



TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF APPLIED & HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

P2

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN INDUSTRIAL MICROBIOLOGY AND BIOTECHNOLOGY
SEP 2023 J&S FT

ABT 2209 : INTRODUCTION TO MOLECULAR BIOLOGY
SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: JULY 2025

TIME: 2 HOURS

DATE: Pick Date **MARCH 2025**

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** Question(s). Attempt question ONE (Compulsory) and any other TWO questions.

QUESTION 1

- I. Describe the components of the cell theory (5 marks)
- II. What are the modern additions to the cell theory (3 marks)
- III. How is genetic material packaged in a bacterium (4 marks)
- IV. What is the importance of plasmid in Streptococci bacteria spp (3 marks)
- V. Describe the chemical composition of the RNA molecule (5 marks)
- VI. What advantage does the small size of bacteria have over multicellular organisms? (3 marks)
- VII. Name any four viral infections that could cause damage to DNA (4 marks)



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QUESTION 2

- I. Illustrate a prokaryotic cell (10 marks)
- II. Describe the Trp Operon Gene Expression regulation in prokaryotes in the absence of tryptophan (5 marks)

QUESTION 3

- I. Outline any ten properties of genetic material (10 marks)
- II. Outline the consequences of mutations (5 marks)

QUESTION 4

- I. Describe the mechanisms of DNA repair (10 marks)
- II. Outline the mode of transfer of antibiotic resistance genes (5 marks)

QUESTION 5

- I. Describe the Lac Operon Gene Expression regulation in *Escherichia coli* (10 marks)
- II. Describe the eukaryotic nucleus (5 marks)

