

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)**  $10 \times 1 = 10$
- (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 :  $1 \times 2 = 2$
- (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.