



# ANDHRA UNIVERSITY

## TRANS-DISCIPLINARY RESEARCH HUB

### ENVIRONMENTAL ECOLOGY

#### UNIT I

##### DEFINITION AND SCOPE OF ECOLOGY:

Physical, chemical, environmental factors and their relation to organisms. Climatic Factors: Environmental complex-Interaction of ecological factors-Light factor- Temperature factor- Precipitation (rain fall) –

#### UNIT II

##### EDAPHIC FACTORS (Soil Science):

Importance of soil- Definition and composition of soil-Formation (origin) of soil-Factors affecting soil formation-soil profile-Some processes in soil formation-Characteristic to the climate type-Soil classification- Soil complex-components and properties-Soil erosion- Soil conservation.

#### UNIT III

##### BIODIVERSITY AND ITS CONSERVATION:

Current levels of biodiversity – alpha and beta diversity- extinction and endangered species – steps to preserve biodiversity- insitu and ex-situ conservation – gene banks – biodiversity conservation and agenda –21 – hotspots of biodiversity – national parks and sanctuaries – gene pools. Biodiversity Act 2002 of India.-

#### UNIT IV

##### POPULATION AND COMMUNITY ECOLOGY:

Relation within species, population growth, population dynamics positive and negative growth, bio potential, age structure, equilibrium position, oscillation and fluctuation-

#### UNIT V

##### ECOSYSTEM ECOLOGY:

Structure and functions of an Ecosystem- Ecological energetic-Energy flow in ecosystem Food chain, role of producers and consumers, Methods of calculating energies in the ecosystems-

Pond ecosystem-Marine ecosystem-Grassland ecosystem-Forest ecosystem-Desert ecosystem – Ecosystem modeling -Introduction, wetland mapping, spatial models, ecological systems and process.

#### **Text Books:**

Concepts of Ecology. E.J.Kormondey, 1984. Indian reprinted 1991  
Ecology & Environment, P.D.Sharma, Ashish publications, 1994.

#### **Reference Books:**

Introduction to Ecology, Paul Colinvaux, 1973. Wiley International Edition.  
Advanced Ecological Theory- Principles and Applications, Blackwell Science Ltd., Oxford (1999). Environment Conservation, Raymond F Dasmann, John Wiley & Sons (1984).

**MODEL QUESTION PAPER**  
**ENVIRONMENTAL ECOLOGY**

**Time: 3 Hrs**

**Max. Marks 100**

Answer any five questions. **5 x 20 M = 100 M**

All questions carry equal marks.

1. (a) Citing examples distinguish between autecology and synecology.  
(b) Describe the way light and temperature influence ecosystem processes.
2. (a) Briefly describe the way climatic factors influence the biome.  
(b) Describe the factors influencing soil formation and soil profile.
3. (a) Discuss how the soil complex components influence soil erosion and conservation  
(b) With suitable examples distinguish alpha-biodiversity from beta-biodiversity.
4. (a) Describe key features of the Biodiversity Act 2002 of India.  
(b) Elaborate on in-situ and ex-situ conservation measures followed in India to protect biodiversity.
5. (a) Describe the way the relation within species influences population growth.  
(b) Why do some populations show radical fluctuations in size over time, while others remain relatively stable?
6. (a) Briefly describe the methods used for calculating energies in the ecosystems.  
(b) Describe the key features of ecological mapping.
7. (a) Discuss the population dynamics in relation to positive and negative growth.  
(b) Diagrammatically represent key players and their role in the marine ecosystem.
8. (a) With a suitable diagrammatic representation describe the water cycle.  
(b) With suitable examples describe various types of symbiotic relations and describe their role in ecosystem dynamics.