

THE OPEN UNIVERSITY OF SRI LANKA

B. Sc. DEGREE PROGRAMME - LEVEL 4

FINAL EXAMINATION- 2014/2015

COURSE TITLE: FUNDAMENTALS OF ECOLOGY

COURSE CODE - ZLU 2281

DURATION - 3 HOURS



INDEX NUMBER .....

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DATE: 21.10.2015

TIME: 9.30AM-12.30 PM

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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 WRITTEN IN THE SPACE PROVIDED.

**PART "A"**

**QUESTION 1**

1.1

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

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.....

b) Define the term habitat.

.....

c) List the two main niche characteristics.

i .....

ii.....

d) Explain the above characteristics briefly.

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ii.....  
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e) Briefly explain the fundamental niche and realized niche.

Fundamental niche

Realized niche

1.2

a) Environmental factors affect the distribution of living organisms within the biosphere.

List three physical and three chemical factors that affect the distribution of living organisms.

Physical factors:.....

Chemical factors:.....

b) Two laws have been put forward to explain the responses of organisms to the changes in the environmental factors. One is the Liebig's Law of minimum.

State the second law and explain it. ....

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c) Using a diagrammatic representation further explain the above 1.2b.

1.3.

a) Fill in the blanks given below with most **appropriate word/s**

**homeostasis, seasonally, annually, acclimatization, narrow, physical, environmental, broad**

The ranges of tolerance for .....factors are not fixed. They vary ....., geographically and with the stage of life cycle. This type of relatively short term response of an individual to changing environmental conditions is called..... Tolerance curves can either broad or narrow. Organisms that possess very ..... peaked tolerance curves are described with the prefix “steno” where as those who show ..... tolerance curves are described with the prefix “eury”.

b) A and B are fish species that live in two different aquatic systems, referred to as K and L respectively. Salinity and temperature varies within these ecosystems. The minimum and maximum values of the above environmental factors for each ecosystem are given below. According to the environmental conditions given in the table, name M, N, O, and P.

Species	Ecosystem	Salinity (ppt) range	Temperature (C°) range
A	K	20-25	M..... 0-20 O.....
B	L	20-45	N..... 20-55 P.....

c) Draw labeled diagrams to show temperature and salinity tolerance curves for A and B separately (Indicate M & N conditions in one diagram and O & P conditions in another diagram).

**PART "B"****ANSWER ANY FOUR (04) QUESTIONS**

2. Describe the nitrogen cycle and explain briefly the major human influences on this cycle.
3. Write an essay on "community boundaries".
4. i) List the three main categories of inter-specific interactions.  
ii) Explain the Lotka and Volterra proposed model for prey-predator interactions using graphical representation and relevant equations.
5. Discuss the trophic levels in an ecosystem and ecological pyramids in detail.
6. i) Define the term ecosystem.  
ii) Name the main categories of aquatic ecosystems in Sri Lanka.  
iii) Aquatic plants are adapted to survive and tolerate the different environmental conditions they encountered. Briefly describe this information with appropriate examples.  
iv) Briefly explain the main steps of an "Allogenic Succession" taking place in aquatic communities, citing the relevant examples for each step.
7. Write short notes on **any three** of the following.
  - a) Survivorship curves.
  - b) Green house effect.
  - c) Heterotrophs.
  - d) Logistic growth curve.