



**RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES**

**B.Sc. (General) Degree in Applied Sciences
Second Year - Semester II Examination – October/November 2017**

BIO 2302 – PRINCIPLES OF ECOLOGY

Time: Three (03) hours

Answer any six (06) of the following questions.

1. a) Explain the terms food chain and food web. (04 marks)
b) Describe the different types of ecological pyramids its energy transmission, within them. (11 marks)
c) "Bio accumulation is a major ecological concern". Using an example, briefly explain the process of bioaccumulation. (10 marks)
2. a) Define the term "biogeochemical cycles". (05 marks)
b) Discuss how the various types of organisms and their biochemical reactions contribute to the recycling of sulfur in nature and its consequences. (20 marks)
3. a) Differentiate fundamental niche from realized niche. (04 marks)
b) Explain how resource partitioning leads to species coexistence. (12 marks)
c) Using examples from both plants and animals, comment on the strategies adopted by species to minimize predation. (09 marks)
4. a) Distinguish between a life table and a reproductive table. (03 marks)
b) The pure European Mouflon sheep survive in small numbers on reserves and in zoos. Sheep are supposed to have come originally from the lofty plateaus and mountains of Central Asia. A study was conducted on a population of female Mouflon sheep in the lofty plateaus are the Cohort life table for female Mouflon sheep (x = years) is given below.

x	nx	m
0	608	0
1	487	0
2	480	0
3	472	1.86
4	465	1.68
5	447	1.22
6	419	0.93
7	390	0.7
8	346	0.69
9	268	0.3
10	154	0.05
11	59	0
12	4	0
13	2	0
14	0	0

- (i) Construct a life table for the Mouflon sheep and find how many more years will a female Mouflon sheep at age 3, is expected to live and her age at time of death. **(12 marks)**
- (ii) Draw a survivorship curve for this cohort and comment on it. **(04 marks)**
- (iii) Calculate the net reproductive rate and generation time for this population using the equations given below. **(06 marks)**

$$T = \frac{\sum_{x=0}^n x l_x m_x}{R_0} \quad R_0 = \sum l_x m_x$$

5. a) Define the term "Pedology". **(03 marks)**
- b) List the different kinds of soil structures. **(09 marks)**
- c) State various types of soil erosion and explain the measurers that could be adopted to minimize them. **(13 marks)**

6. a) List the different types of terrestrial and aquatic ecosystems in Sri Lanka. (10 marks)
- b) Citing appropriate examples describe the diversity of ecosystems in the North Central and North Western Provinces and its ecological importance. (15 marks)
7. Write short notes on the following;
- a) symbiotic associations exist in the nature
 - b) intra and interspecific competition
 - c) ecological succession.

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