

**FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)  
EXAMINATION, NOVEMBER 2020**

(CBCSS)

Zoology

ZOL 1C 03—ECOLOGY AND ETHOLOGY

(2019 Admissions)

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. *There will be an overall ceiling for each Section / Part that is equivalent to the maximum weightage of the Section / Part.*

**Section A**

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

- |                          |                                      |
|--------------------------|--------------------------------------|
| 1 Stimulus filtering.    | 2 Dominance hierarchy.               |
| 3 Filial imprinting.     | 4 Gangetic plain biogeographic zone. |
| 5 Autogenic succession.  | 6 Species dominance.                 |
| 7 Resource partitioning. |                                      |

(4 × 2 = 8 weightage)

**Section B**

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

- 8 Explain J. P. Scott's categories of behaviour.
- 9 Citing examples explain cultural transmission of behaviour.
- 10 Explain different methods of navigation by birds during navigation.
- 11 Explain the basic principles of conservation.
- 12 Explain, how decomposers and detrivores influence ecosystem functioning ?

**Turn over**

- 13 Elaborate on biodiversity of India with reference to status, monitoring and documentation.
- 14 Write on different kinds of predatory species-interactions.

(4 × 3 = 12 weightage)

### Section C

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

- 15 Explain parental care and associated behavioural patterns.
- 16 Explain carbon cycle. Enumerate the factors influencing global carbon cycle.
- 17 Elaborate on the methods of estimating population density.
- 18 Write a critical account on the major terrestrial biomes.

(2 × 5 = 10 weightage)

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Zoology

ZOL 1C 02—BIOPHYSICS AND BIOSTATISTICS

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

**General Instructions**

1. *In cases where choices are provided, students can attend **all** questions in each section.*
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**Section A**

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

- 1 State Vant Hoff's laws.
- 2 What are GM counters ?
- 3 Write the properties of electromagnetic radiations.
- 4 Explain ANOVA.
- 5 State and explain Hendeson - Hasselbach equation.
- 6 Distinguish between skewness and kurtosis.
- 7 What is Chi-square test ?

(4 × 2 = 8 weightage)

**Section B**

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

- 8 Explain the physical organization of human ear.
- 9 Describe the principle and applications of mass spectroscopy.
- 10 Give an account of patch clamp technique.

**Turn over**

- 11 Explain the principle of HPLC.
- 12 Distinguish between census and sampling methods.
- 13 What is meant by correlation analysis ? Explain different types of correlation.
- 14 Give an account of Shannon diversity index and Simpson's dominance index.

(4 × 3 = 12 weightage)

### Section C

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

- 15 Write an essay on the properties and biological importance of colloids.
- 16 Explain the biological effects of ionizing radiations.
- 17 Describe the principle and applications of SEM and TEM.
- 18 a) Briefly describe different measures of central tendency.

b) Calculate arithmetic mean for the following data :

Class	10-14	15 -19	20-24	25-29	30-34	35-39
Frequency	3	16	26	31	16	8

(2 × 5 = 10 weightage)

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Zoology

ZOL 1C 01—BIO-CHEMISTRY AND CYTOGENETICS

(2019 Admissions)

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. *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 What is optical isomerism ?
- 2 What is the significance of Ramachandran plot ?
- 3 Write a note on multiple alleles.
- 4 What is gluconeogenesis ?
- 5 Write the structure of ATP ?
- 6 What are cadherins ?
- 7 What is heterochromatin ?

(4 × 2 = 8 weightage)

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

- 8 Describe the structure of tRNA.
- 9 Briefly describe the biological role of lipids.

10. Describe various factors affecting enzyme action.
11. Briefly describe oxidative phosphorylation.
12. Describe the structure and types of ribosomes.
13. Briefly describe the concept of interrupted genes.
14. What is apoptosis ? How is apoptosis regulated ?

(4 × 3 = 12 weightage)

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

15. Write an essay on the secondary structure of proteins.
16. Describe the citric acid cycle.
17. Describe different forms of polysaccharides.
18. Describe different forms of chromosomal mutations.

(2 × 5 = 10 weightage)

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**FIRST SEMESTER M.Sc. DEGREE (SUPPLEMENTARY) EXAMINATION  
NOVEMBER 2020**

(CUCSS)

Zoology

ZO 1C 03—ECOLOGY AND ETHOLOGY

(2016 Admissions)

Time : Three Hours

Maximum : 36 Weightage

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

- 1 Write briefly on Nilgiri Biosphere Reserve.
- 2 What do you mean by carbon trading.
- 3 Comment on Deccan plateau biogeographic zone.
- 4 Write on vertical stratification in community.
- 5 What is the concept of deme ?
- 6 Comment on net primary productivity.
- 7 What do you mean by resource partitioning ?
- 8 Explain, how nitrogen fixation facilitates nitrogen cycle ?
- 9 What is kin selection ?
- 10 Write briefly on imprinting.
- 11 What is stimulus filtering ?
- 12 Comment on displacement activities.
- 13 What is Behaviourism ?
- 14 Write on proximate and ultimate causes of behaviour.

(14 × 1 = 14 weightage)

II. Answer any *seven* questions. Each question carries 2 weightage :

- 15 Elaborate on the major drivers of biodiversity changes.
- 16 Write on green building technology and its ecological importance.

**Turn over**

- 17 Explain the mechanisms involved in ecological succession.
- 18 Describe population growth curves.
- 19 Elaborate on the grassland biomes of the world.
- 20 What is ecological pyramid ? Describe the different kinds of pyramids.
- 21 Explain the strategies of navigation in animals.
- 22 Elucidate J. P. Scott's categories of behaviour.
- 23 Explain social dominance.
- 24 Write the neural basis of sleep and arousal.

(7 × 2 = 14 weightage)

III. Answer any *two* questions. Each question carries 4 weightage :

- 25 Explain various inter-specific interactions.
- 26 Elaborate on biodiversity from an Indian perspective.
- 27 Explain the social behaviour in primates.
- 28 Elaborate on tropical rain forests with respect to its importance, threats and conservation measures.

(2 × 4 = 8 weightage)



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NOVEMBER 2020**

(CUCSS)

Zoology

ZO 1C 02—BIOPHYSICS AND BIostatISTICS

(2016 Admissions)

Time : Three Hours

Maximum : 36 Weightage

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

- 1 Distinguish between interval data and ordinal data.
- 2 What is confidence interval ?
- 3 What is Sorenson's index ?
- 4 Distinguish between linear and non-linear correlations.
- 5 Mention the laws of probability.
- 6 Differentiate between exclusive and inclusive class intervals.
- 7 Write briefly on G force.
- 8 What is volume expander ?
- 9 How does the blood buffer system work ?
- 10 What is ultrasound ?
- 11 Write briefly on radiation dosimetry.
- 12 What is circular dichroism ?
- 13 What is single neuron recording ?
- 14 Write on freeze fracture method.

(14 × 1 = 14 weightage)

II. Answer any *seven* questions. Each question carries 2 weightage :

- 15 What is frequency curve ? What are the different types of frequency curves ?
- 16 What is a non-parametric test ? Write on two non-parametric tests.
- 17 Write two methods to determine alpha diversity.
- 18 What is standard deviation ? Write the method to calculate standard deviation. Mention its merits and demerits.

**Turn over**

- 19 Explain the bioacoustics of echo location.
- 20 Write on the influence of gravity on human body.
- 21 Explain the applications of diffusion processes in biology.
- 22 Write the principle and applications of autoradiography.
- 23 Describe the applications of nanotechnology in health care and environmental management.
- 24 Explain the principle and applications of gel electrophoresis.

(7 × 2 = 14 weightage)

III. Answer any *two* questions. Each question carries 4 weightage :

- 25 What is regression analysis ? Explain different types of regression analysis and regression equations.
- 26 Elaborate on the biological effects of ionizing radiations.
- 27 Explain the principles and applications of NMR and ESR spectroscopy.
- 28 Describe the applications of laser in biology.

(2 × 4 = 8 weightage)

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NOVEMBER 2020**

(CUCSS)

Zoology

ZO1C01—BIOCHEMISTRY AND CYTOGENETICS

(2016 Admissions)

Time : Three Hours

Maximum : 36 Weightage

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

- 1 Write briefly on the chemical bonds of biomolecules.
- 2 Distinguish between structural isomerism and stereo isomerism.
- 3 What do you mean by pK value and Isoelectric point of amino acids.
- 4 Citing one example each, distinguish between hydroxyl and cyclic fatty acids.
- 5 What is Fischer's Template theory ?
- 6 Explain free energy concept.
- 7 Write on inhibitors of electron transport chain.
- 8 Why PFK is referred to as the pacemaker of glycolysis ?
- 9 What are cytoskeletons ?
- 10 Write on the role of carbon monoxide as a signaling molecule.
- 11 What do you know about repetitive DNA ?
- 12 Distinguish between Gap junction and Tight junction.
- 13 What is cell adhesion ?
- 14 What is cell coat ?

(14 × 1 = 14 weightage)

II. Answer any *seven* questions. Each question carries 2 weightage :

- 15 Write a concise account on cell permeability.
- 16 Explain the functional significance of cAMP.
- 17 Give the structural organization of ribosomes.
- 18 Explain the regulation of apoptosis.
- 19 Citing one example each, write briefly on the classification of lipids.
- 20 Describe the biological roles of nucleotides and nucleic acids.
- 21 Explain HMP pathway.
- 22 Briefly enumerate the biosynthesis of cholesterol.
- 23 Explain transamination and deamination reactions in biological system.
- 24 Illustrate the methods of representation of sugars.

(7 × 2 = 14 weightage)

III. Answer any *two* questions. Each question carries 4 weightage :

- 25 Elaborate on extrachromosomal inheritance.
- 26 Describe different kinds of enzyme inhibition.
- 27 Explain the secondary structure of protein.
- 28 Enumerate the structure and functions of homopolysaccharides.

(2 × 4 = 8 weightage)