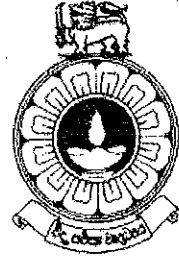


The Open University of Sri Lanka  
 Faculty of Natural Sciences  
 B.Sc/ B. Ed Degree Programme



Department	: Zoology
Level	: 4
Name of the Examination	: Final Examination
Course Code and Title	: FUNDAMENTALS OF ECOLOGY – ZLU2281
Academic Year	: 2019/2020
Date	: 18.01.2020
Time	: 1:30pm – 4:30pm
Duration	: 3 hours
Index number	:

### General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of 4 questions in 5 pages.
3. 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.
4. Answer for each question should commence from a new page.
5. Draw fully labelled diagrams where necessary.
6. Having any unauthorized documents/ mobile phones in your possession is a punishable offense
7. Use blue or black ink to answer the questions.
8. Circle the number of the questions you answered in the front cover of your answer script.
9. Clearly state your index number in your answer script

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PART "A"

QUESTION 1

1.1

a) Illustrate the growth patterns of exponential and logistic population growth in one graph and explain them briefly.

Space for graph

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b) Write the relevant growth equations for exponential and logistic growth patterns.

i..... ii.....

c) What is meant by "carrying capacity".

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d) A hypothetical population will have the initial population of 40 with the rate of increase (r) = 0.2 and the carrying capacity (K) of 50. Calculate the population size (N<sub>1</sub> and N<sub>2</sub>) for the times T<sub>1</sub> and T<sub>2</sub> separately for the conditions (a) and (b) given below.

(a) If the population, follow the exponential growth

(b) If the population follow the logistic growth

T <sub>0</sub>	Calculation	Population size = 40
T <sub>1</sub>		
T <sub>2</sub>		

T <sub>0</sub>	Calculation	Population size = 40
T <sub>1</sub>		
T <sub>2</sub>		

1.2. a) List the three main categories of inter-specific interactions.

1..... 2 .....3.....

b) List the main categories of predation and explain them briefly.

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c) Illustrate the graphical representation of the four possible outcomes of Lotka and Volterra proposed model for prey-predator interactions with brief explanation.

d) Illustrate the oscillations of Lotka-Volterra model of prey- predator oscillations, through time.

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

2. i) Identify and describe the main components and processes of ecosystem. (30 marks)  
ii) Explain the common characteristics of Muthurajawela marsh – Negombo lagoon wetland ecosystem. (40 marks)  
iii) Explain the distinct habitat types and the main environmental factors that keep changing in this ecosystem. (30 marks)
  
3. i) Explain what are biogeochemical cycles. (30 marks)  
ii) Compare and contrast two sedimentary cycles you have studied. Represent in a table format. (50 marks)  
iii) Describe briefly the human influence on these cycles. (20 marks)
  
4. i) Illustrate a food web for a forest ecosystem and explain the trophic levels of this ecosystem. (30 marks)  
ii) Discuss the ecological pyramids in detail. (70 marks)
  
5. You have conducted an ecological survey of a stream ecosystem in your practical class.  
(i) List the main steps of the survey process and explain them briefly. (30 marks)  
ii) List the type of data gathered from the survey and write down the important aspects that were considered during the collection of data. (30 marks)  
iii) Considering hypothetical values for the part ii) above, write a complete report for an ecological survey. (40 marks)
  
6. i) What is meant by the term succession that leads to the formation of a climax forest community. (05 marks)  
ii) Compare the major characteristic features of plant species found in the early stage of a succession with that of a climax forest community. (25 marks)  
iii) List the major plant communities found in major climatic zones of Sri Lanka. (20 marks)  
iv) Briefly describe the edaphic, climatic and community parameters in a climax forest of the wet zone low country of Sri Lanka. (50 marks)

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

- a) Greenhouse effect.
- b) Density dependent regulation.
- c) Niche properties.
- d) Transition zone.

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