MZO-004

ASSIGNMENT BOOKLET

M.Sc. (Zoology) Programme

(MSCZOO)

Systematics, Biodiversity and Evolution

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: ……

……

……

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-004
Assignment Code: MZO-004/TMA/2025
Maximum Marks: 100

Note: Attempt all questions. The mark for each question is indicated against it.

1. Discuss the evidence supporting the RNA World Hypothesis and its implications for understanding the transition from prebiotic chemistry to cellular life. (10)

2. Discuss the role of horizontal gene transfer in shaping the evolutionary relationships among domains of life. (10)

3. What is the concept of speciation in bacteria, and how does it differ from speciation in eukaryotic organisms? (10)

4. What is the molecular clock? Describe how is it used to estimate the timing of evolutionary events? (4+6=10)

5. How did endosymbiosis contribute to the evolution of eukaryotic genomes, and what evidence supports the theory of endosymbiotic origin for organelles like mitochondria and chloroplasts? (10)

6. Describe the role played by genomic changes, such as chromosomal rearrangements, gene duplications, and regulatory divergence, in the process of speciation? (10)

7. What are the key differences between the artificial and natural systems of classification? Differentiate between diploblastic and triploblastic animals based on any five characteristics. (5+5=10)

8. What is Taxonomic diversity? Describe its various types. (2+8=10)

9. Describe the different stages in the origin of *Homo sapiens*. Also, draw a well-labeled human evolution tree. (5+5=10)

10. Describe the following: (2½×4=10)

    a) Abiogenesis

    b) Phylogenetic tree

    c) Exon shuffling

    d) Artificial speciation