13.12.18 (M)

This question paper contains 4 printed pages.

Your Roll No. .....

Sl. No. of Ques. Paper : **124** **I**

Unique Paper Code : **32231102**

Name of Paper : **Perspectives in Ecology**

Name of Course : **B.Sc. (Hons.) Zoology**

Semester : **I**

Duration : **3 hours**

Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt five questions in all.
Question No. 1 is compulsory.

1. (a) Define the following:

(i) Life table

(ii) Fecundity

(iii) Oligotrophic lake

(iv) Species divesity. 4

(b) Distinguish between the following:

(i) Autogenic and Allogenic succession

(ii) Unitary and Modular population

(iii) Grazing and Detritus food chain

(iv) Neritic and Benthic zone. 6

P. T. O.

(c) State whether true or false. Also correct the false statements:

(i) Flow of energy in an ecosystem is bidirectional.

(ii) Type I functional response of predator can stabilize prey population density.

(iii) The upper asymptote is also known as the carrying capacity of a population in a sigmoid growth curve.

(iv) Competition, parasitism and predation are examples of density-independent factors of population regulation. 4

(d) Match the following: 5

1. Competitive exclusion principle	(a) Ernst Haeckel
2. Law of minimum	(b) Charles Darwin
3. Ecology	(c) A.G. Tansley
4. Ecological pyramid	(d) Justus von Liebig
5. Polyclimax theory	(e) Charles Elton
	(f) Georgy Gause

(e) Fill in the blanks:

(i) ..... is also known as the tension zone or the zone of stress.

(ii) The area actually inhabited by the tigers in whole of Jim Corbett National Park would be termed as its ..... density.

(iii) Permanently frozen deeper soil in tundra is called as .....

(iv) Assimilation efficiency in carnivores is ..... than in herbivores. 4

(f) Illustrate the following with the help of diagrams (no description required):

(i) Universal energy flow model

(ii) Dispersion patterns. 4

2. (a) Explain the exponential and logistic growth forms of population with the help of suitable diagrams and equations.

(b) Write a note on density dependent factors with suitable examples. 7,5

3. (a) Define biogeochemical cycle. Explain nitrogen cycle emphasizing on the role of microorganisms in it.

(b) Explain Shelford's law of tolerance with suitable examples. 7,5

4. (a) Define ecological succession. Explain the various theories of climax in succession.

(b) Differentiate between ecosystem and biome. Explain the components of an ecosystem with any one ecosystem as an example. 5,7

P. T. O.

5. (a) Describe Lotka-Volterra model for predation with the help of diagrams and equations.

   (b) Differentiate between r- and k-selected species. 8,4

6. Write short notes on any *three* of the following:

   (a) Vertical stratification in a temperate lake

   (b) Edge effect

   (c) Temperature as a limiting factor

   (d) Lindeman's efficiency

   (e) Population interactions. 4,4,4