



W1-2-60-1-6

JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

UNIVERSITY EXAMINATIONS 2023/2024

**ORDINARY EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE IN
MICROBIOLOGY**

TMM 3103: MICROBIAL GENETICS

DATE: DECEMBER 2023

TIME: 3 HOURS

INSTRUCTIONS: ANSWER ANY FOUR QUESTIONS

QUESTION ONE

Discuss DNA repair mechanisms (25 Marks)

QUESTION TWO

Discuss *Agrobacterium tumefaciens*-mediated transformation in plants (25 Marks)

QUESTION THREE

- a) Discuss the components, procedure, and key practical guidelines of a PCR experiment (17 Marks)
- b) Discuss applications of Real-time PCR (8 Marks)

QUESTION FOUR

Discuss salient features of conjugation, transformation and transduction and explain how the processes can be used to map bacterial genes (25 Marks)

QUESTION FIVE

Discuss genetic response by quorum sensing in pathogenic bacteria (25 Marks)

QUESTION SIX

- a) Discuss factors affecting migration of DNA fragments in agarose gels (8 Marks)
- b) Discuss analytical applications of Gel electrophoreses (17 Marks)

