

**FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, NOVEMBER 2021**

(CBCSS)

Zoology

ZOL 1C 03—ECOLOGY AND ETHOLOGY

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend all questions in each section.*
2. *The minimum number of questions to be attended from the Section / Part shall remain the same.*
3. *The instruction if any, to attend a minimum number of questions from each sub section / sub part / sub division may be ignored.*
4. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

I. Answer any *four* questions. Each question carries 2 weightage :

- 1 Inclusive fitness.
- 2 Social releasers.
- 3 Kinesis.
- 4 Character displacement.
- 5 Competitive exclusion principle.
- 6 Community stratification.
- 7 Blue carbon.

(4 × 2 = 8 weightage)

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

- 8 Explain the social behaviour of termites.
- 9 Elaborate on circadian rhythms.

Turn over

- 10 Explain various aspects of motivation.
- 11 Elaborate on any *four* biogeographic zones of India.
- 12 Explain the major drivers of biodiversity change.
- 13 Describe the concept of climax with reference to ecological succession.
- 14 Explain age structure of population.

(4 × 3 = 12 weightage)

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

- 15 Explain the role of hormones in regulating different behaviour patterns.
- 16 Explain nitrogen cycle. Elaborate on the anthropogenic effects on nitrogen cycle.
- 17 Enumerate the major approaches to conservation and management of biodiversity.
- 18 Elaborate on the global ecological significance of tropical rain forests as a major terrestrial biome.

(2 × 5 = 10 weightage)

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ZOL 1C 02—BIOPHYSICS AND BIOSTATISTICS

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

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Part A

I. Answer any *four* questions. Each carries 2 weightage :

- 1 What is meant by Gibbs Donnan equilibrium ?
- 2 What are buffers ? Mention any two roles of buffers in biological systems.
- 3 Distinguish between infrasonic and ultrasonic sounds.
- 4 What is probability distribution ? Explain poisson distribution.
- 5 What is single neuron recording ?
- 6 Distinguish between type I and type II errors.
- 7 Write notes on Margalef species richness.

(4 × 2 = 8 weightage)

Part B

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

- 8 What are the properties of colloids ?
- 9 Explain NMR spectroscopy and its applications.

Turn over

- 10 Give an account of brain activity recording.
- 11 Describe the fixation and staining techniques for electron microscopy.
- 12 What is frequency curve ? Explain different types of frequency curve.
- 13 Explain the different types of sampling.
- 14 What is ANOVA ? Write an account of different types of ANOVA.

(4 × 3 = 12 weightage)

Part C

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

- 15 Explain the physical aspects of sound transmission in the ear.
- 16 What is LASER ? Explain the applications of LASER in biology.
- 17 Write an essay on electrophoresis.
- 18 a) Give an account of measures of dispersion.

b) Calculate SD for the following data :

Class	48-50	50-52	52-54	54-56	56-58	58-60	60-62
Frequency	5	13	15	30	15	12	10

(2 × 5 = 10 weightage)

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Zoology

ZOL1C01—BIOCHEMISTRY AND CYTOGENETICS

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

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I. Answer any *four* questions. Each carries 2 weightage :

- 1 What is the chemical nature of chitin ?
- 2 Write a brief note on transamination.
- 3 What is micro-RNA ?
- 4 What are prostaglandins ?
- 5 What are pseudoalleles ?
- 6 Distinguish between heterochromatin and euchromatin.
- 7 Write the functional significance of cAMP.

(4 × 2 = 8 weightage)

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

- 8 Briefly describe the biological roles of proteins.
- 9 Illustrate the structural organization of tRNA.

Turn over

- 10 Derive Michaelis-Menten equation of enzyme kinetics.
- 11 Describe the process of glycolysis.
- 12 Describe different forms and functions of lysosomes.
- 13 Briefly describe different forms of inter cellular attachments.
- 14 Write a note on maternal inheritance.

(4 × 3 = 12 weightage)

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

- 15 Illustrate the structure and functions of homopolysaccharides.
- 16 Write an essay on electron transport system and oxidative phosphorylation.
- 17 Describe the process of biosynthesis of purines and pyrimidines.
- 18 Describe the mechanism of apoptosis and its significance.

(2 × 5 = 10 weightage)