



KISII UNIVERSITY
UNIVERSITY EXAMINATIONS

FIRST YEAR EXAMINATION FOR THE AWARD OF THE
DEGREE OF BACHELOR OF SCIENCE IN NURSING
SECOND SEMESTER 2022/2023
[MAY-AUGUST, 2023]

NUR 142: EPIDEMIOLOGY AND DEMOGRAPHY

STREAM: Y1S2

TIME: 2 HOURS

DAY: MONDAY, 12:00 – 2:00 PM

DATE: 31/07/2023

INSTRUCTIONS

- 1. Do not write anything on this question paper.***
- 2. Answer all questions in Section A, B and C.***

SECTION A (MCQS—20 MARKS)

1. In the definition of epidemiology, “distribution” refers to:
 - A. Who
 - B. When
 - C. Where
 - D. Why
 - E. All of the above
 - F. A, B and C
 - G. A, B, and D
2. In the definition of epidemiology, “determinants” generally includes:
 - A. Agents
 - B. Causes
 - C. Control measures
 - D. Risk factors
 - E. Sources
 - F. All of the above
 - G. A, B, D, and E

3. Epidemiology, as defined in this course, would include each of the following activities except?
 - A. Describing the demographic characteristics of persons with acute aflatoxin poisoning in District A.
 - B. Prescribing an antibiotic to treat a patient with community-acquired methicillin-resistant *Staphylococcus aureus* infection.
 - C. Comparing the family history, amount of exercise, and eating habits of those with and without newly diagnosed diabetes.
 - D. Recommending that a restaurant be closed after implicating it as the source of a hepatitis A outbreak.

4. The epidemiologic triad of disease causation refers to: (Choose one best answer)
 - A. Agent, host, environment
 - B. Time, place, person
 - C. Source, mode of transmission, susceptible host
 - D. John Snow, Robert Koch, Kenneth Rothman

5. The hallmark feature of an analytic epidemiologic study is: (Choose one best answer)
 - A. Use of an appropriate comparison group
 - B. Laboratory confirmation of the diagnosis
 - C. Publication in a peer-reviewed journal
 - D. Statistical analysis using logistic regression

6. A reservoir of an infectious agent can be:
 - A. An asymptomatic human
 - B. A symptomatic human
 - C. An animal
 - D. The environment

7. Indirect transmission includes which of the following?
 - A. Droplet spread
 - B. Mosquito-borne
 - C. Foodborne
 - D. Doorknobs or toilet seats

8. Disease control measures are generally directed at which of the following?
 - A. Eliminating the reservoir
 - B. Eliminating the vector
 - C. Eliminating the host
 - D. Interrupting mode of transmission
 - E. Reducing host susceptibility

9. Number of current cases(new and old) of specified disease identified over a given time interval from estimated population at mid interval is called;
- A. Prevalence
 - B. Period Prevalence
 - C. Point Prevalence
 - D. Disease Prevalence
10. Number of live births reported during a given time interval from estimated mid-interval population is called;
- A. Birth Rate
 - B. Growth Rate
 - C. Crude Fertility rate
 - D. Crude Birth Rate
11. Measure of the frequency of occurrence of death in a defined population during a specified interval is called;
- A. Crude death rate
 - B. Mortality Rate
 - C. Death ratio
 - D. Mortality
12. Use of statistics to analyze characteristics or changes to a population is termed as;
- A. population Pyramid
 - B. vital statistics
 - C. Population statistics
 - D. Population dynamics
13. Number of current cases(new and old) of specified disease identified over a given time interval from estimated population at mid interval is called;
- A. Prevalence
 - B. Period Prevalence
 - C. Point Prevalence
 - D. Disease Prevalence
14. Which of the following ratio provide us an estimate of risk in case control study;
- A. Odd ratio
 - B. Sex ratio
 - C. Disease ratio
 - D. Dependency ratio
15. A study in which children are randomly assigned to receive either a newly formulated vaccine or the currently available vaccine, and are followed to monitor for side effects and effectiveness of each vaccine, is an example of which type of study?

- A. Experimental
 - B. Observational
 - C. Cohort
 - D. Case-control
 - E. Clinical trial
16. Indirect transmission includes which of the following?
- A. Droplet spread
 - B. Mosquito-borne
 - C. Foodborne
 - D. Doorknobs or toilet seats
17. A propagated epidemic is usually the result of what type of exposure?
- A. Point source
 - B. Continuous common source
 - C. Intermittent common source
 - D. Person-to-person
18. The ability of a single person to remain free of clinical illness following exposure to an infectious agent is known as:
- A. Hygiene
 - B. Vaccination
 - C. Herd immunity
 - D. Immunity
 - E. Latency
19. Chicken pox is a highly communicable disease. It may be transmitted by direct contact with a person infected with the varicella-zoster virus (VZV). The typical incubation time is between 10 to 20 days. A boy started school 2 weeks after showing symptoms of chicken pox including mild fever, skin rash, and fluid-filled blisters. One month after the boy returned to school, none of his classmates had been infected by VZV. The main reason was:
- A. Herd immunity
 - B. All had been immunized prior to the school year
 - C. Contact was after infectious period
 - D. Subclinical infection was not yet detected
20. A person who harbors the microorganisms of a disease and excretes them without self-suffering from symptoms is called;
- A. Reservoir
 - B. Carrier
 - C. Host
 - D. Agent

SECTION B (40 MARKS)

Question one

- i) Explain five main objectives of epidemiology in Public Health nursing (5 marks)
- ii) Distinguish between descriptive and analytic epidemiology (2 marks)

Question two

- i) Name and explain four different sources of demographic data? (4 marks)
- ii) Explain the importance of demographic information for health systems (1 mark)

Question three

- i) By citing a relevant example, describe the critical requirements necessary for infectious disease transmission, or non-infectious diseases presence, in the community. (4 marks)
- ii) Describe the epidemiologic approach and highlight three key roles of the epidemiologist using this approach (3 marks)

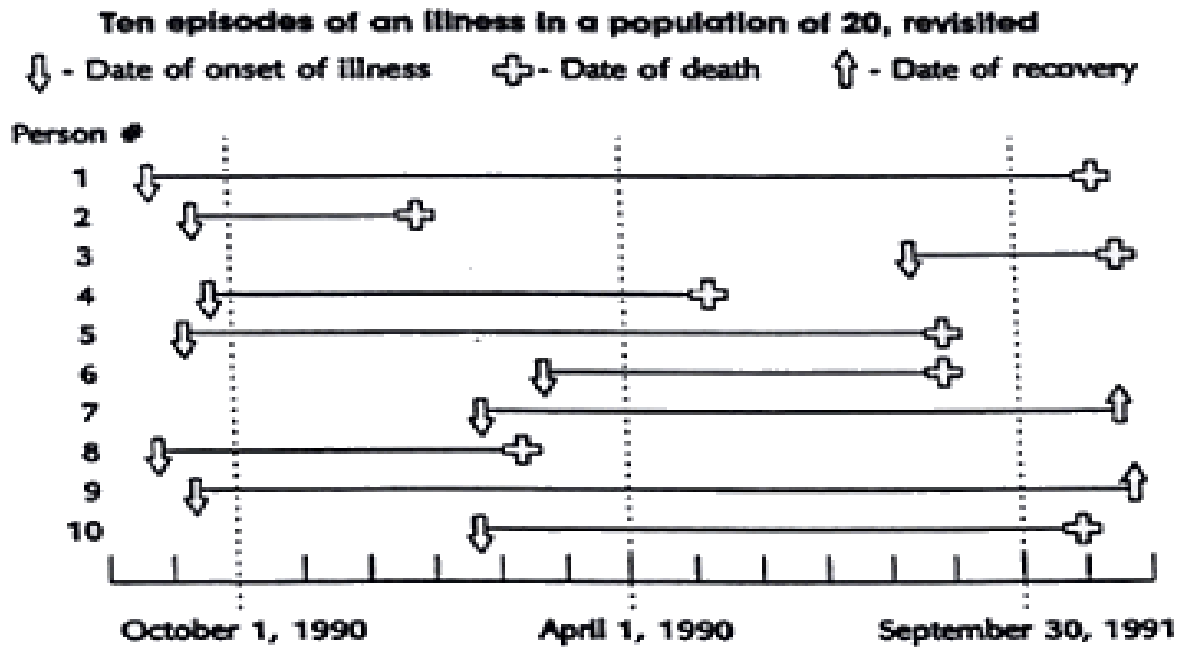
Question four

The figure below represents ten episodes of an illness in a population of 20 over a period of 16 months. Each horizontal line represents the period of time one person spends being ill. The arrow indicates the date of onset and the plus shows the date of death or recovery.

Calculate the following rates per 1000:

- i. Point prevalence on October 1, 1990 (1 mark)
- ii. Period prevalence, October 1, 1990 to September 30, 1991 (1 mark)

- iii. Explain the relationship between prevalence and incidence (Hint: use a flask diagram with an inlet and outlet). (3 marks)



Question Five

In a certain country with six million people, 60,000 deaths occurred during the year 2022. These included 30,000 deaths from COVID-19 disease in 100,000 people who were sick with COVID-19 disease.

- i. Calculate the crude mortality rate for the year 2000 (2 marks)
- ii. What is the cause-specific mortality rate from COVID-19 disease in 2022? (2 marks)
- iii. What was the case-fatality rate from COVID-19 disease in 2022? (2 marks)

Question six

Briefly describe the process of disease outbreak investigation including the management stage. (5 marks)

Question seven

Define the term vital statistics and explain any four uses of vital statistics in Kenya. (5 marks)

SECTION C (40 MARKS)

Question one

Discuss, using relevant examples of specified activities, which should be undertaken at various levels of disease prevention based on the natural history of a known disease. (20 marks)

Question two

Discuss Disease Surveillance under the following themes

- a. The definition and rationale disease surveillance (5 marks)
- b. The objectives of disease surveillance (5 marks)
- c. Data flow in disease surveillance (5 marks)
- d. Basic requirements for a good surveillance system (5 marks)