TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Applied and Health Sciences

Department of Pure & Applied Sciences

UNIVERSITY EXAMINATION FOR:

BACHELOR OF TECHNOLOGY IN MICROBIOLOGY AND BIOTECHNOLOGY

AAB 4201: BACTERIOLOGY

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: JULY 2025

TIME:2HOURS

DATE: Pick DateSelect MonthPick Year

Instructions to Candidates

You should have the following for this examination

Answer Booklet, examination pass and student ID

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

Do not write on the question paper.

Question ONE

a) State the effect of pH in the staining characteristics of bacteria. (4mks)

b) Differentiate homofermentative from heterofermentative lactic acid bacteria. (4mks)

c) Explain the difference between beta haemolysis and alpha haemolysis (4mks)

d) With examples, list the four immunological groups of Streptococci. (4mks).

e) Name four products of industrial importance produced by heterofermentative bacteria. (4mks)

f). Explain the industrial importance of *Bacillus thuringiensis* (4mks).

g) Explain how Mycoplasmas are able to resist osmotic lysis without a cell wall (3mks)

h) Explain the principle behind the use of acid-fast staining technique in Mycobacteria. (3mks).

Question TWO

(a). Using appropriate example, describe the process of sporulation in a named bacterium.

(12mks)

(b). Explain the economic importance of members of the genus *Clostridium*. (8mks)

Question THREE

(a) Use of acid fast staining procedure is the best for members of the genus *Mycobacteria.* Explain (8mks)

b) Name any four antibiotics produced by Streptomycetes. (4mks)

c) Describe vegetative growth form of Streptomyces (8mks)

Question FOUR

(a). Using illustrations describe the life cycle of *Chlamydia* (6mks)

(b). Describe Cyanobacteria under the following.

i). Structure (8mks)

ii) Classification. (6mks)

Question FIVE

(a) Using methylene blue dye, explain the principle behind positive and negative staining. (12mks)

(b) Describe gram's staining technique. (8mks)