MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF HEALTH SCIENCES

DEPARTMENT OF PUBLIC AND COMMUNITY HEALTH

SECOND YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (FOODS NUTRITION AND DIETETICS)

HPH 213: EPIDEMIOLOGY

DATE: 30/5/2022 **TIME: 8.30-10.30 AM**

INSTRUCTIONS:

This paper consists of two sections A and B

Section A is compulsory

Section B choose any two (2) questions

SECTION A: COMPULSORY (30 MARKS)

QUESTION ONE (30 MARKS)

a) Identify which of the following statements are true or false

i. Among all persons' variables, disease occurrence within a population varies most with age.

ii. A decrease in the case fatality rate of a disease leads to an increase in the prevalence rate of the disease

iii. Proportions and rates do not indicate the time that a given event occurs

iv. Disease occurrence within a given population is random

v. Virulence refers to how fast a disease spreads in a population

vi. The relative risk is the best measure to assess how much disease in a population could potentially be prevented by reducing exposure to that factor (3 marks)

b) Explain the concepts of specificity and sensitivity in population screening. (3 marks)

c) Epidemiology is concerned with frequency and patterns of health events in a population. Differentiate between the two. (3 marks)

d) Since the inception of Covid-19, the Ministry of Health has had campaigns on mass screening. Do you support mass screening for Covid-19? Explain your answer. (3 marks)

e) Outline three (3) sources of Vital statistics and give examples of mortality/morbidity data that can be derived from the same. (3 marks)

f) Identify six (6) comparative factors that may result to increased rates of a disease occurrence. (3 marks)

g) Giving appropriate examples, enumerate three (3) categories of disease-causing agents in any environment. (3 marks)

h) Outline three (3) disadvantages of case-control studies. (3 marks)

i) State three criteria/conditions that must be certified for an agent to be said to cause a disease. (3 marks)

j) Identify the three (3) classical diseases in the development of Epidemiology as a field of study. (3 marks)

SECTION B: ANSWER ANY TWO QUESTIONS. EACH QUESTION CONTAINS 20 MARKS

QUESTION TWO (20 MARKS)

a) In Katoloni sub-county a total of 5856 children below five years were screened in the beginning of January 2009 and 1464 of them were confirmed to be goiter cases. During the month of January 2009 after screening, 355 of children died out of which 36 were among those who had goiter. The children were followed up for a period of one year. In December 2009, an additional 732 under-fives were confirmed as new goiter cases. Showing all your working

   i. Calculate the prevalence of goiter in the beginning of January and in December 2009? (4 marks)

   ii. What was the incidence rate of goiter between February and December of 2009? (2 marks)

   iii. What was the cause specific death rate (CSDR) for goiter that year? (2 marks)

   iv. Assuming no other deaths were reported in the year, what was the crude death rate in Katoloni. (2 marks)

b) Discuss the importance of studying epidemiology to a Public Health officer. (10 marks)

QUESTION THREE (20 MARKS)

a) In the year 2020, village Y had a total population of 5,000 people. A group of 600 expectant mothers in the village were followed up during antenatal visits. Within the follow up period there were 400 deaths reported in the village of which 20 were from pregnant related complications. Of the pregnant women, 480 safely delivered, however only 420 of the children delivered celebrated their first birthday. Showing all your working;

i. Calculate the crude death rate in the village in 2020. (3 marks)

ii. Calculate the maternal mortality rate in the year. (3 marks)

iii. What was the infant mortality rate. (4 marks)

b) Using a diagram explain the algorithm for classification of epidemiological studies (10 marks)

QUESTION FOUR (20 MARKS)

a) You are the Public Health Officer in charge of Machakos County. Reportedly there has been a rise in the Covid-19 cases and Screening is recommended. Giving appropriate examples, discuss the types of screening that you would use to address the problem. (10 marks)

b) Epidemiological studies have shown that a person's sex influences disease occurrence and that males have higher rates of illness and death than do females for many diseases. Discuss this in the context of the prevailing Covid-19 pandemic in Kenya. (10 marks)

QUESTION FIVE (20 MARKS)

a) Country Y had a total population of 1 million persons in the year 2020. Of the total population 600,000 were women of child bearing age. In the year, 36,000 live births were recorded amongst the 20-24 year olds, who numbered 240,000 of the total population. Calculate; -

i. The Crude Birth Rate of country Y in 2020. (3 marks)

ii. The General Fertility Rate in 2020. (3 marks)

iii. The Age Specific Fertility Rate for the 20-24 year olds in 2020. (4 marks)

b) Highlighting the signs and symptoms at each stage; describe the natural history of a chronic disease of your choice. (10 marks)