



UNIVERSITY OF EMBU

2016/2017 ACADEMIC YEAR

FIRST SEMESTER EXAMINATION

**SECOND YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE IN MANAGEMENT OF AGROECOSYSTEMS AND BACHELOR OF
SCIENCE IN ENVIRONMENT; BACHELOR OF SCIENCE IN AGRICULTURE;
BACHELOR OF SCIENCE IN HORTICULTURE AND BACHELOR OF
SCIENCE IN RANGE MANAGEMENT**

ASS 201: SOIL BIOLOGY AND BIOCHEMISTRY

DATE: NOVEMBER 30, 2016

TIME: 11:00AM-1:00PM

INSTRUCTIONS:

Answer Question ONE and ANY Other TWO Questions.

QUESTION ONE (30 MARKS)

- a) Differentiate between the following terms as used in soil biology:
- i) Biological nitrogen fixation and Denitrification (4 marks)
 - ii) Ectomycorrhizae and Endomycorrhizae (5 marks)
- b) Explain the following phenomena in soil biology
- i) Bacteria accumulation inside soil aggregates (2 marks)
 - ii) Biological crusts in arid areas (5 marks)
- c) State the effect of the rhizosphere on soil organisms (6 marks)
- d) Describe the procedure of establishing a wormery to study earthworms (8 marks)
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QUESTION TWO (20 MARKS)

- a) Describe the classification of fungi based on mode of reproduction (14 marks)
- b) A farmer in Embu County practices conventional tillage on a cabbage and Spinach rotation. Discuss the effect of this practice on mycorrhizae (6 marks).

QUESTION THREE (20 MARKS)

- a) Describe the habitats where soil organisms are found (14 marks)
- b) Using an illustration describe a soil food web (6 marks)

QUESTION FOUR (20 MARKS)

- a) Describe the processes involved in decomposition of organic matter. (14 marks)
- b) Discuss the roles of earthworms in soil. (6 marks)

QUESTION FIVE (20 MARKS)

- a) State ten biological principles of soil fertility. (10 marks)
- b) Using these principles design a sustainable four year horticultural crop management program for a farmer in Embu town. (10 marks)

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