



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF SPATIAL PLANNING**  
**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF ARTS IN SPATIAL**  
**PLANNING**  
**SEMESTER 2016/2017 ACADEMIC YEAR**

**CENTRE: MAIN CAMPUS**

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**COURSE CODE: PES 3215**

**COURSE TITLE: ELEMENTS AND PRINCIPLES OF BIOLOGICAL ENVIRONMENT**

**EXAM VENUE: STREAM: SPATIAL PLANNING**

**DATE: EXAM SESSION:**

**TIME: 2 HOURS**

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**Instructions:**

- 1. Answer question 1 ( compulsory ) and ANY other 2 questions.**
- 2. Candidates are advised not to write on the question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

### **QUESTION ONE**

- a) Define the concept of carrying capacity and give its formula (5 marks)
- b) With the help of a schematic diagram, discuss the concept of sustainable development (5 marks)
- c) Discuss with relevant examples the 3Rs of controlling environmental pollution (5 marks)
- d) Outline the existing and major forms of energy (5 marks)
- e) With the aid of relevant examples, describe any five interactions between populations and/or individuals (5 marks)
- f) With the help of appropriate examples, discuss the trophic levels in an ecosystem (5 marks)

### **QUESTION TWO**

- (a) Discuss the factors that promote species co-existence (10 marks)
- (b) Discuss ecosystem services (10 marks)

### **QUESTION THREE**

- (a) Discuss the four reservoirs of geochemical cycles (10 marks)
- (b) Discuss the human role in landscape change and development (10 marks)

### **QUESTION FOUR**

- (a) With the help of a schematic diagram, discuss the Carbon cycle and its importance (10 marks)
- (b) Discuss positive species interactions and how they are beneficial (10 marks)

### **QUESTION FIVE**

- (a) Briefly discuss Ecological Integrity Indicators (10 marks)
- (b) Discuss the waste management hierarchy (10 marks)