



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

P.O. Box 972-60200 – Meru-Kenya.

Tel: +254 (0)799529958, +254 (0)799529959, +254 (0)712524293

Website: www.must.ac.ke Email: info@must.ac.ke

UNIVERSITY EXAMINATIONS 2023/2024

FIRST YEAR, SECOND SEMESTER EXAMINATION FOR DEGREE OF MASTER OF
SCIENCE IN NURSING

NNM 7121: EPIDEMIOLOGY

DATE: DECEMBER 2023

TIME: 3 HOURS

INSTRUCTIONS: Answer all questions

QUESTION ONE: 20 MARKS

- a) Describe the key components of a comprehensive public health surveillance system. Provide examples of how each component contributes to early detection and response to health threats (4 Marks)
- b) Analyse the triad model from a One Health perspective looking at humans, animals and environments and how they interact with the triad using the case of a known zoonotic case of your own (5 Marks)
- c) Compare and contrast the strengths and weaknesses of case-control and cohort study designs. Provide examples of research questions or scenarios where each design would be more appropriate, and explain your rationale (5 marks)
- d) A study from Meru University of Science and Technology examined whether the risk of Hepatitis C (Hep C) was related to whether people had tattoos. A sample of 600 individuals were randomly selected from the student population. In this sample 113 had a tattoo. For individuals with a tattoo, 22 were found to have Hepatitis C and for individuals without a tattoo, 25 were found to have Hepatitis C. Researchers want to know if there is evidence from this study of an increased prevalence of Hep C for individuals with a tattoo amongst the population from which they were sampled.

- a. Describe the study design used and construct an appropriately labelled 2x2 table to display these data (3 marks)
- b. Calculate and interpret the sample prevalence (risk) ratio for Hep C among individuals with a tattoo compared to individuals without a tattoo (3 marks)

QUESTION TWO 20 MARKS

- a) Using the concept of the chain of infection, analyze the potential vulnerabilities and interventions in preventing the transmission of a novel zoonotic disease from wildlife to humans, considering the stages of the chain, including the reservoir, agent, mode of transmission, susceptible host, and environmental factors. Provide a real-world example of a zoonotic disease and discuss how understanding the chain of infection can inform public health strategies to mitigate the risk of spillover (10 marks)
- b) Describe the key components of a comprehensive community-based TB prevention and control program in Meru County, indicating how such a program effectively break the chain of TB infection within a community (10 marks)

QUESTION THREE 20 MARKS

Citing relevant examples, discuss how the various health determinants impact the health of a population, giving strategies on how to reduce or eliminate their impacts.