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1M1N24075 (Pages : 2) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

First Semester M.Sc Zoology Degree Examination, November 2024

MZL1C02 – Biophysics & Biostatistics

(2022 Admission onwards)

Time: 3 hours Max. Weightage : 30

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

1. What is cerenkov radiation? Write on its applications in biophysics.
2. Comment on patch clamp recording.
3. What is PAGE. Discuss the principle involved in this method.
4. Write on theories that explain how humans perceive pitch.
5. Comment on role of nanotechnology in environmental management.
6. What is circular dichroism?
7. Give short note on arithmetic mean as a measure of central tendency.
8. Write a brief note on degree of freedom.
9. Comment onlimits and applications of biostatistics.
10. What are type I and type II error?
11. What is standard error?
12. Comment on ANOVA.

(1 x 8 = 8 weightage)

II. Answer any Four questions. (Each question carries 3 weightage).

13. Explain NMR and ESR spectroscopy and its principles and applications.
14. Write on the pH value calculation & Henderson Hasselbach equation.
15. Write on molecular imaging of radioactive materials in nuclear medicine.
16. Explain the differential centrifugation and density gradient centrifugation.
17. The wheat production (in Kg) of 20 acres is given as: 1120, 1240, 1320, 1040, 1080, 1200, 1440, 1360, 1680, 1730, 1785, 1342, 1960, 1880, 1755, 1720, 1600, 1470, 1750, and 1885. Find the quartile deviation and coefficient of quartile deviation.
18. Describe the Skewness and Kurtosis.
19. Discuss the Kruskal-Wallis test and Mann–Whitney test.

(3 x 4 = 12 weightage)

III. Answer any Two questions. (Each question carries 5 weightage).

20. Write an essay on the principle and applications of various methods in chromatography.
21. Write an essay on major microscopic techniques used with applications. Describe the different fixation and stating techniques.
22. Write an essay on probability distribution, law of probability and types of probability distributions and its properties.
23. Write an essay on correlation and regression analysis. Discuss the types and methods and its applications.

(5 x 2 = 10 weightage)

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1M1N24074 (Pages : 2) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

First Semester M.Sc Zoology Degree Examination, November 2024

MZL1C01 – Biochemistry

(2022Admission onwards)

Time: 3 hours Max. Weightage : 30

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

1. What is mutarotation?
2. Describe the differences between covalent bonds and ionic bonds.
3. What is glycogenolysis?
4. How does flavin adenine dinucleotide (FAD) participate in electron transfer reactions?
5. What is Polenske number of lipid?
6. How do entropy and enthalpy changes influence reaction feasibility?
7. Describe the role of cysteine in protein structure.
8. What are the functions of prostaglandin?
9. What are the enzymes involved in the biosynthesis of phenylalanine?
10. Describe the difference between euchromatin and heterochromatin.
11. What is ribozyme?
12. Classify vitamins into two main categories and provide examples.

(1x8=8 weightage)

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

13. Write an account of Pentose phosphate pathway.
14. Explain the amphoteric nature of proteins.
15. What are the major biological roles of lipids?
16. Outline the degradation pathway of methionine.
17. Compare and contrast alpha and omega oxidation of fatty acids.
18. Describe the biosynthetic pathway of cytosine and thymine, including key enzymes and precursors.
19. Explain how ATP functions as a molecular currency in energy transfer.

(3x4=12 weightage)

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

20. Explain the theoretical basis and applications of the Lineweaver-Burk equation in analyzing enzyme kinetics data.
21. Describe the electron transport system (ETS) and oxidative phosphorylation (OXPHOS) incellular respiration.
22. Discuss the structure, biological roles, and significance of the following disaccharides in living organisms:

    a. Maltose b. Sucrose c. Lactose d. Cellobiose e. Trehalose.
23. Describe the Watson and Crick model of DNA structure, highlighting its key features and significance.

(5x2=10 weightage)

1M1N24076 (Pages : 1) 65 Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

First Semester M.Sc Zoology Degree Examination, November 2024

MZL1C03 – Systematics & Evolution

(2022Admission onwards)

Time: 3 hours Max. Weightage : 30

I. Answer any eight of the following (Each question carry 1 Weightage)

1. Explain the neutral theory of molecular evolution
2. Comment on founder effect and genetic drift.
3. Briefly describe collapse of orthogenesis
4. Explain the natural selection in Islands
5. Comment on Y chromosome Adam and mitochondrial Eve
6. Write about molecular clocks and genetic equidistance
7. Comment on Super species and Morphospecies
8. Differentiate between chemo taxonomy and serotaxonomy
9. Explain Ecospecies and Cenospecies
10. Distinguish between Essentialism and Empiricism
11. What is Gamma taxonomy? How it differ from Alpha taxonomy?
12. Comment on International Code of Zoological Nomenclature

(1x8=8 weightage)

II. Answer any four of the following (Each question carry 3 Weightage)

13. Write about the different mechanism of natural selection
14. Explain the evolutionary significance of Gradualism and punctuated equilibrium
15. Describe the stages in primate evolution
16. What are the different kinds of taxonomic characters used in classification?
17. Explain species concepts and add notes on difficulties in the application of biological species concep
18. Explain the ethics related to taxonomic publications
19. How important is DNA bar coding in systematics? Explain its merits and demerits

(3x4=12 weightage)

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

20. Explain the significance of Phylogenetic relationships in evolutionary biology
21. Discuss the different types of evidence that support for evolution
22. Describe the impediments in publishing taxonomic work and suggest solutions to overcome
23. Comment on the types of taxonomic collections, preservation, labelling, curating and the methods of identification of specimens

(5x2=10 weightage)