



AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF PUBLIC HEALTH
DEPARTMENT OF HEALTH SYSTEMS MANAGEMENT AND DEVELOPMENT
BACHELOR OF SCIENCE IN HEALTH RECORDS AND INFORMATION
MANAGEMENT

END OF SEMESTER EXAMINATION (AUGUST 2025)

UNIT CODE: HRI 108 UNIT NAME: EPIDEMIOLOGY AND DEMOGRAPHY
FOR HRIT

DATE: 4 AUGUST 2025

TIME: Two Hours

Start: 4: 30 PM

Finish: 6:30 PM

INSTRUCTIONS

1. This exam is marked out of 70 marks
2. This Examination comprises TWO Sections
Section A: Compulsory Question (30 marks)
Section B: Long Answer Questions (40 marks)

SECTION A: COMPULSORY QUESTION (30 MARKS)

QUESTION 1

- i. Describe how time, place, and person are used in descriptive epidemiology and explain how they help in understanding disease patterns. 6 marks
- ii. Compare and contrast cohort and case-control studies, highlighting their strengths and weaknesses. 6 marks
- iii. Describe how confounding can affect the results of an epidemiological study and provide an example of a confounding variable in a study on smoking and lung cancer. 2 marks
- iv. With an appropriate example for each case, define primary, secondary, and tertiary prevention. 6 marks
- v. State the differences between crude birth rate, total fertility rate, and age-specific fertility rate, and explain how they are used in demographic studies. 6 marks

QUESTION 2

- i. Describe the five stages of the demographic transition model explaining the changes in birth and death rates at each stage. 10 marks
- ii. How does the demographic transition model apply to Kenya, and what are the challenges the country may face as it moves through the stages. 10 marks

QUESTION 3

- i. Discuss the three main components of the epidemiologic triangle (agent, host, and environment) and provide an example of how they interact in the spread of a disease. 6 marks
- ii. Explain the concept of "necessary" and "sufficient" causes in disease causation, and provide an example of each. 4 marks
- iii. Explain how demographic data is used in designing and monitoring health programs, and provide an example of a health program that relies on demographic data for its success. 6 marks
- iv. Explain how screening programs fit into the framework of secondary prevention, and provide an example of a disease where screening is commonly used. 4 marks

QUESTION 4

- a) Discuss any FIVE (5) measures of disease frequency covered in the course, including their definitions, calculations, and applications in epidemiology (10 Marks)
- b) In the mid-1800, Kenya had 2 Million infants (midpoint population), 100,000 of them developed Malaria. There were 10,000 deaths in one year. Of those 10,000 deaths, 2000 died from Malaria. Compute the following measures ($k=1000$). (10 Marks)
 - i. The annual mortality rate?
 - ii. The annual mortality rate from Malaria?
 - iii. The case fatality rate from Malaria?
 - iv. The proportion of deaths from Malaria?
 - v. The annual prevalence of Malaria?