**UNIVERSITY OF KABIANGA**

**UNIVERSITY EXAMINATIONS**

**2014/2015 ACADEMIC YEAR**

**THIRD YEAR FIRST SEMESTER EXAMINATION**

**FOR THE DEGREE OF BACHELOR OF SCIENCE IN MICROBIOLOGY**

**COURSE CODE: MIC 310**

**COURSE TITLE: SOIL MICROBIOLOGY**

**DATE: 11/12/2014**

**TIME: 2.00 P.M-5.00 P.M**

**INSTRUCTIONS TO CANDIDATES:**

Answer **ALL** questions in **section** **A** and any other **FOUR** questions in **section B**.

**SECTION A; (30 MARKS)**

Q1. Define the following terms as used in soil microbiology;

 a. Soil. (1 mark)

 b. Edaphon. (1 mark)

 c. Humus. (1 mark)

 d. Bioremediation. (1 mark)

Q2. Describe the following groups of soil;

 a. Pod soils. (2 marks)

 b. Bog soils. (2 marks)

Q3. Discuss the importance of soil as a microbe ecosystem. (4 marks)

Q4. Soil bacteria can be subdivided into two (2) groups with appropriate examples, illustrate the two groups in brief. (4 marks)

Q5. Explain the effects of the following environmental factors to microbial populations in the soil:

 a. Toxic compounds. (2 marks)

 b. Oxidation. (2 marks)

Q6. Outline the process of humification as is assisted by soil microbes. (4 marks)

Q7. Describe the following mutual interaction between microorganisms in soil:

 a. Symbiosis. (2 marks)

 b. Parasitism. (2 marks)

Q8. State the importance of biotransformation in soil. (2 marks)

**SECTION B; (40 MARKS)**

Q9. Describe the classification of soil microorganism under energy and nutrient categories. (10 marks)

Q10. Discuss the **two** symbiosis of fungi and plants in detail. (10 marks)

Q11. Using appropriate illustrations, trace the sequence of events in the nitrogen cycle and list the names of microbes that play a key role in this cycle. (10 marks)

Q12. Describe bio extraction as used in biodegradation of environmental pollutants. (10 marks)

Q13. List any **four** edaphic factors and explain how the listed factors affect microbial populations in soil. (10 marks)