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2M1N23330

(Pages : 2)

Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE  
First Semester M.Sc Degree Examination, November 2023  
MZL1C01 – Biochemistry  
(2022 Admission onwards)

Time : 3 hours

Max. Weightage : 30

**I. Answer any eight questions (Each question carries 1 Weightage)**

1. What are sugar alcohols?
2. How are hydrogen bonds involved in protein folding?
3. Define the term 'Entropy'.
4. Write the balanced equation of photosynthesis.
5. Draw the Lineweaver Burk plot for a competitive inhibition.
6. What is the function of biotin as a co-enzyme?
7. Distinguish between hemiacetal and hemiketal linkages.
8. How are fatty acids transported into the mitochondria?
9. Enumerate the basic differences between biosynthesis of purine and pyrimidine nucleotides.
10. Outline the biochemical importance of Lecithin.
11. Draw the structure of a phosphodiester bond.

**(1x8=8 weightage)**

**II. Answer any four questions (Each question carries 3 Weightage)**

12. Derive Michaelis-Menten equation. Add note on its importance in enzymology.
13. Summarize the various complexes of ETC.
14. Outline the role of noncovalent interactions in maintaining the structure and functions of biomolecule.
15. Brief on different classes of lipids and their biological significance.
16. Explain Ramachandran plot and its importance in protein structure determination.
17. Explain Watson – Crick model of DNA.
18. Explain the structure and function of important heteropolysaccharides.
19. 'TCA cycle is amphibolic'. — Explain the statement with examples.

**(3x4=12 weightage)**

**III. Answer any 2 of the following questions (Each question carries 5 Weightage)**

20. Describe the  $\beta$ -oxidation of fatty acids. Discuss the number of ATP's formed on complete oxidation of one molecule of palmitic acid.
21. Elaborate the structure and classification of proteogenic amino acids.
22. What are the irreversible steps of glycolysis? Write the reactions involved with enzymes and co-enzymes.?
23. Explain the mechanism and theories of enzyme action. Mention Co-factors.

**(5x2=10 weightage)**

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

First Semester M.Sc Zoology Degree Examination, November 2023

MZL1C02 – Biophysics &amp; Biostatistics

(2022 Admission onwards)

Time : 3 hours

Max. Weightage : 30

**I. Answer any Eight questions. (Each question carries one weightage).**

1. What is electrosmosis? Give its significance.
2. Discuss the importance of Henderson Hasselbach equation.
3. What is patch clamp recording?
4. Explain X-ray diffraction and its uses.
5. What is isoelectric focussing?
6. Enumerate the applications of tracer techniques.
7. Comment on EEG.
8. Explain immunoelectrophoresis.
9. What is gel filtration? Explain its applications.
10. Define skewness and kurtosis.
11. Explain chi-square test.
12. What is ANOVA?

**(1 x 8= 8 weightage)****II. Answer any Four questions. (Each question carries 3 weightage).**

13. Explain NMR and ESR spectroscopy.
14. What is LASER? Explain its applications in biology.
15. Comment on the effects of Positive and Negative G forces.
16. Explain the principle and working mechanism of SEM and TEM.
17. Describe the different types of radiation detectors.
18. What are the differences between regression and correlation analysis?
19. Explain parametric and nonparametric tests.

**(3 x 4= 12 weightage)****III. Answer any Two questions. (Each question carries 5 weightage).**

20. Describe the physical organization of the ear and the mechanism of sound transmission.
21. Explain the principle and applications of any five types of chromatographic techniques.
22. Discuss the role of nanotechnology in environmental management.
23. Explain the Laws of Probability. Describe the Binomial, Poisson and Normal distribution patterns.

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

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE  
First Semester M.Sc Zoology Degree Examination, November 2023  
MZL1C03 – Systematic & Evolution  
(2022 Admission onwards)

Time : 3 hours

Max. Weightage : 30

I. **Answer eight of the following questions.(Weightage-1)**

1. What is Cladism?
2. Explain molecular systematics.
3. Define Hardy-Weinberg principle.
4. Comment on microevolution.
5. Differentiate anagenesis and cladogenesis.
6. What is super species?
7. Comment on different types of taxonomic keys.
8. What is a taxon?
9. Explain sexual selection.
10. Differentiate convergent and divergent evolution.
11. Comment on type method.
12. Explain bottleneck effect.

**(8x1=8 weightage)**

II. **Answer any four of the following questions. (Weightage-3)**

13. Write notes on ethics related to taxonomic publications.
14. Explain different methods of identification of a taxon.
15. Briefly explain different species concepts.
16. Comment on collapse of orthogenesis.
17. Explain molecular clocks.
18. Describe the mechanism of natural selection.
19. Comment on different levels of taxonomy.

**(4x3=12 weightage)**

III. **Answer any two of the following questions. (Weightage-5)**

20. Write an essay on the important rules of ICZN.
21. Explain the significance of population genetics in evolutionary studies.
22. Give an account on different theories of biological classification.
23. Comment on genetic drift and its importance in evolution.

**(2x5=10 weightage)**