

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

First Semester M.Sc Degree Examination, November 2016

**ZO1CT03 – Ecology & Ethology**

(2016 Admission onwards)

Max. Weightage : 36

Time: 3 hours

**Answer all fourteen questions**

What is a habitat?

What are the greenhouse gases?

Compare realized niche with fundamental niche.

What is negative or zero population growth? List two countries with zero population growth

Write the concept of climax community.

Write notes on primary succession.

What is logistic growth curve?

What is meant by carrying capacity?

What is biodiversity hotspot? Cite examples from India

What are fixed action patterns?

What is stimulus filtering?

What is ritualization?

What are sign stimuli?

Write notes on animal migration

**(14 x 1=14 weightage)**

**Answer any seven questions**

1. Briefly explain the mechanisms of character displacement.

2. Describe the major approaches of biodiversity management.

3. Discuss the concepts of Project Tiger.

4. Brief on the Ground and remote sensing methods

5. Discuss the Gross primary productivity and Net primary productivity.

6. Explain the population sampling methods.

7. Write a note on neural basis of learning

8. What are Ethograms? Explain their significance.

9. Explain instinctive behaviour.

10. Write a note on types of orientation.

**(7 x 2 = 14 weightage)**

**Answer any two questions**

5. Write an essay on management strategies for conservation of nature

6. Write an essay on types of species interactions and its significance with examples.

7. Explain Species diversity and its measurements.

8. Give an account of general factors in motivation. Add notes on motivation in guppies.

**(2 x 4 = 8 weightage)**

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE  
 First Semester M.Sc Degree Examination, November 2016  
**ZO1CT02 – Biophysics & Biostatistics**  
 (2016 Admission onwards).

k. Time: 3 hours

Max. Weightage : 36

**PART A****Answer all questions.**

- What is circular dichroism? Give its applications.
- Explain the resolving power of light microscopy.
- Describe the fixation and staining technique for electron microscopy.
- What is gel filtration? Describe its applications.
- Explain the influence of G force.
- Enumerate the applications of tracer techniques.
- What is PET? Explain its principle.
- Explain autoradiography.
- Discuss the importance of Henderson Hasselbalch equation.
- Explain Fick's law and diffusion coefficient.
- Define skewness and kurtosis
- What is Poisson Distribution?
- Explain laws of probability.
- What is ANOVA?

**(14 x 1 = 14 weightage)****Answer any seven questions.**

- Explain the importance of buffers in biology.
- Comment on the applications of Nanotechnology in the field of health care.
- Explain the different types of radiation detectors.
- Enumerate the applications of ultra sonic waves.
- Explain NMR and ESR spectroscopy.
- What is LASER? Explain its applications in biology.
- Describe the structure determination by X-ray crystallography.
- Briefly explain different sampling techniques.
- Describe primary and secondary data.
- What are the differences between regression and correlation analysis?

**(7 x 2 = 14 weightage)**

**III. Answer any two questions.**

25. Explain the physical organization of ear and mechanism of sound transmission.
26. What are isotopes? Enumerate the different types of radio isotopes used in biology.
27. Explain the different types of chromatographic techniques and their applications.
28. What is the significance of statistical tests? Explain the methods of t-test, chi-square test and F-test.

**(2 x 4 = 8 weighta**

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

First Semester M.Sc Degree Examination, November 2016

ZO1CT01 – Biochemistry &amp; Cytogenetics

(2016 Admission onwards)

Time: 3 hours

Max. Weightage : 36

**Answer all questions. Each question carries 1 weightage**

What is an epimer? Give an example.

Give the structure of trehalose. What is its biological importance?

What is mutarotation?

What is a zwitterion?

What is pK value? Give its significance.

What are sphingolipids? Mention its importance.

What are co enzymes? Give two examples.

What is an active site? How it is formed?

What is gluconeogenesis? What are its precursors?

Glycogen is the storage form of glucose. Why glucose is to be converted to glycogen for storage?

What is transamination?

What is calmodulin?

What are caspases?

What is the importance of Ras in the growth of cells?

Define signal transduction.

(14 x 1=14)

**Short Essay. Answer any seven questions. Each question carries two weightage.**

What are heteropolysaccharides? Describe the structure of the heteropolysaccharides.

Discuss Ramachandran plot. Mention its applications.

Describe the structure and functions of prostaglandins.

Describe the nitrogen bases of nucleic acids.

Describe the structural organization of tRNA.

Explain allosteric regulation with suitable examples.

Describe the laws of thermodynamics. Mention its importance in biological system.

22. Describe extrachromosomal inheritance.
23. Discuss JAK-STAT signalling pathway.
24. Describe the role of lysosomes in cellular digestion.

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**III. Essay. Answer any two questions. Each question carries four weightage.**

25. Describe the primary, secondary, tertiary and quaternary structure of proteins with suitable examples.
26. Describe the mechanism of enzyme action with suitable examples.
27. Describe the biosynthesis of cholesterol. Mention about its regulation.
28. Describe apoptosis with examples from eukaryotic cells. Mention the significance of apoptosis.

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