RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. (General) Degree in Applied Sciences
Second Year - Semester II Examination –February/March 2019

BIO 2302 – PRINCIPLES OF ECOLOGY

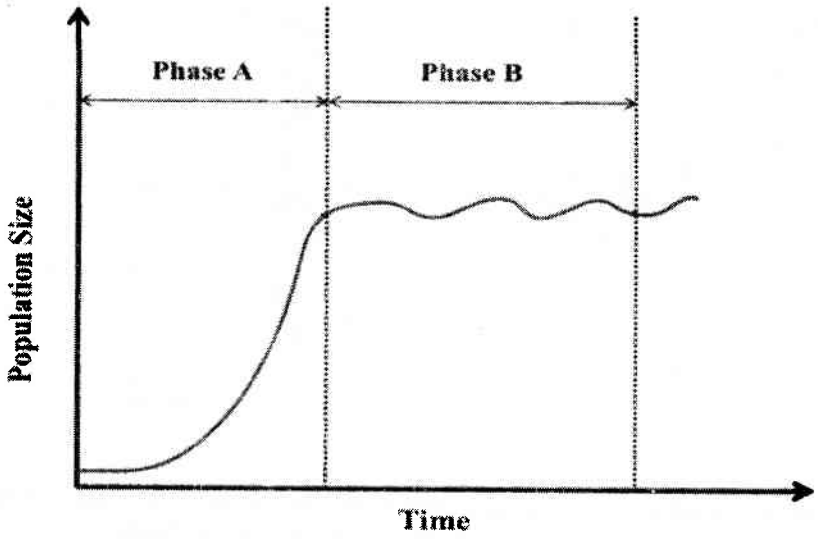
Time: Three (03) hours

Answer SIX (06) questions.

1. a) Describe the phosphorus cycle emphasizing on each step. **(50 marks)**

   b) Discuss how the various types of organisms and their biochemical reactions contribute to the recycling of phosphorus in an ecosystem and its negative impacts to the ecosystem. **(50 marks)**

2. Many populations exhibit the following growth curve:



   a) Describe the reason for the shape exhibited by the population during phase A. **(25 marks)**

   b) Discuss **three (03)** factors that might cause fluctuations in phase B. **(30 marks)**

   c) Organisms demonstrate exponential (r), or logistic (k), population growth. Explain these two strategies and discuss how they affect population size over time. **(45 marks)**

3. Using appropriate examples write an account on the importance of symbiotic associations of species that are well adapted for their survival in nature.

(100 marks)

4. a) List the basic factors involved in maintain a population. **(12 marks)**

b) A study was conduct on a population of aphids and the following table shows the offspring produced during one reproductive season of aphids.

Age, days (x)	Number of survivals (n_x)
0	1000
1	900
2	820
3	750
4	680
5	620
6	550
7	500
8	450
9	400
10	350
11	300
12	250
13	200
14	100
15	50
16	0

i. Construct a life table for the aphid cohort and find how many more years will a female aphid at age 5 be expected to live and her age at death.

(66 marks)

ii. Draw a survivorship curve for the cohort. **(12 marks)**

iii. State your conclusions on the life history and growth characteristics for the population.

(10 marks)

5. a) Define the following terms;

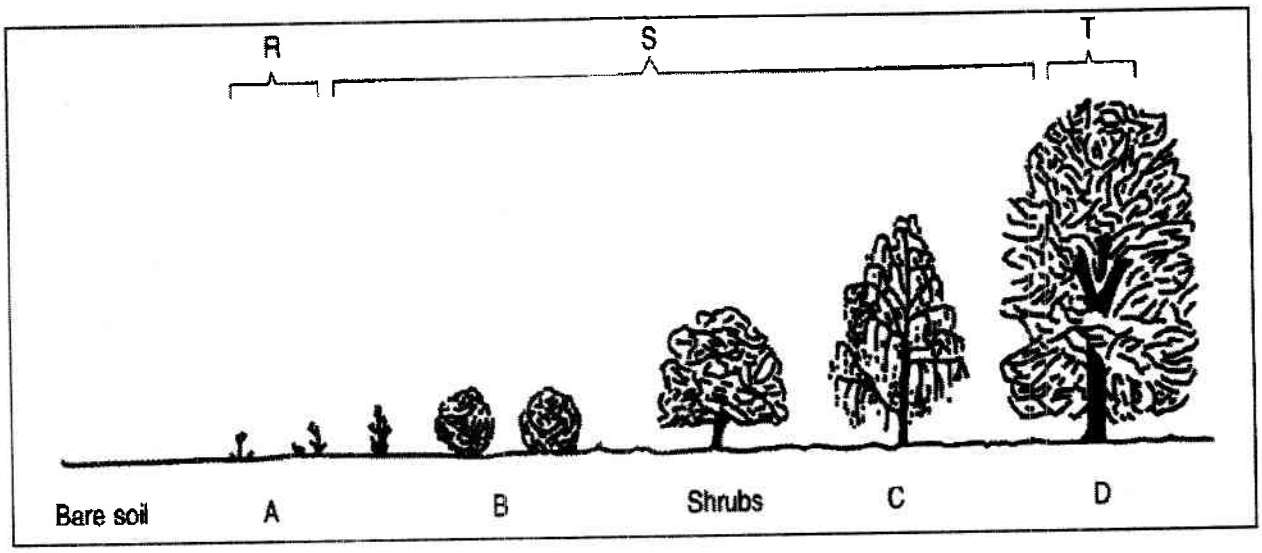
   i. Intraspecific competition
   ii. Interspecific competition
   iii. Territory

(03x05 marks)

b) Using suitable examples explain how the same species reduce inter-species competition within their territories?

(85 marks)

6. The following diagram illustrates succession in a plant community. Study the diagram and answer the questions that follow.



a) What is meant by the term succession? **(04 marks)**

b) Identify and name the segments R, S and T. **(12 marks)**

c) Give the examples for fauna and flora in segments R, S and T in question (b). **(24 marks)**

d) Tabulate the differences between primary and secondary succession. **(36 marks)**

e) Citing suitable examples briefly explain the importance of succession in an ecosystem. **(24 marks)**

7. Write short notes on the followings;

a) importance of soil for plant growth

b) energy flow between trophic levels.

c) significance of maintain niches in an ecosystem.

d) terrestrial biomes of the world.

(20x5 marks)

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