



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**SCHOOL OF AGRICULTURAL AND FOOD SCIENCES**

**THIRD YEAR FIRST SEMESTER UNIVERSITY EXAMINATION FOR THE DEGREE OF  
BACHELOR OF SCIENCE IN HORTICULTURE**

**2017/2018 ACADEMIC YEAR**

**REGULAR**

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**COURSE CODE: ALS 3313**

**COURSE TITLE: ENVIRONMENTAL BIOGEOCHEMISTRY**

**EXAM VENUE: LR 8**

**STREAM: BSc. Soil Science**

**DATE 12/12/17**

**EXAM SESSION 2.00 – 4.00PM**

**TIME: 2 HOURS**

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#### **INSTRUCTIONS**

- 1. Answer ALL questions in section A and any other TWO Questions in section B**
- 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**

**SECTION A: (30 MARKS) ANSWER ALL QUESTIONS IN THIS SECTION**

1. A) what is meant by the term biogeochemistry? (1mks)  
b) Give one scientist and his contributions in the early development of biogeochemistry. (2mks)  
c) List three **non – living spheres** of the earth system. (3mks)
2. a) What is meant by the term biogeochemical cycle. (1mk)  
b) State the significance of biogeochemical cycles to the environment. (1mk)  
c) Using a well labelled diagram describe the carbon cycle. (4 mks)
3. a) Distinguish between **climate change adaptation** and **mitigation** measures taken against global warming. (2mks)  
b) State two **climate change adaptation** and **mitigation** measures taken to control global warming. (4 mk)
4. a) Distinguish between **eutrophic** and **oligotrophic** aquatic ecosystem. (2mk)  
b) State three characteristics of **eutrophic** ecosystem. (3 mks)  
c) List one management practice against eutrophication. (1mk)
5. a) what Is meant by the term **acid rains**. (1mk)  
b) Give one effect of acid rains to each of the following  
i) Soils (1mk)  
ii) Crops (1mk)  
c) State three control measures taken against acid rains in Canada. (3mks)

**SECTION B: (40 MARKS) ANSWER ANY TWO QUESTION FROM THIS SECTION**

6. a) Name three **Greenhouse gases** (GHGs). (3mks)  
b) Discuss the impact of Greenhouse effect to the environment. (17mks)
7. Discuss the nitrogen cycle. (20mks)
8. a) what is meant by the term eutrophication. (2mks)  
b) Discuss the causes and effects of eutrophication. (18mks)
9. Discuss the causes and effects of acid rains to the environment. (20mks)