



Technical University of Mombasa

Faculty of Applied and Health Sciences

DEPARTMENT OF PURE AND APPLIED SCIENCES
UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF
TECHNOLOGY IN INDUSTRIAL MICROBIOLOGY AND
BIOTECHNOLOGY & BACHELOR OF SCIENCE IN FOOD QUALITY
ASSURANCE

BIMBT 12S
BSFQA 12S

SBT 2173 /AAB 4201 : GENERAL MICROBIOLOGY

SPECIAL/SUPPLEMENTARY EXAMINATION

JULY 2013 SERIES

2

HOURS

Instructions to candidates:

This paper consist of **FIVE** questions

Answer question **ONE** (compulsory) and any other **TWO** questions

Question ONE

- a) (i) List THREE main routes by which microorganisms enter our bodies **(3marks)**
- (ii) Name SIX precautions which should be observed while working in the laboratory. **(3marks)**
- b) Outline the following steps in the staining procedure
- (i) Making the slide preparation **(4marks)**
- (ii) Fixing **(2marks)**

- c) Draw a well labeled diagram of a Eukarfotoic cell. **(4marks)**
- d) Describe types of media that are used for culturing microorganisms. **(8marks)**
- e) (i) List FOUR methods used for enumeration of microorganisms **(2marks)**
- (iii) Mention SIX intrinsic factors and 2 extrinsic factors that affect the growth of microorganisms. **(4marks)**

Question TWO

- a) (i) In a viable plate count procedure, the following results were obtained;
- | Dilution used | Plate I | Plate II |
|---------------|---------|----------|
| 10^{-2} | >300 | >300 |
| 10^{-3} | 150 | 162 |
| 10^{-4} | 12 | 17 |
- Calculate the number of microorganisms per ml in the original sample **(3marks)**
- (ii) Explain the limitations of the viable plate count procedure in enumerating bacteria. **(4marks)**
- b) Describe the sterility tests for the following laboratory equipment;
- (i) Media
- (ii) Pipettes
- (iii) Petri-dishes
- (iv) Rinses **(8marks)**
- c) List 5 methods of maintaining pure cultures in the laboratory. **(5marks)**

Question THREE

- a) (i) What are the factors which affect the staining reaction of a cell **(4marks)**
- (ii) Define the term mordant and explain the mode of action of dyes. **(4marks)**
- b) Use a diagram to discuss the bacterial growth curve. **(12marks)**

Question FOUR

- a) (i) Compare fermentation with respiration **(8marks)**
- (ii) The concentrations of O₂ and glucose in the environment will determine to what extent fermentation and respiration take place. Discuss showing products
(8marks)
- b) Differentiate ammonification from putrefaction. **(4marks)**

Question FIVE

- a) Briefly explain intrinsic and extrinsic factors that affect the growth of bacteria.
(10marks)
- b) Giving the expected results, describe the chronological steps in the gram stain procedure.
(10marks)