

## 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

- 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)
- 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)

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