Term End External Examination 4th Semester (Session- July 2024)

Subject: Zoology

Course No and Title: ZOLC3422M/Animal Ecology

Time: 2.15 hours Max Marks:100 Min. Marks:40

Section A: Objective Type Questions

Q1. Choose the appropriate Answer: (8x1.5=12)

i. Water has a high heat capacity. This property helps to:
A Increase its pH **B** Regulate temperature in organisms and environments
C Decrease its density **D** Increase its transparency

ii. Which form of nitrogen is directly usable by most plants
A N2 (Nitrogen gas) B NH3 (Ammonia)
C NO3- (Nitrate) D NO2- (Nitrite)

iii. In a population, what does a high sex ratio skewed towards males indicate:
A High reproductive potential B Potential future decline in population size
C High natality rate D Low mortality rate

iv. The logistic growth model includes which additional parameter compared to the exponential growth model:
A Birth rate **B** Death rate
C Carrying capacity **D** Growth rate

v. What is the primary distinction between detritus and grazing food chains:
A Detritus food chains involve herbivores **B** Grazing food chains begin with dead organic matter
C Detritus food chains begin with dead organic matter **D** Grazing food chains involve decomposers

vi. Ecological succession that starts on newly exposed surfaces without any previous soil is called:
A Primary **B** Secondary succession
C Climax succession **D** Degradative succession

vii. What is a key strategy for the conservation of natural resources:
A Over exploitation **B** Ecological succession
C Primary productivity **D** Species richness

viii. Which ecological concept is fundamental to biodiversity management:
A Keystone species **B** Ecological succession
C Primary productivity **D** Species richness

Section-B: Descriptive Type Questions (Short Type)

Q2: Answer all the Questions (8 x 4 =32)

i. What is thermal stratification in lakes, and how does it affect aquatic life.

ii. Explain the roles of the phosphorus cycle in ecosystems.

iii. Define unitary and modular populations and provide examples of each.

iv. Discuss the significance of the sex ratio in population ecology.

v. Distinguish between detritus and grazing food chains with examples.

vi. Explain the concept of an ecotone and the edge effect.

vii. Explain three major causes of environmental degradation.

viii. Discuss the concept of environmental ethics and its significance.

Section – C: Descriptive Type Questions (Medium Type)

Answer all the questions: (4 x 7=28)

Q 3. Explain the concept of limiting factors in ecology. Discuss how limiting factors can regulate population growth and distribution.

OR

Provide a detailed overview of the carbon cycle and Discuss its significance for ecosystem function and global climate.

Q 4. Analyze the factors that influence population density and distribution, providing examples for each.

OR

Describe the age structure of a population and its impact on future population growth.

Q 5. Describe the process of ecological succession and its importance in ecosystem development and stability.

OR

Discuss the energy flow in an ecosystem, highlighting the roles of producers, consumers, and decomposers.

Q6. Discuss the application of ecological principles in biodiversity management and conservation.

OR

Describe the concept of ecosystem restoration and its role in enhancing biodiversity

Section – D: Descriptive Type Questions (Long Type)

Answer any two of the following: (2 x 14=28)

Q7. Discuss the role of microorganisms and the cycling of nitrogen between the atmosphere, soil, and living organisms, highlighting its importance for agriculture and ecosystem health.

Q8. Define and elaborate on the concept of an ecological niche. Discuss its components and explain how niche differentiation contributes to species coexistence and biodiversity.

Q9. Discuss in detail the different types of ecological pyramids (numbers, biomass, and energy).

Q10. Discuss the principles and practices of biodiversity management using ecological approaches