



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY  
SCHOOL OF SPATIAL PLANNING  
UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN  
WATER RESOURCES AND ENVIRONMENTAL MANAGEMENT**

**YEAR THREE SEMESTER II 2019/2020 ACADEMIC YEAR**

**CENTRE: MAIN CAMPUS**

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**COURSE CODE: PES 3323**

**COURSE TITLE: SCIENTIFIC AND ECONOMIC INSTRUMENTS FOR ENVIRONMENTAL  
MANAGEMENT**

**EXAM VENUE: STREAM: BSc Water Resources [3.2]**

**DATE: 1/12/20 EXAM SESSION: 3-6 PM TIME: 3 HOURS**

**Instructions:**

**1. Answer question 1 (compulsory) and ANY other 2 questions.**

- 1. Candidates are advised to write on the text editor provided, or to write on a foolscap, scan and upload alongside the question.**
- 2. Candidates must ensure that they submit their work by clicking 'FINISH AND SUBMIT ATTEMPT' button at the end.**

### **QUESTION ONE**

- (a) Differentiate between Environmental Auditing (EA) and Environmental Management Systems (EMS) [5 marks]
- (b) List the criteria for deciding on a green tax (5 marks)
- (c) Highlight 5 approaches to environmental appraisal (5 marks)
- (d) Expound on the things considered as outputs in a life cycle assessment. (5 marks)
- (e) Outline the types of environmental audits. (5 marks)
- (f) Outline five limitations to the implementation of a strategic environmental assessment (SEA) plan. (5 marks)

### **QUESTION TWO**

Discuss the steps to establishing and implementing an Environmental Management System (EMS) (20 marks)

### **QUESTION THREE**

- (a) Discuss the three (3) major steps to establishing a payment for ecosystem services (10 marks)
- (b) Apply your three steps above to paying for water as an ecosystem service (10 marks)

### **QUESTION FOUR**

- a) Explain the meaning of Strategic Environmental Assessment (SEA) (5 marks)
- b) Compare and contrast SEA and Environmental Impact Assessment (EIA) (15 marks)

### **QUESTION FIVE**

- a) Discuss the four (4) attributes of an effective environmental tax (10 marks)
- b) Discuss how subsidies can be used as economic instruments of environmental management. (10 marks)