of lipids and mention their biological functions.
21. Explain the mechanism of enzyme action with reference to the induced fit model and activation energy.
22. Describe the structure and supercoiling of DNA. Add a note on A, B, and Z forms.

**(2 × 5 = 10)**

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First Semester M.Sc Degree Examination, November 2025

MZL1C02 - Biophysics &amp; Biostatistics

(2022 Admission onwards )

Time: 3 hours

Max. weightage : 30

**I. Answer any eight questions. Each carries 1 weightage**

1. What is the Henderson-Hasselbalch equation?
2. Describe the biological applications of radioisotopes.
3. Compare NMR and ESR spectroscopy in biophysical methods.
4. Define electrophysiological methods.
5. What is the principle behind laser and its applications in biology?
6. Describe the characteristics of gas chromatography.
7. Explain the principle and application of hydrodynamic techniques.
8. Describe the characteristics of sound.
9. What is the importance of statistical inference?
10. Explain the laws of probability.
11. Summaries Type I and Type II errors.
12. Comment on the role of biostatistics in modern research.

(1 x 8 = 8 weightage)

**II. Answer any four questions. Each carries 3 weightage**

13. Explain the biological effects of ionizing radiation.
14. Describe biophysical methods.
15. Write short essay on electron microscopy.
16. Explain the applications of infrasonic and ultrasonic sound.
17. What is Electrophoresis? Explain any two types of Electrophoresis.
18. What are the characteristics of normal distribution curve? Explain Skewness and Kurtosis.
19. Explain various measures of variability.
20. Write short note on measures of central tendency.

(3 x 4 = 12 weightage)

**III. Answer any two questions. Each carries 5 weightage**

21. What is Separation techniques? Explain any four types.
22. Write an essay on the application of nanotechnology and its role in the management of environmental pollution.
23. Explain Correlation. Describe different types and methods to measure correlation.
24. What are the different types of regression and correlation analysis with example.

**(5 x 2 = 10 weightage)**

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First Semester M.Sc Degree Examination, November 2025

MZL1C03 - Systematics &amp; Evolution

(2022 Admission onwards )

Time: 3 hours

Max. weightage : 30

**I. Answer any Eight questions( Each question carry 1 Weightage)**

1. What is meant by Genetic drift?
2. Explain briefly different types of Taxonomic collections
3. Comment on levels of Taxonomy
4. Describe Macro evolution
5. Differentiate between Monotypic and Polytypic species
6. Explain Good gene hypothesis
7. What are Molecular clocks
8. Briefly describe Biological species concept
9. Explain Embryological evidence of evolution
10. Differentiate between Synonyms and Homonyms
11. What are the functions of Taxonomic characters?
12. Comment on Type method

**II. Answer any Four (Each question carry 3 Weightage)**

13. What are the methods to overcome Taxonomic impediments?
14. Explain the process involved in Gradualism and Punctuated equilibrium
15. Explain Neutral theory of molecular evolution
16. Explain DNA Bar coding and its advantages
17. Describe the ethics related to Taxonomic publications
18. Write a note on Nucleotide sequence analysis
19. Describe the different types of Taxonomic keys and its merits and demerits

**III. Answer any Two of the following (Each question carry 5 Weightage)**

20. Describe the different types of Taxonomic characters and their functions
21. Explain the mechanism of natural selection
22. Describe the various stages in Primate evolution
23. What are the objectives of classification? Give an account on theories of classification