



*(Knowledge for Development)*

**KIBABII UNIVERSITY**  
**UNIVERSITY EXAMINATIONS**  
**2017/2018 ACADEMIC YEAR**

**FOURTH YEAR 1<sup>ST</sup> SEMESTER**  
**MAIN EXAMINATIONS**

**FOR THE DEGREE OF BACHELOR OF SCIENCE BIOLOGY**

**COURSE CODE: SBT 412**  
**COURSE TITLE: MICROBIAL ECOLOGY**

**DATE: 18<sup>th</sup> December 2017**      **TIME: 11:30 – 1:30 p.m.**

---

**INSTRUCTIONS TO CANDIDATES**

Answer Question one (1) and any other two (2) Questions. Question one is compulsory and carries 30 marks, the other Questions carry 20 marks each.

TIME: 2 Hours

This paper consists of 2 printed pages. Please Turn Over



KIBU observes ZERO tolerance to examination cheating

**QUESTION ONE**

- a) Describe the trophic levels in a food chain. (5 marks)
- b) State three categories of secondary and tertiary consumers. (3 Marks)
- c) State three types of pyramids in determining animal numbers in the ecosystem. (3 Marks)
- d) Explain four biotic factors influencing the distribution of organisms. (4 Marks)
- e) Name four organisms involved in the nitrogen cycle. (2 Marks)
- f) Describe the four main constituents of the soil. (4 Marks)
- g) Explain the symbiotic existence in the mycorrhiza. (4 Marks)
- h) Distinguish between mutualistic and parasitic relationships in an ecosystem. (2 Marks)
- i) Define the term zonation. (1 Mark)
- j) Write short notes on the following :-
  - i. Biotic component (1 Mark)
  - ii. Biosphere (1 Mark)

**QUESTION TWO**

- a) Discuss the importance of microorganisms found in the soil. (15 Marks)
- b) Explain how predator-prey relationships affect population size. (5 Marks)

**QUESTION THREE**

- a) Explain in detail the events that take place in a carbon cycle. (15 Marks)
- b) Explain how to estimate microbial population capture-recapture method. (5 Marks)

**QUESTION FOUR**

- a) Enumerate five assumptions of capture-recapture method. (5 Marks)
- b) Discuss methods employed to control microorganisms in the ecosystem. (15 Marks)

**QUESTION FIVE**

- a) Explain the main approaches that may be adopted in undertaking new investigations in an ecosystem. (15 Marks)
- b) Describe two methods of sampling microorganisms in the environment. (5 Marks)