MZO-007

ASSIGNMENT BOOKLET

M.Sc. (Zoology) Programme

(MSCZOO)

Principles of Ecology

Valid from 1st January, 2025 to 31st December, 2025

School of Sciences
Indira Gandhi National Open University
Maidan Garhi
New Delhi-110068

(2025)

Dear Student,

Please read the Section on assignments in the Programme Guide for M.Sc. (Zoology). A weightage of 30 per cent, as you are aware, has been earmarked for continuous evaluation, which would consist of one tutor-marked assignment for this course. The assignment is in this booklet. The total marks for this assignment is 100, of which 40 marks are needed to pass it.

Instructions for formatting your Assignments

Before attempting the assignment please read the following instructions carefully:

1) On top of the first page of your answer sheet, please write the details exactly in the following format:

ROLL NO.: ……

NAME: ……..

ADDRESS: ……

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COURSE CODE: …….

COURSE TITLE: …….

ASSIGNMENT NO.: ……..…

STUDY CENTRE: ……..…....

DATE: ……..……...

PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE EVALUATION AND TO AVOID DELAY.

2) Use only foolscap size writing paper (but not of very thin variety) for writing your answers.
3) Leave 4 cm margin on the left, top and bottom of your answer sheet.
4) Your answers should be precise.
5) Solve this assignment, and **submit the complete assignment answer sheets within the due date.**
6) The assignment answer sheets are to be submitted to your Study Centre within the due date. **Answer sheets received after the due date shall not be accepted. We strongly suggest that you retain a copy of your answer sheets.**
7) This assignment is valid from 1st January, 2025 to 31st December, 2025. If you have failed in this assignment or fail to submit it till its validity, then you need to get the assignment for the next year and submit it as per the instructions given in the Programme Guide.
8) **You cannot fill the examination form for this course** until you have submitted this assignment.

We wish you good luck.

ASSIGNMENT

Course Code: MZO-007
Assignment Code: MZO-007/TMA/2025
Maximum Marks: 100

Note: Attempt all questions. The marks for each question are indicated against it.

1. a) Describe the four fundamental characteristics shared by all ecosystems, including appropriate examples for each. (5)

   b) Distinguish between Gross Primary Productivity, Net Primary Productivity and Net Community Production. (5)

2. Describe the nitrogen cycle in detail, outlining its main reservoirs, key processes (nitrogen fixation, assimilation, ammonification, nitrification, and denitrification), and the impact of human activities on its natural balance. (10)

3. Explain how biodiversity, species distribution, ecosystem functioning, and sensitive biomes like coral reefs, rainforests, and tundra are affected by climate change in both terrestrial and marine biomes. (10)

4. a) Explain the ecological significance of mortality, life tables, age structure, sex ratio, and population increase (both exponential and logistic) using appropriate examples. (5)

   b) Describe how mortality works in population ecology. Using examples, distinguish between realised (ecological) mortality and minimum (potential) mortality. (5)

5. Explain the difference between density-dependent and density-independent factors regulating population growth. Discuss their types (biotic and abiotic) with suitable examples, and highlight how these factors can interact to influence population dynamics. (7+2+1=10)

6. Explain the Lotka–Volterra, Functional Response, and Numerical Response models of prey–predator interactions, highlighting their assumptions, equations, and ecological applications. (10)

7. Explain the contribution of biodiversity to medicine and industry. Illustrate your answer with suitable examples of medicinal plants, animal-based medicinal uses, micro-organisms, and industrial raw materials derived from biodiversity. (10)

8. a) Discuss the significance of the Traditional Knowledge Digital Library (TKDL) in safeguarding India's traditional knowledge systems. (5)

   b) Explain the concepts of population bottleneck and founder effect, highlighting their impact on genetic diversity with suitable examples from plants and animals. (5)

9. Explain the concepts of dose, threshold dose, and LD_{50} in toxicology. Differentiate between acute and chronic effects of toxicants with appropriate examples. (6+4=10)

10. Define biodegradation and bioremediation. Discuss with suitable examples how persistent organic pollutants (POPs), polymers, heavy metals, and pesticides are degraded or transformed through these processes. (4+6=10)