00523

THE OPEN UNIVERSITY OF SRI LANKA

B. Sc. DEGREE PROGRAMME - LEVEL 4

FINAL EXAMINATION– 2010/2011

COURSE TITLE: FUNDAMENTALS OF ECOLOGY

COURSE CODE – ZOU 2265/ZLU 2281

DURATION – 3 HOURS

INDEX NUMBER .....

DATE: 23.06.2011 TIME -9.30AM-12.30 PM

QUESTION PAPER CONSISTS OF TWO PARTS, PART "A" AND PART "B".

ANSWER QUESTION 1 FROM PART "A" AND ANY FOUR QUESTIONS FROM PART "B".

PLEASE NOTE THAT QUESTION 1 IS COMPULSORY AND THE ANSWERS SHOULD BE WRITTTEN IN THE SPACE PROVIDED.

PART "A"

QUESTION 1

1.1.

a) Define the term habitat

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b) Giving suitable examples differentiate between macro and micro habitats.

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c) What is meant by the "niche of a species?"

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d) What are the factors that should be determined for the identification of a "niche of a bird species"?

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e) Define an ecosystem?

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f) State the two major components of an ecosystem and recognize their constituents.

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1.2

a) Define the term population and identify the characteristic features of it.

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b) Name the interactions given below.

Interactions between same species .....

Interactions between different species .....

c) List the type of population interactions between species and define them on the basis of effects (negative, positive or neutral), on their population growth.

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d) Give an example for each type of interaction given in question1.2 (c) above.

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1.3

a) What are the three possible out comes of interspecific competition between two species?

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b) Lotka and Volterra proposed a model for prey - predator interactions. Given below is the equation for growth of the prey population.

$$\frac{dN_h}{dt} = r_h N_h - pN_h N_p$$

r_h - per capita rate of increase for the prey population

N_h - host population size (prey population size)
N_p - number of predators
p - rate of predation

What are the assumptions made by Lotka and Volterra regarding this model?

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c) Name the appropriate interaction in the given space below.

The **mathematical model** (Lotka and Volterra) proposed to explain predation strongly apply to the prey-predation interaction between .....

d) Write the Lotka and Volterra **mathematical equation** for growth of the predator population.

1.4.

a) If the population growth of prey is zero, illustrate the prey isoclines of the Lotka and Volterra prey – predator equations.

b) If the population growth of predator is zero, illustrate the predator isoclines of the Lotka and Volterra prey – predator equations

c) Illustrate the prey -predator isoclines and explain the behavior of joint populations (prey and predator) using above 1.4a and 1.4b isoclines.

PART "B".

ANSWER ANY FOUR (04)) QUESTIONS

2. Stating the important features of energy flow across an ecosystem, explain the energy flow models of ecosystems.

3. Describe ecotone/edge effect. How does it operate in nature?

4. Discuss the anthropogenic influences which affect the distribution and abundance of organisms.

5. Write an essay on population regulation.

6." Diverse climatic, edepic and topographical factors of Sri Lanka contribute to a wide variety of community types that represents most of the world vegetation types."

   a) List the major climatic zones of Sri Lanka and state the major community types belong to each zone.

   b) Name the main forest types found in low land dry zone and low land wet zone of Sri Lanka and briefly describe the specific characteristic features of each forest type.

   d) How do characteristic features of wet mountain forests deviate from low land wet forest?

7. Write short notes on **any three (03)** of the following.

a) Nitrogen fixation.

b) Thermal stratification of a pond.

c) Age structure and age pyramid.

d) Species diversity.

THE OPEN UNIVERSITY OF SRI LANKA
B. Sc / B. Ed DEGREE PROGRAMME
BOTANY – LEVEL 4

BOU2200 / BOE4200/ BTU2201: PLANT PHYSIOLOGY
FINAL EXAMINATION 2010/2011

DURATION: THREE (03) HOURS

Date: 28th June 2011 **Time: 9.30 am -12.30 pm**

There are two (2) parts (part 1 and part 2) in this paper with eight (8) questions. Each part comprises of four (4) essay type questions. You have to answer FIVE (5) questions selecting at least TWO (2) questions from the each part.

PART 1

1. Water status of the plant is often expressed in terms of water potential and water content in cells. Plant water status depends on the soil water content.

   a. Define the following terms

      i. Water potential

      ii. Relative water content

      iii. Permanent wilting point

      iv. Field capacity

   b. Briefly explain the effect of intra-cellular solute molecules and cell wall on the water status of the plant cell.

   c. Deduce whether the cell given below will be plasmolysed if it is equilibrated in the given solution.