



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2020/2021
FIRST SEMESTER EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE
(MEDICAL LABORATORY SCIENCE)
HSU 854: PRINCIPLES OF EPIDEMIOLOGY

DATE: FRIDAY 12TH FEBRUARY 2021

TIME: 2.00 P.M. - 5.00 P.M.

INSTRUCTIONS

NOTE: Answer any THREE questions on the answer booklet provided, beginning your answer to each question on a new page (30 marks each).

1. a) Explain five concepts useful in assessing causality. (15 marks)
b) Define randomization and discuss three major objectives in a randomized clinical trial. (10marks)
c) Outline five limitations of the randomized clinical trial (5 marks)
2. a) In the 1930s and the 1940s, the most common agent of hospital-acquired (nosocomial) infections was the staphylococcus bacteria. In the 1950s, it was the streptococcus bacteria. During the 1960s and 1970s, the most common agents were gram negative bacteria. Explain **three** reasons that might explain this changing etiology of nosocomial infections? (15 marks)
b) Explain five reasons why clinical health care professionals find positive and negative predictive values more useful than sensitivity in evaluating a test (5 marks)
c) The serologic test for past exposure to HIV is very sensitive and very specific. In the early 1980s, during the first phase of the HIV epidemic, it was suggested that everyone in the Kenya be screened for the past exposure to HIV. Explain why is this policy was not followed (5 marks)

- d) List five potential strengths and five potential weaknesses of operating a registry for a disease in a community? (5 marks)
3. a) In the early 1980's, epidemiologists recognized that AIDS occurred most frequently in men who had sex with men and in intravenous drug users. Describe how this information might be used for each of the following population or community health assessment (10 marks)
- b) Give a clear definition of an "ecological fallacy" and explain why it is important to the epidemiologist (10 marks)
- c) Describe the major steps involved in an investigation of a food-borne outbreak (10 marks)
4. Geographic variation is another clue used by epidemiologists to understand the causes of a disease. The death rates from HIV infection are the result of transmission of an infected person, most frequently because of intravenous drug use associated with needle sharing, unprotected sex, blood transfusions, or mother-to-infant transmission. The death rates from HIV infection in 1987 are given on the next page for the top five and lowest five Counties below.

TOP 5 HIV DEATH RATES		LOWEST 5 HIV DEATHS	
County	RATE PER 100,000	County	RATE PER 100,000
Nairobi	28.8	Wajir	3
Kisumu	19.2	Turkana	4
Mombasa	13.8	Kericho	5
Nakuru	9.6	Narok	6
Machakos	9.2	Isiolo	8

- a) Suggest hypothesis to explain the geographic distribution of the HIV rates. (20 marks)
- b) Analyze the following statements explaining whether you hold them to be true or not.
- i. Errors due to random variability is usually worsened by increasing the size of the study population. (5 marks)
- ii. When studying exposures considered to be harmful (such as smoking) on relatively uncommon conditions (such as less common cancers), case control studies can be useful (5 marks)
