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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 on limits and applications of biostatistics.

10. What are type I and type II error?

11. What is standard error?

12. Comment on ANOVA.

$$(1 \times 8 = 8 \text{ weightage})$$

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.

$$(3 \times 4 = 12 \text{ weightage})$$

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 staining 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.

$$(5 \times 2 = 10 \text{ weightage})$$

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester M.Sc Zoology Degree Examination, November 2024

MZL3C07 – Physiology

(2022 Admission onwards)

Time: 3 hours Max. Weightage : 30

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

1. What is physiological calorie value of food stuffs?

2. What are accessory excretory organs?

3. Give an account on Wernicke's area and its intellectual function.

4. Briefly explain heart as a pump.

5. Comment on Parkinson's disease.

6. List out the functions of lymphatic system.

7. Explain reflex action.

8. Give an account on the structural organization of brain stem.

9. Explain environmental stressors.

10. Mention the parts and functions of cerebellum.

11. What is obesity? Write note on its causes and consequences.

12. Write a short note on basal ganglia.

(8x1=8 weightage)

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

13. Comment on pulmonary volumes and capacities.

14. Describe coronary circulation.

15. Write a brief account of electrophysiology of vision.

16. Comment on neural and chemical regulation of heart function.

17. Explain renal regulation of acid –base balance.

18. Comment on thermal receptors and their stimulation.

19. Discuss the role of hormones and neurotransmitters in the control of GI motility.

(4x3=12 weightage)

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

20. Write an essay on the counter- current mechanisms in urine formation.

21. Describe the mechanism of transport of gases.

22. Write a brief account on the functional and association areas of cerebral cortex.

23. Explain the physiology of taste.

(2x5=10 weightage)

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester M.Sc Zoology   Degree Examination, November 2024

MZL3C08 – Microbiology & Biotechnology

(2022 Admission onwards)

Time: 3 hours   Max. Weightage : 30

I. Answerany eight of the following: - (Weightage – 1)

1. Describe the microbiological analysis of drinking water.

2. Comment on the contributions of Alexander Fleming and Edward Jenner to microbiology.

3. What is Bergey's Manuel? Comment on major groups.

4. Comment on microbial growth curve.

5. Write on types of viruses.

6. Comment on Construction of chimeric DNA.

7. Write on FISH and McFISH

8. Write on biopesticides with examples.

9. Give short notes on GATT and TRIPS.

10. Write on GM crops and related ethical issues.

11. Comment on Antisence RNA

12. Comment on DNA fingerprinting. Explain the steps undertaken.

                                                              (8 x 1 = 8 weightage)

II. Answer any four of the following: - (Weightage – 3)

13. Explain the major transfection methods.

14. Write on molecular markers.

15. Write on various blotting techniques.

16. Explain the biosynthetic process involved in peptidoglycan synthesis and amino acid synthesis.

17. Write on the methods for measurement of microbial cell numbers and microbial cell mass.

18. Write a short essay on microbial nutritional requirements and nutritional types.

19. Explain the physical and chemical agents for microbial control.

                                                       (4 x 3 = 12 weightage)

III. Answer anytwo of the following: - (Weightage – 5)

20. Give a detailed account on bacterial cell structure and function.

21. Write an essay on microbiology of food.

22. Describe the tools and methods in biotechnology used to address environmental issues.

23. What is cloning vector? Mention properties of a good cloning vector. Write an essay on types of vectors used in cloning.

$$(2 \times 5 = 10 \text{ weightage})$$