



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

BACHELOR OF TECHNOLOGY IN INDUSTRIAL MICROBIOLOGY AND

BIOTECHNOLOGY

AAB 4107: MICROBIAL DIVERSITY –PAPER 2

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: Pick Date May 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

Define the following terminologies in the context of Microbial diversity

- i) Sporophores
- ii) Chemoorganotroph
- iii) Extreme halophile
- iv) Nanoarchaeota
- v) Sulfate reducing bacteria (5 mks)

b) Describe the ecological adaptation and economic importance

of *Acidithiobacillus ferrooxidans* (5 mks)

c) Describe the industrial and ecological significance of Acetic Acid Bacteria (5 mks)

- d) With examples, discuss the adaptation of *Beggiatoa* sp. to its habitat (5 mks)
- e) Describe the economic importance of *Zymomonas* sp. (5 mks)
- f) Explain how purple non-sulfur bacteria are adapted to anaerobic conditions (5 mks)

Question TWO

- a) Discuss ecological adaptation and energy metabolism among Crenarchaeotes (10 mks)
- b) With examples, explain the chemical composition of hypersaline environments (10 mks)

Question THREE

- a) Explain how *Mathanopyrus* discovery unraveled oceanic biogenic methanogenesis (10 mks)
- b) Discuss the economic importance of genera *Streptomyces* and *Actinomycetes* (10 mks)

Question FOUR

- a) With examples, discuss the economic importance of the Low GC Gram-positive staining non-sporulating bacteria (10 mks)
- b) With examples, discuss ionic composition of hypersaline lake and surfaces (10 mks)

Question FIVE

Discuss the economic importance of the following *Spirochetes*

- a) *Treponema* sp. (10 mks)
- b) *Leptospira* sp. (10 mks)