



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY
SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES DEPARTMENT OF
BIOLOGICAL SCIENCES
UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE
(BIOLOGICAL SCIENCES WITH IT)
2ND YEAR 2ND SEMESTER 2019/2020 ACADEMIC
YEAR MAIN CAMPUS - REGULAR

COURSE CODE: SBI 3224

COURSE TITLE: PRINCIPLES OF ECOLOGY 1

EXAM VENUE: 11

STREAM: (BIO)

DATE: 15/4/19

EXAM SESSION: 12.00 – 2.00PM

TIME: 2 HOURS

Instructions:

- 1. Answer ALL questions in Section A and Any two questions in Section B**
- 2. Candidates are advised not to write on question paper**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**

SECTION A: SHORT ANSWER QUESTIONS (30 MARKS)

1. Briefly explain the relationship between the rate of nutrient cycling and grazing in African grasslands (3 marks).
2. Describe your understanding of the following terms: a). Photosynthetic autotrophs, b) Chemosynthetic autotrophs, c) Heterotrophs (3 marks).
3. Using appropriate diagrams, describe the three main types of ecological pyramids (3 marks).
4. On an isolated oceanic island 3000 miles from any continent, you find only 4 species: a flowering shrub, a rabbit, a large deer, and a small fox.
 - a) Identify the species in competition (2 marks).
 - b) Identify the primary consumer (1 mark).
5. List three adaptations of organisms inhabiting lotic ecosystems (3 marks).
6. Account for the differences in organism diversity between the temperate regions to the tropics (3 marks).
7. Using appropriate diagrams, describe the three main types of population dispersions (3 marks).
8. Differentiate between interspecific and intraspecific competition in an ecological community (3 marks).
9. Using appropriate examples in a forest ecosystem, differentiate between food chain and food web (3 marks).
10. Explain briefly what would happen to the populations of algae, zooplanktons and detritivores when large amounts of phosphorus are added to a lake (3 marks).

SECTION B: ESSAY QUESTIONS (40 MARKS)

11. Discuss the impact of human-induced global climate change on the populations of trees and grasses within tropical savannahs (20 marks).
12. Comment briefly on the following terms, give examples
 - a)
 - i. Abiotic components of an ecosystem (4 marks).
 - ii. Ecology and community (3 marks).
 - iii. Ecological equilibrium (3 marks).
 - b) Discuss the principle of energy and matter flow in an ecosystem (10 marks).
13. Discuss the capture-recapture method of determining animal population size (20 marks).
14. Discuss the carbon cycle (20 marks).