

THE OPEN UNIVERSITY OF SRI LANKA

B. Sc. DEGREE PROGRAMME - LEVEL 4

FINAL EXAMINATION- 2017/2018

COURSE TITLE: FUNDAMENTALS OF ECOLOGY

COURSE CODE - ZLU2281

DURATION - 3 HOURS



INDEX NUMBER .....

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DATE: 15.09.2018

TIME: 1.30PM-4.30 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) Define the term habitat.

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b) Giving a suitable example briefly explain the macro and microhabitats.

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

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d) The main niche of a species is determined by several different (sub) categories of niches. Describe these main sub niches for a particular species.

- 1.....
- 2.....
- 3.....
- 4.....

e) Giving a suitable diagram explain the difference between fundamental niche and realized niche.

f) Explain the three types of niche overlap.

g) Define the Hutchinson's concept of niche.

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h) What is meant by niche breadth?

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i) Explain niche breadth by using suitable examples.

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j) Using a diagrammatic representation explain the generalist species and specialist species.

1.2

a) Explain the Shelford's law of tolerance.

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.....

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

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

**eurythermic, euryhaline, stenohaline, stenothermic, “steno”, “eury”**

Tolerance curves can be either broad or narrow. Organisms that possess very narrow peaked tolerance curves are described with the prefix ..... where as those who show wide range tolerance curves are described with the prefix ..... Narrow peaked tolerance curves for temperature is referred as .....and for salinity it is referred as..... Further broad tolerance curves for temperature is referred as .....and for salinity it is referred as.....

d) Using a diagrammatic representation explain tolerance curves for euryhaline and stenohaline conditions for two hypothetical species A and B.

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

2. i) There is an important nutrient cycle which led to the formation of fossil fuels. Name this nutrient cycle and explain the main reservoirs and processes of the cycle. (60 marks)
- ii) Discuss the human influences on the natural cycling of this nutrient and how to minimize such effects in future. (40 marks)
3. i) Explain what is meant by population interactions. (20 marks)
- ii) List the inter specific interactions and identify the effect (influences) on each interacting population. (20 marks)
- iii) Group the above inter specific interactions under three main categories. (14 marks)
- iv) State the four possible outcomes of competition and explain the Lotka and Volterra proposed model for competition using graphical representations and relevant equations. (46 marks)
4. i) Define food chain and food web. (10 marks)
- ii) Draw a food web diagram in a forest and label the stenophagous and euryphagous animals inhabiting this ecosystem. (14 marks)
- iii) Discuss the trophic levels of the above forest ecosystem and ecological pyramids in detail. (76 marks)
5. i) Discuss the "ecosystem concept" in relation to the Tansly's definition. (68 marks)
- ii) Describe the common characteristics of Muthurajawela marsh – Negombo lagoon wetland ecosystem. (32 marks)
6. i) What is meant by a salt marsh ecosystem? (10 marks)
- ii) Briefly describe the ecological adaptation of saltmarsh plants to their habitats' environmental conditions. (35 marks)
- iii) Giving relevant examples, state the major steps involved in community dynamics of the saltmarsh vegetation. (20 marks)
- iv) Distinguish between the community dynamics of saltmarsh vegetation and abandoned agricultural land. (35 marks)

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

- a) Mark and recapture method.
- b) Survivorship curves.
- c) Ecotonal community.
- d) Thermal stratification.

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