



Dr.B.R. AMBEDKAR OPEN UNIVERSITY

FACULTY OF SCIENCE

DEPARTMENT OF ZOOLOGY

M.Sc., FIRST YEAR, SEM-II

COURSE-1 (Ecological Principles and Conservation Biology)

Instructions:

- Do not copy the answer directly from any of the books.
- As far as possible, try to answer the questions independently in your own words.
- Each course has two assignments (Assignment-1 and Assignment-2). Maximum marks are 15 and Minimum marks (Pass marks) are 06 for each assignment. Each assignment has “three questions” and each question carries 05 marks.
- You must pass both assignment-1 and assignment-2.
- You must submit the handwritten assignments. Printed materials/ Xerox copies are not acceptable.
- Answers must be written in blue or black ballpoint pen. You may use colour pencils / colour pens for drawing diagrams.
- Answers must be written on one side of the paper only. Do not write on both sides of the paper.
- Each assignment must be a minimum of 10 pages and a maximum of 15 pages.
- You must sign at the end of each page of your answer sheet.

ASSIGNMENT-1

Max. Marks: 15

Min. Marks: 06

- I. Answer **all** the following questions. (Draw diagrams, flow charts wherever necessary). Each question carries 05 marks.
1. Explain the ecosystem concept, its organization, structure and functions with their significance.
 2. Describe life history strategies with special reference to r-selection and K-selection, highlighting their ecological significance
 3. Describe the various types of population interaction.

ASSIGNMENT-2

Max. Marks: 15

Min. Marks: 06

- II. Answer **all** the following questions. (Draw diagrams, flow charts wherever necessary). Each question carries 05 marks.
1. Explain ecological succession with its stages and types.
 2. What are Biogeochemical Cycles and describe their importance in maintaining ecological balance.
 3. Describe the various strategies used for biodiversity conservation. Discuss the major conservation case studies in India.



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COURSE-2 (Genetics and Evolutionary Biology)

Instructions:

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- You must submit the handwritten assignments. Printed materials/ Xerox copies are not acceptable.
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- Each assignment must be a minimum of 10 pages and a maximum of 15 pages.
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ASSIGNMENT-1

Max. Marks: 15

Min. Marks: 06

- I. Answer **all** the following questions. (Draw diagrams, flow charts wherever necessary). Each question carries 05 marks.
1. Explain the laws of inheritance and the reasons for Mendels' success.
 2. Explain different types of markers and their role in constructing genetic maps.
 3. Define mutation. Classify mutations based on origin, molecular nature and phenotypic effect with suitable examples.

ASSIGNMENT-2

Max. Marks: 15

Min. Marks: 06

- II. Answer **all** the following questions. (Draw diagrams, flow charts wherever necessary). Each question carries 05 marks.
1. Explain the origin of life on Earth?
 2. Describe the different Isolating mechanisms.
 3. Describe the evolutionary time scale. Discuss briefly about major events during evolutionary time scale



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COURSE-3 (Structural Biology)

Instructions:

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- You must pass both assignment-1 and assignment-2.
- You must submit the handwritten assignments. Printed materials/ Xerox copies are not acceptable.
- Answers must be written in blue or black ballpoint pen. You may use colour pencils / colour pens for drawing diagrams.
- Answers must be written on one side of the paper only. Do not write on both side of the paper.
- Each assignment must be a minimum of 10 pages and a maximum of 15 pages.
- You must sign at the end of each page of your answer sheet.

ASSIGNMENT-1

Max. Marks: 15

Min. Marks: 06

- I. Answer **all** the following questions. (Draw diagrams, flow charts wherever necessary). Each question carries 05 marks.
1. What are carbohydrates? Explain their general characteristics. Differentiate Monosaccharides, Disaccharides and Polysaccharides
 2. Classify amino acids based on the nature of their side chains with suitable examples. Discuss the classification of proteins with suitable examples
 3. What are the characteristic features of Watson and Crick DNA? Discuss the differences between DNA and RNA in terms of structure, composition and functions.

ASSIGNMENT-2

Max. Marks: 15

Min. Marks: 06

- II. Answer **all** the following questions. (Draw diagrams, flow charts wherever necessary). Each question carries 05 marks.
1. Write an essay on mechanism of enzyme action. What are the factors affecting the rate of enzyme activity?
 2. Explain protein synthesis mechanism in eukaryotes.
 3. Explain the concept of bioenergetics and laws of thermodynamics in biological systems. Describe the structure and functions of ATP and its role as the energy currency of the cell.



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COURSE-4 (Developmental Biology)

Instructions:

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- Each course has two assignments (Assignment-1 and Assignment-2). Maximum marks are 15 and Minimum marks (Pass marks) are 06 for each assignment. Each assignment has “three questions” and each question carries 05 marks.
- You must pass both assignment-1 and assignment-2.
- You must submit the handwritten assignments. Printed materials/ Xerox copies are not acceptable.
- Answers must be written in blue or black ballpoint pen. You may use colour pencils / colour pens for drawing diagrams.
- Answers must be written on one side of the paper only. Do not write on both sides of the paper.
- Each assignment must be a minimum of 10 pages and a maximum of 15 pages.
- You must sign at the end of each page of your answer sheet.

ASSIGNMENT-1

Max. Marks: 15

Min. Marks: 06

- I. Answer **all** the following questions. (Draw diagrams, flow charts wherever necessary). Each question carries 05 marks.
1. Detail about gametogenesis and gamete differentiation. Describe the structure of Sperm and Ovum
 2. Detail about foetal membranes in chick. Write the Classification of Placenta.
 3. Discuss different types of Fertilization. Write about the mechanisms of prevention of Polyspermy

ASSIGNMENT-2

Max. Marks: 15

Min. Marks: 06

- II. Answer **all** the following questions. (Draw diagrams, flow charts wherever necessary). Each question carries 05 marks.
1. What is neurulation and explain the primary and secondary neurulation? Describe the tissue architecture of central nervous system.
 2. Discuss Explain the general body axis development in vertebrates. Describe the proximate tissue interactions.
 3. Describe the limb development in vertebrates. What are the growth factors essential for the development of the limb bud