**UNIVERSITY OF KABIANGA**

**UNIVERSITY EXAMINATIONS**

**2015/2016 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: 7/4/2016**

**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 root nodule. (1 mark)

 b. Describe briefly the biochemistry of the root nodule. (4 marks)

2. Describe the free living bacteria that take part in Nitrogen-fixing symbiosis. (6 marks)

3. Briefly explain the process of attachment and infection during root nodule formation. (5 marks)

4. Explain how the Ti-plasmids are used in genetic engineering. (6 marks)

5. How do mycorrhizae fungi promote plant diversity. (6 marks)

**SECTION B; (42 MARKS)**

**Answer any three questions**

6. Describe consortia as symbiosis between microorganisms. (14 marks)

7. Discuss the contribution of gut microorganisms to human metabolism. (14 marks)

8. Discuss microbial fermentation in the rumen. (14 marks)

9. Describe the non- legume Nitrogen-fixing symbiosis. (14 marks)