



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

BTMB

AAB 4202 : ENVIRONMENTAL MICROBIOLOGY

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: Pick Date Dec 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE

- a) Explain the significance of biofilm formation to microorganisms. (4 marks)
- b) With the aid of a diagram explain the characteristics of the lake hydro-ecosphere that determine microbial colonization (6mks)
- c) Differentiate between;
- i) Autochthonous and allochthonous microbes (3 marks)
 - ii) Positive and negative microbial interactions (3 marks)
- d) List FOUR limitations of biostimulation. (4 marks)
- e) Explain the role of the following bacteria in the carbon cycle.
- i) Acetogens
 - ii) Methanogens
 - iii) Methylotrophs (6 marks)
- f) Describe FOUR challenges posed by biofilms to human health (4 marks)

Question TWO

Discuss the factors necessary for the successful succession and establishment of a microbial population in any environment (20 marks)

Question THREE

- a) Describe water as a vehicle for infections (8 marks)
- b) Outline the procedures of the following tests for water analysis
 - i) Presumptive
 - ii) Confirmed
 - iii) Completed (12 marks)

Question FOUR

- a) Outline the underlying principles for symbioses (8 marks)
- b) Using relevant examples, explain the functions of normal flora (12 marks)

Question FIVE

Describe the role played by microorganisms in fostering the nitrogen cycle. (20 marks)