



UNIVERSITY
OF
JOHANNESBURG

FACULTY OF SCIENCE

DEPARTMENT OF BIOTECHNOLOGY & FOOD TECHNOLOGY (DFC)

MODULE: MCB1AE1/MCB1XB1 (MICROBIOLOGY 1)

CAMPUS: DFC

June Examination 2019

DATE:	25 May 2019
SESSION:	12:30 to 15:30
ASSESSOR	Prof Ezekiel Green
INTERNAL MODERATOR	Dr. Bheki Dlamini
DURATION:	3 HOURS
MARKS	100

NUMBER OF PAGES: 2

SURNAME AND INITIALS: _____

STUDENT NUMBER: _____ **CONTACT NUMBER:** _____

NUMBER OF PAGES:

INSTRUCTIONS:

- 1 READ ALL THE INSTRUCTIONS AND ANSWER ALL QUESTIONS
- 2 HAND THE **ANSWER SCRIPT** AS WELL AS YOUR **QUESTION PAPER**

QUESTION 1**[25 Marks]**

- a. Define the following terms as they are used in microbiology.
 - i. Colony.
 - ii. Culture media.
 - iii. Virus
 - iv. Taxonomy
 - v. Thallus(2 Marks each)
- b. Explain the importance of continuous culture (5 marks)
- c. Using a table, compare and contrast archaea and bacteria (10 Marks)

QUESTION 2**[25 Marks]**

- a. Name and explain the 3 capsids found in viruses (12 Marks)
- b. Antimicrobial agents are classified based on their mechanisms of action. Discuss any two antibiotic mechanisms of action and give examples of antibiotics using those mechanism of action. (13 Marks)

QUESTION 3**[27 Marks]**

- a. What are culture media? Give a classification of three culture media and their examples (10 Marks)
- a. Using a diagram, explain how bacteria reproduce using binary fission (8 Marks)
- b. From a three step 10^{-1} dilution with a final volume of 9 ml,
 - i. Indicate the volume of the original sample you will need in the first step. (2 Marks)
 - ii. What is the total dilution factor? (2 Marks)
- b. You plated 0.1 ml of 10^{-4} and from that, you determined that the number of cells in the original samples was 3×10^5 . You then realized that the cells doubled every 20 minutes. How many bacterial cells will you have after 30 hours? (5 Marks)

QUESTION 4.**[23 Marks]**

- a. With the aid of a diagram, discuss a simple growth curve. (10 Marks)
- b. You have plated 0.1 ml of 0.01 dilution tube and 44 colonies grew on a plate. What is the Colony Forming Unit of the original sample? (5 Marks)
- c. Give eight steps used when transferring bacteria from one tube to the next. (8 Marks)