W1-2-60-1-6

JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

University Examinations 2025/2026

SPECIAL/SUPPLIMENTARY EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE IN MEDICAL MICROBIOLOGY

TMM 3103: MICROBIAL GENETICS

DATE: MAY 2026 **TIME: 3 HOURS**

INSTRUCTIONS: ANSWER ANY FOUR QUESTIONS ONLY

QUESTION ONE (25 Marks)

The impact/contribution of microbial genetics on the development of modern genomics and biotechnology

QUESTION TWO (25 Marks)

Giving appropriate citations and references, discuss the roles of the human microbiome in health, nutrition, immunity, and disease.

QUESTION THREE (25 Marks)

a) Describe mutation selection methods in site-specific mutagenesis (10 Marks)

b) Discuss applications of Site-specific mutagenesis (15 Marks)

QUESTION FOUR (25 Marks)

a) Describe the process of biofilm formation in bacteria (10 Marks)

b) Discuss the implications of biofilm formation in pathogenic bacteria with regard to antibiotic susceptibility testing and resistance (15 Marks)

QUESTION FIVE (25 Marks)

Giving examples, discuss bacterial and viral genomes

QUESTION SIX (25 Marks)

Discuss DNA replication in prokaryotes