



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI -
ABUJA
FACULTY OF SCIENCE
APRIL, 2019 EXAMINATIONS

BIO 313 ANIMAL ECOLOGY - 2 UNITS

INSTRUCTION: ANSWER QUESTIONS 1 AND ANY OTHER THREE.

TIME ALLOWED - 2 HOURS.

- 1(a) What is an ecosystem? (2 marks)
- (b) Make a list of the abiotic components of the environment. (2½ marks)
- (c) Briefly explain the different types of symbiotic relationships (7½ marks)
- (d) i. What is a food web? (2 marks)
- ii. By means of a labelled drawing ONLY, describe a typical food web showing the different trophic levels. (6 marks)
- (e) i. What is competition? (3 marks)
- ii. Enumerate the different types of competition (2 marks)
- 2(a) Explain the terms (i) Population size and (ii) Population density (2 marks)
- (b) List four (4) abiotic factors that could affect the future size of a population (2 marks)
- (c) By means of diagrams, show the two types of growth patterns and the features of each of these growth curves? (11 marks)
- 3(a) Differentiate between **natality rate** and **mortality rate**. (1 mark)
- (b) Explain the following: Immigration, Emigration and Carrying capacity indicating how they could affect a population structure (6 marks)
- (c) Briefly describe four (4) biotic factors that could affect population growth (8 marks)
- 4(a) What is optimization theory in ecology? (6 marks)

(b) Illustrate this concept using a typical ectotherm such as the lizard (9 marks)

5(a) Explain the terms (i) Demography (ii) Life expectancy and (iii) Stationary population (7 marks)

(b) What are the direct and indirect methods of collecting demographic data?
(8 marks)