

CHUKA



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**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF EDUCATION
(SCIENCE) AND BACHELOR OF SCIENCE**

ZOOL 412: POPULATION BIOLOGY

STREAMS: BED(SCI), BSC (BIO) Y4S2

TIME: 2 HOURS

DAY/DATE: FRIDAY 12/04/2019

2.30 P.M – 4.30 P.M

INSTRUCTIONS

- Answer all questions in section A and any two other questions in section B
- Use illustration where applicable

SECTION A: (30 MARKS)

1. (a) Explain how age structure affects the growth rate of animal populations. [2 marks]
- (b) State the factors that limit the population growth suggested by Anderwatha and Birch. [2 marks]
- (c) Outline the survivorship curves exhibited by ;
 - (i) Elephants [1 mark]
 - (ii) Fishes [1 mark]
2. (a) Differentiate between semelparity and Iteroparity. [2 marks]
- (b) Outline features of r-strategists. [4 marks]
3. (a) State the assumptions of exponential model of population growth. [3 marks]
- (b) A moth population was observed to grow exponentially from 5000 to 6000 individuals per year. Predict the population after four years assuming no change in growth rate. [3marks]
4. Describe symbiotic interactions among animals. [6 marks]
5. Describe Nicholson –Bailey model of host – parasitoid interaction. [6 marks]

SECTION B (40 MARKS)

6. (a) Describe the behavioral strategies used by animals to evade predation. [12 marks]
(b) Describe the Lotka- Volterra predator –prey model. [8 marks]
7. (a) Describe the different types of population dispersions. [12 marks]
(b) Describe Nelson Hairston experiments. [8 marks]
8. Discuss the mechanisms of interspecific competition suggested by Thomas Schoever.

[20

marks]
