



“Investing in Africa’s Future”

COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES

DEPARTMENT OF PUBLIC HEALTH AND NURSING

NSHS 203: INTRODUCTION TO EPIDEMIOLOGY AND BIostatISTICS

END OF FIRST SEMESTER EXAMINATIONS

NOV/DEC 2025

LECTURER: MR. E. CHIKAKA

DURATION: 3 HOURS

INSTRUCTIONS

ANSWER **ALL** QUESTIONS FROM SECTION A AND **ANY THREE (3)** FROM SECTION B

THE MARK ALLOCATION FOR EACH QUESTION IS INDICATED AT THE END OF THE QUESTION

CREDIT WILL BE GIVEN FOR LOGICAL, SYSTEMATIC AND NEAT PRESENTATION

SECTION A [40 MARKS]

QUESTION 1

What do you understand by epidemiology and what are its function and uses in public health? [10]

QUESTION 2

Summarize the historical evolution of epidemiology [10]

QUESTION 3

List and explain the key features and uses of:

- i. Descriptive epidemiology [5]
- ii. Analytic epidemiology [5]

QUESTION 4

What do measures of central tendency and variation indicate? Describe the important measures of central tendency and variation pointing out the situation when one measure is considered relatively appropriate in comparison to other measures. [10]

SECTION B [60 MARKS]

QUESTION 5

The following are the number of students absent from a college on 24 consecutive days:

29, 25, 31, 28, 30, 28, 33, 31, 35, 29, 31, 33, 35, 28, 36, 30, 33, 26, 30, 28, 32, 31, 38 and 27.

- i. Calculate the range, IQR, mean, mode, median, variance, standard deviation, and standard error of these data. [15]
- ii. Calculate the 95% confidence interval around the mean and interpret it [5]

QUESTION 6

A mammogram detects 300 positives for breast cancer, of which 170 are incorrect, and 700 negatives, of which 80 are incorrect.

- i. Construct a 2 x 2 table to measure the diagnostic performance of a mammogram for breast cancer [4]

TEST	CANCER	NO CANCER	TOTAL
+			
-			
TOTAL			

- ii. What is the sensitivity, specificity of the mammogram [4]
- iii. What is the false positive and false negative rate? [4]
- iv. What is the positive and negative predictive value? [4]
- v. What is the accuracy of the mammogram? [4]
- vi.

QUESTION 7

- a. Distinguish with examples the different types of scales of measurement and how each type is presented. [10]
- b. Describe the processes, uses, and evaluation of public health surveillance. [10]

QUESTION 8

- a. List and explain all the steps one needs to take in the investigation of an outbreak [10]
- b. Are the following nominal, ordinal, interval or ratio data? Explain your answers.
 - (i) Temperatures measured on the Kelvin scale.
 - (ii) Police ranks.
 - (iii) National Social Security numbers.
 - (iv) Number of passengers on buses from Harare to Mutare.
 - (v) Code numbers given to the religion of persons attempting suicide. [10]