W1-2-60-1-6

JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY
University Examinations 2023/2024

YEAR I SEMESTER II EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE IN EPIDEMIOLOGY AND BIOSTATISTICS

PEH 3108: MOLECULAR EPIDEMIOLOGY

DATE: DECEMBER, 2023 **TIME: 3 HOURS**

INSTRUCTIONS: Answer ANY Four Questions – 25 Marks Each

1. You are part of a group of scientists tasked to study the Molecular Epidemiology of Virus X responsible for an outbreak in County Y where 35 symptomatic patients have been admitted to hospital. Virus X Disease has never been reported in the country before.
   a. Derive FIVE research questions that would initiate the study. (5marks)?
   b. Describe a Molecular Epidemiological Methodology that you would apply in identifying the etiology of Virus X disease. (20 marks)
2. Compare and contrast the protein-based detection methods used in molecular epidemiology. (25 marks)
3. Explain how you would solve epidemiologic problems related to bacterial infectious diseases using genotyping techniques (25 marks)
4. Describe how you would use FIVE nucleic based molecular analytical techniques to distinguish the genetic damage in a diseased tissue from a healthy tissue. (25 marks)
5. Illustrate the molecular detection methods used in analyzing genetic variations in viruses. (25 marks)
6. Outline the platforms for biomarker analysis using high through-put approaches in genomics, transcriptomics, proteomics, metabolomics and bioinformatics (25 marks)