

MIC 210



ALUPE UNIVERSITY

OFFICE OF THE DEPUTY PRINCIPAL

ACADEMICS, STUDENT AFFAIRS AND RESEARCH

UNIVERSITY EXAMINATIONS

2024 /2025 ACADEMIC YEAR

SECOND YEAR FIRST SEMESTER REGULAR EXAMINATION

**FOR THE DEGREE OF BACHELOR OF SCIENCE
IN MICROBIOLOGY**

COURSE CODE: MIC 210

COURSE TITLE: GENERAL MICROBIOLOGY

DATE: 6TH JANUARY 2025

TIME: 08.00 A.M – 11.00 A.M

INSTRUCTIONS TO CANDIDATES

- SEE INSIDE

THIS PAPER CONSISTS OF 3 PRINTED PAGES

PLEASE TURN OVER

MIC 210

REGULAR – MAIN EXAM

MIC 210 : GENERAL MICROBIOLOGY

STREAM: BSc. in Microbiology

DURATION: 3 HOURS

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INSTRUCTIONS TO CANDIDATES

- i. Answer **ALL** questions in section A and any **THREE** in section B.
- ii. Diagrams should be used whenever they serve to illustrate the answer.
- iii. Do not write on the question paper.

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SECTION A (24 MARKS)

Question One

- a) Distinguish between Gram positive and Gram negative bacterial cell walls. (3 Marks)
- b) Outline any three physiological characteristics in cells during the stationary phase of a bacterial growth. (3 Marks)
- c) During Log phase growth of bacterial culture, a sample was taken at 8.00 a.m and found to contain 1,000 viable cells per ml. A second sample taken at 6.00 p.m. was found to contain 1,000,000 viable cells per ml. What is the generation time in hours? (3 Marks)
- d) Explain the principle of Ziehl Neelsen method of staining. (3 Marks)

Question Two

- a) Differentiate between batch culture and continuous culture. (4 Marks)
- b) Describe two physical conditions required by bacteria for growth. (4 Marks)
- c) Using relevant examples, point out two applications of microbiology in the following fields:
 - i. Agriculture (2 Marks)
 - ii. Industrial production (2 Marks)

SECTION B (36 MARKS)

Question Three

- a) Using an illustration, discuss the four main growth curve phases observed in a batch culture. (8 Marks)
- b) Describe three inoculation techniques used for culturing a sample on a solid medium. (4 Marks)

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Question Four

- a) After collection of a microbiological specimen for Gram staining, outline the steps involved in the procedure and the expected results. (7 Marks)
- b) Describe how the following factors affect microbial growth:-
 - i. Oxygen (2.5 Marks)
 - ii. Temperature (2.5 Marks)

Question Five

- a) Discuss how microbial growth is determined. (8 Marks)
- b) Outline Koch's postulates (4 Marks)

Question Six

- a) Describe how bacteria are classified based on the following:-
 - i. Nutrition (5 Marks)
 - ii. Number of flagella on the cell surface (4 Marks)
- b) Explain three factors that affect an immune system. (3 Marks)

Question Seven

- a) Give an account of five physical barriers of the innate immunity. (10 Marks)
- b) State four functions of a bacterial cell wall. (2 Marks)
