



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY**  
**MAIN CAMPUS**  
**UNIVERSITY EXAMINATION**  
**SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES**  
**DEPARTMENT OF BIOLOGICAL SCIENCES**  
**3<sup>rd</sup> YEAR BACHELOR OF SCIENCE (BIOLOGICAL SCIENCES)**

**CODE: SBI 3312, TITLE: Principles of Ecology II**

TIME 2 HOURS

Instructions

Answer all questions in section A and any two questions in section B

**SECTION A (30 MARKS)**

- 1) Define the following terms as used in principles of ecology II:
  - a) Community. (1 mark)
  - b) Species diversity. (1 mark).
  - c) Plant Functional Types (PFTs). (1 mark).
- 2) Citing relevant examples, differentiate between two types of plant succession. (3 marks)
- 3) List six properties of a plant community. (3 Marks).
- 4) List three differences between primary forests and secondary forests (3 marks).
- 5) Briefly describe vertical and horizontal structure of species distribution patterns. (3 marks).
- 6) Briefly state why both low and high levels of disturbance can reduce species diversity (3 marks).
- 7) List three differences between the individualistic and integrated hypothesis of community structure. (3 marks)
- 8) Differentiate between keystone and foundation species in a community. (3 marks)
- 9) Briefly describe two types of vegetation sampling under field conditions. (3 marks)
8. State three ways in which human activities affect nitrogen cycle in aquatic ecosystems. (3 marks).
9. Differentiate between the structure and function of Simpson Index of Diversity and Shannon-Weiner Index (3 marks)
10. State three reasons why tropical regions have higher biodiversity compared to temperate regions. (3 marks).

**SECTION B (20 marks each)**

11. Plant communities are depleted through deforestation, excessive use of fossil fuels, air pollution and toxic wastes discharged into water bodies, Discuss. (20 marks).
12. a) Disturbance influences species diversity and composition. Discuss (6 marks)  
b) Species richness on islands depends on island size and distance from the mainland. Discuss. (14 marks).

13. Based on the green stuff observed on some rocks, discuss the origin and evolution of modern plant species. (20 marks)
14. Discuss East African terrestrial and aquatic vegetation types (20 marks).