JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY

SCHOOL OF BIOLOGICAL, PHYSICAL, MATHEMATICS AND ACTURIAL SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE

THIRD YEAR SPECIAL EXAMS 2020/2021 ACADEMIC YEAR

MAIN CAMPUS - REGULAR

COURSE CODE: **SBI 3224**

COURSE TITLE: **PRINCIPLES OF ECOLOGY I**

EXAM VENUE: **_____**

DATE: **EXAM SESSION:**

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. Define the following ecological terms (3 marks)

   a) Ecosystem:

   b) Ecological niche:

   c) Biosphere:

2. Explain the role of "producers" in the global Carbon cycle. (3 marks)

3. Explain 3 attributes of natural ecosystems. (3 marks)

4. What do you understand by the term "solar constant"? Explain why natural ecosystems require constant energy input from external sources. (3 marks).

5. Discuss the key roles of chemosynthates in ecosystem energy and nutrient balances (3 marks)

6. Describe three ways by which ecosystems can be demarcated/compartmentalized. (3 marks)

7. Explain three ways through which resources are lost from natural ecosystems. (3 marks)

8. Ecosystems are "self-regulating systems" explain, giving an example. (3 marks).

9. Briefly discuss why autotroph-based ecosystems are less efficient in energy utilization. (3 marks)

10. State the "niche exclusion theory" and explain how it applies in natural ecosystems (3 marks)

SECTION B: ESSAY QUESTIONS (40 MARKS)

11. Discuss four methods of estimating primary production of natural ecosystems. (20 marks)

12. Discuss the mechanisms involved in the transformation of Nitrogen during its flux through terrestrial ecosystems. (20 marks)

13. Discuss environmental impacts of human activities and their influence on the stability of natural ecosystems. (20 marks).

14. Discuss the mechanisms involved in the distribution of energy in natural ecosystems (20 marks)