



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF SPATIAL PLANNING
UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN
WATER RESOURCE AND ENVIRONMENTAL MANAGEMENT
SEMESTER 2016/2017 ACADEMIC YEAR

CENTRE: MAIN CAMPUS

COURSE CODE: PES 3215

COURSE TITLE: ELEMENTS AND PRINCIPLES OF PHYSICAL AND BIOLOGICAL ENVIRONMENT

EXAM VENUE: STREAM: SPATIAL PLANNING

DATE: EXAM SESSION:

TIME: 2 HOURS

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.**

Q1a) Explain the relevance of “Elements and Principles of Physical and Biological Environment” Course to trainee spatial planners with relevant examples from Kenya

[10 Marks]

b) With the aid of relevant examples, explain how man impacts on biogeochemical cycles

[10 Marks]

c) Explain your understanding of the following concepts with the help of relevant examples:

- i. Ecosystem [2 Marks]
- ii. Habitat [2 Marks]
- iii. Niche [2 Marks]
- iv. Biosphere [2 Marks]
- v. Ecology [2 Marks]

Q2a) Explain your understanding of the phenomenon “*Tragedy of the Commons*” in the context of arid and semi-arid lands (ASALs)

[10 Marks]

b) Explain your understanding of the following terms with the help of relevant examples

- i. Carbon sequestration [2 Marks]
- ii. Energy pyramid [2 Marks]
- iii. Species distribution [2 Marks]
- iv. Carrying capacity [2 Marks]
- v. Landscape [2 Marks]

Q3a) Explain any **FIVE** fundamental principles of ecology

[10 Marks]

b) With the help of relevant examples, identify and explain the critical role of the abiotic elements of Planet Earth

Q4) a) Identify and explain the tools used by public sector agencies to manage and conserve environment and natural resources

[10 Marks]

b) With the aid of a sketch diagram, explain levels of organization in a typical Savannah ecosystem

[10 marks]

Q5) a) Explain the importance of the following unique ecosystems with the aid of relevant examples

- i. Mountain ecosystems [5 Marks]
- ii. Rangeland ecosystems [5 Marks]
- iii. Wetland ecosystems [5 Marks]
- iv. Forest ecosystems [5 Marks]