

Total number of printed pages-4

1 (Sem-4) ZLG 3

2025

ZOOLOGY

Paper : ZLG0400304

(Principles of Ecology and Evolution)

Full Marks : 45

Time : Two hours

The figures in the margin indicate full marks for the questions.

Write the answer to the two Parts in separate books.

Q. No. 1 is compulsory for both Part-A and Part-B.

Part-A

(Principles of Ecology)

1. Choose the correct answer : $1 \times 3 = 3$
- (a) _____ is the study of the ecology of a single species.
- (i) Autecology
 - (ii) Oncology
 - (iii) Synecology
 - (iv) All of the above

- (b) _____ consists of different populations living together and interacting with one another as competitors, predators and prey etc.
- (i) Community
 - (ii) Organism
 - (iii) Ecosystem
 - (iv) Biome
- (c) Which of the following is NOT a true characteristic of a population?
- (i) Natality
 - (ii) Mortality
 - (iii) Sex-ratio
 - (iv) Stratification

2. Write short notes on : **(any three)** $2 \times 3 = 6$

- (a) Synecology
- (b) Energy flow in an ecosystem
- (c) Gause's Principle of competitive exclusion
- (d) Ecotone
- (e) Food Web

3. Answer briefly : **(any two)** $5 \times 2 = 10$

- (a) Explain the different types of functional attributes of a ecosystem.
- (b) Discuss the concepts of life table and survivorship curve. $2\frac{1}{2} + 2\frac{1}{2} = 5$

- (c) What do you understand by the term 'community'? What are the characteristics of a community? Briefly highlight the structure of a community.
1+2+2=5
- (d) What do you understand by the term 'ecosystem'? Write briefly on *any two* types of ecosystems with necessary examples.
1+2+2=5
4. Answer elaborately : **(any one)** 10×1=10
- (a) Define biotic potential. What is population regulation? Discuss the density-dependent factors of population regulation.
1+2+7=10
- (b) What is ecological succession? Explain the different types of succession processes highlighting necessary examples. Briefly add a note on *any one* important theory related to the formation of a climax community.
2+6+2=10

Part-B (Evolution)

1. Choose the correct answer : 1×2=2
- (a) Which one of the following is a protocell?
- (i) Coacervate
 - (ii) Microsphere
 - (iii) Tobacco Mosaic Virus
 - (iv) Both (i) and (ii)

- (b) Which era is considered as the age of reptiles in the geological timescale?
- (i) Cenozoic
 - (ii) Mesozoic
 - (iii) Paleozoic
 - (iv) Proterozoic
2. Write short notes on : **(any two)** $2 \times 2 = 4$
- (a) Lamarckism
 - (b) RNA World Hypothesis
 - (c) Founder effect
 - (d) Selection coefficient
3. Answer briefly : **(any two)** $5 \times 2 = 10$
- (a) Briefly highlight the pattern of evolution of horse with necessary diagrams.
 - (b) What do you understand by chemogeny with respect to origin of life? Briefly explain the possible pathways of origin of basic biomolecules. $1 + 4 = 5$
 - (c) What do you understand by genetic drift? Explain briefly with appropriate examples. $1 + 4 = 5$
 - (d) What is the principle behind the establishment of Hardy-Weinberg Law? Derive the Hardy-Weinberg Law with any example of your choice.
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