



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

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UNIVERSITY EXAMINATIONS 2023/2024

FIRST YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE IN HEALTH SYSTEM MANAGEMENT

NNH 3152: FUNDAMENTALS OF EPIDEMIOLOGY

DATE: APRIL 2024

TIME: 2 HOURS

INSTRUCTIONS: ANSWER QUESTIONS ONE AND ANY OTHER TWO

QUESTION ONE (30 MARKS)

- a) Define the following terms as used in epidemiology. (5 marks)
- Host
 - Vector
 - Virulence
 - Epidemic
 - Confounding
- b) Using relevant examples, state five environmental factors that influence disease occurrence. (5 marks)
- c) Describe three levels of disease prevention (6 marks)
- d) Describe the iceberg phenomenon of disease occurrence (6 marks)
- e) Describe four applications of Epidemiology in health systems. (8 marks)

QUESTION TWO(20MARKS)

Second year BSc Health Systems Management students decided to go and celebrate the end of the semester in April. A total of 20 students went to Neon Café. 8 of the students treated themselves with

fish fillet. The next day, 7 of the students were treated at the University clinic for food poisoning. Of the students who had food poisoning, five had taken fish fillet. Using this information:

- a) Draw a 2x2 table to display this data (4 marks)
- b) Calculate the odds ratio (3marks)
- c) Interpret your findings (1 mark)
- d) State four merits and three demerits of cohort studies (7 marks)
- e) State five forms of bias that are common with cohort studies (5 marks)

QUESTION THREE(20MARKS)

- a) With illustration, explain the meaning of;
 - i. The concept "gold standard" diagnostic test (2 marks)
 - ii. Validity of a diagnostic test. (2 marks)
- b) A doctor conducted physical examination on 100 patients to detect enlargement of the thyroid gland. The patients were then examined with an ultrasound, the gold standard, to confirm the findings of the physical examination. The results of the two forms of examination were as follows:

	Ultrasound (gold standard)		
	Enlarged (+)	Not Enlarged (-)	Total
Physical Examination			
Enlarged (+)	35	10	45
Not Enlarged (-)	5	50	55
Total	40	60	100

Calculate:

- i. Sensitivity of the physical examination (3 marks)
- ii. Specificity of the physical examination (3 marks)
- iii. The positive and negative predictive value of the examination (4 marks)
- iv. Interpret the findings of sensitivity and specificity of the diagnostic test (2 marks)

QUESTION FOUR(20MARKS)

- a) Describe the steps followed in outbreak investigation. (10 marks)
- b) Explain the descriptive epidemiology of disease in an outbreak. (10 marks)

