**UNIVERSITY OF KABIANGA**

**UNIVERSITY EXAMINATIONS**

**2014/2015 ACADEMIC YEAR**

**THIRD YEAR SECOND SEMESTER EXAMINATION**

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

**COURSE CODE: MIC 314**

**COURSE TITLE: SYMBIOTIC INTERACTIONS**

**DATE: 23/4/2015**

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

**INSTRUCTIONS TO CANDIDATES:**

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

**SECTION A; (28 MARKS)**

**Answer all questions.**

1. a. Define the term symbiosis. (1 mark)

b. Describe 3 types of symbiotic interactions. (3 marks)

2. Describe the Non-legume Nitrogen-fixing symbiosis. (6 marks)

3. Outline the steps in root nodule formation. (6 marks)

4. Describe the role of microorganisms in human metabolism. (6 marks)

5. What is the functional significance of obligate intracellular symbionts in insects? (6 marks)

**SECTION B; (42 MARKS)**

**Answer any three questions.**

6. Discuss lichens as symbiosis between microorganisms. (14 marks)

7. Discuss mycorrhizae as a symbiosis between plants and microorganisms. (14 marks)

8. Discuss Agrobacterium and the crown gall disease. (14 marks)

9. Discuss the role of microbes in the foregut and hind gut fermenters. (14 marks)