

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1406

I

Unique Paper Code : 2232011103

Name of the Paper : DSC-3, Concepts of Ecology

Name of the Course : B.Sc. (Hon) Zoology

Semester : I, NEP-UGCF 2022

Duration : 2 Hours

Maximum Marks : 60

**Instructions for Candidates**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **four** questions including.
3. Question No. 1 which is compulsory.
4. Draw well-labeled diagrams wherever necessary.

1. (a) Define the following :

(4)

(i) Migration

(ii) Natality

P.T.O.

(iii) Fecundity

(iv) Sere

(b) Distinguish between the following : (6)

(i) Autecology and Synecology

(ii) Unitary and Modular population

(iii) Fundamental and Realized niche

(c) Name the scientists associated with the following terms : (3)

(i) Ecology

(ii) Hypervolume niche

(iii) Ecosystem

(d) State whether the following statements are True or False : (2)

(i) Maximum theoretical production of new individuals under ideal conditions is known as exponential growth.

(ii) Human population shows concave type of survivorship curve.

(iii) Complete competitors can coexist.

(iv) Commensalism describes a relationship between organisms where one benefits and the other is harmed.

2. (a) Describe various density-dependent factors that regulate the population size near carrying capacity level. (9)
- (b) What are life tables? Add a note on their significance. (3)
- (c) Illustrate the sigmoid growth curve with the help of well-labeled diagram. (3)
3. (a) Describe Lotka-Volterra model for predator and prey interaction with the help of diagrams and equations. (8)
- (b) Explain Shelford's law of tolerance. (3)
- (c) Describe various types of ecological pyramids. (4)
4. (a) Define biogeochemical cycles. (1)



- (b) Explain Nitrogen cycle with the help of diagram. Explain the role of microorganisms in Nitrogen cycle. (9)
- (c) Explain ecotone and edge effect. Why is ecotone considered as zone of stress? (5)
5. (a) Explain different 'energy flow' models in an ecosystem. (8)
- (b) Define ecological succession. Explain the various theories of climax in succession. (5)
- (c) Differentiate between pioneer and climax community. (2)
6. Write short notes on any **three** of the following:
- (a) Protected areas
- (b) Gause's principle
- (c) Light as a limiting factor
- (d) Ecological efficiencies
- (e) Resource partitioning (3×5)