



W1-2-60-1-6

JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

UNIVERSITY EXAMINATIONS 2021/2022

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR

PPH 3100/TID 3103: PRINCIPLES OF EPIDEMIOLOGY/EPIDEMIOLOGY

DATE: JULY/AUGUST 2022

TIME: 2 HOURS

INSTRUCTIONS: ANSWER ANY FOUR QUESTIONS

QUESTION ONE: 30 MARKS

- a. Define descriptive epidemiology and list its functions. (6 marks)
- b. Explain analytic epidemiology and its role? (4 marks)
- c. Define analytic epidemiology and its role? (4 marks)
 - i. Infectivity. (2 marks)
 - ii. Latent period. (2 marks)
 - iii. Hyperendemic. (2 marks)
 - iv. Susceptibility. (2 marks)
- d. Explain the factors that might lead to the occurrence of an epidemic in a given population? (7 marks)

QUESTION TWO: 25 MARKS

- a. Explain the important of studying the natural history of a disease? (4 marks)
- b. With relevant examples, explain how a person can loose susceptibility to an infectious agent? (6 marks)
- c. Describe the properties of a carrier. (15 marks)

QUESTION THREE: 25 MARKS

- a. List the conditions which prevalence of a disease may increase in a population? (5 marks)
- b. Outline the conditions in which prevalence of a disease can decrease in a population? (4 marks)
- c. Vital statistics for city X show that its population by June 30 2016 was 4,167,432. In the year 2016 from January 1 to December 31, a total of 5,710 residents of city X were infected with TB. In the same year, 1,004 new cases of TB were reported in the city. Calculate the TB prevalence per 100,000 population and incidence per 100,000 population. (4 marks)
- d. Use the information provided in the table below to answer the preceding questions.

Table of Mortality from Selected Causes, Males and Females, USA, 2003

Causes of Death	Males	Females	Total
All Causes	1,201,964	1,246,324	2,448,288
Accidents	70,532	38,745	109,277
Infant deaths	15,902	12,123	28,025
Maternal deaths	NA	495	495
Malignant Neoplasms	287,990	268,912	556,902
Alzheimer's Disease	18,335	45,122	63,457

NB: The total population for 2003 was 290,810,789 (143,037,290 males and 147,773,499 females). During the same year, total number of live births was 4,089,950. For all calculations express all your rates (per 100,000) unless specified otherwise.

- i. Calculate the crude death rate. (2 marks)
- ii. Calculate the ratio of accidents-mortality for males compared to females. (4 marks)
- iii. Calculate maternal mortality rate. (2 marks)
- iv. Calculate the infant mortality rate. (2 marks)
- v. What is the percentage proportion mortality ratio (PMR) for Alzheimer's disease. (2 marks)

QUESTION FOUR: 25 MARKS

- a. A study was made of a physician's ability to diagnose streptococcal throat infections in 149 patients visiting the emergency department of the Coast General referral hospital. The doctor's diagnosis was compared to the results of throat cultures of group A streptococcus. Laboratory throat culture results indicate 37 patients had positive throat culture results and 27 of these were diagnosed by the doctor as having streptococcus throat infection. Among the 112 patients with negative cultures, doctors had diagnosed 35 of them to be having streptococcus throat infection.
- Present the above information in a two by two table. (2 marks)
 - Calculate the sensitivity of the doctor's diagnosis. (2 marks)
 - Calculate the specificity of the doctor's diagnosis. (2 marks)
 - Calculate positive predictive value for the doctor's correct diagnosis was? (2 marks)
- b. Define screening. (2 marks)
- c. Briefly discuss the goals of screening. (15 marks)

QUESTION FIVE: 25 MARKS

- a. In your own words what does it mean for two variables to be associated. **5 (2 marks)**
- b. Differentiate incidence from prevalence? **8 (2 marks)**
- c. Discuss the properties and uses of incidence rates. **12 (2 marks)**

QUESTION SIX: 25 MARKS

- a. Define primordial prevention and give an example? (3 marks)
- b. List the objectives of secondary prevention? (4 marks)
- c. Discuss health promotion and specific protection as approaches for primary prevention. (18 marks)

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