MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

P.O. Box 972-60200 – Meru-Kenya.
Tel: +254 (0)799529958, +254 (0)799529959, +254 (0)712524293
Website: www.must.ac.ke Email: info@must.ac.ke

University Examinations 2023/2024

SECOND YEAR, FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF CLINICAL MEDICINE AND COMMUNITY HEALTH

CCM 3227: EPIDEMIOLOGY AND BIOSTATISTICS

DATE: APRIL 2024 **TIME: 3 HOURS**

INSTRUCTIONS:
Answer all questions in section A and B and any other **TWO** questions in Section C

SECTION A: MCQs 1 mark each (20 marks)

QUESTION ONE

1. Which of the following is NOT a type of epidemic investigation? (1 mark)

A. Common source epidemic

B. Propagated epidemic

C. Mixed epidemic

D. Point source epidemic

2. Which level of prevention aims to prevent the progression of diseases? (1 mark)

A. Primary prevention

B. Secondary prevention

C. Tertiary prevention

D. Quaternary prevention

3.Which of the following is NOT a type of study design in epidemiology? (1 mark)

A. Cohort study

B. Case-Control study

C. Cross-sectional study

D. Experimental study

4.Which of the following is NOT a measure of association used in epidemiology? (1 mark)

A. Odds ratio

B. Relative risk

C. Attribute risk

D. P-value

5.Which of the following is NOT a type of surveillance used in public health? (1 mark)

A. Syndromic surveillance

B. Active surveillance

C. Passive surveillance

D. Experimental surveillance

6. Which of the following is NOT a step in outbreak investigation? (1 mark)

A. Confirm the diagnosis

B. Define a case

C. Identify case and contacts

D. Develop a vaccine

7. Which of the following is NOT a type of bias in epidemiology? (1 mark)

A. Selection bias

B. Recall bias

C. Confounding bias

D. Random bias

8. Which of the following is NOT a measures of central tendency used in biostatics? (1 mark)

A. Mean

B. Median

C. Mode

D. Standard deviation

9. Which of the following is NOT a type of study design used in biostatistics? (1 mark)

A. Cross-sectional study

B. Case-control study

C. Cohort study

D. Randomized controlled trail

10. Which of the following is NOT a type of association in epidemiology? (1 mark)

A. Casual association

B. Non-casual association

C. Positive association

D. Negative association

11.Which of the following is NOT a type of epidemic curve? (1 mark)

A. Point source epidemic curve

B. Continuous source epidemic curve

C. Propagated epidemic curve

D. Mixed epidemic curve

12. Which of the following is NOT a type of sampling used in biostatistics? (1 mark)

A. Simple random sampling

B. Stratified random sampling

C. Convenience sampling

D. Systematic sampling

13. Which of the following is NOT a type of risk used in epidemiology? (1 mark)

A. Absolute risk

B. Relative risk

C. Attributable

D. Standard risk

14. Which of the following is NOT a type of study design used in outbreak investigation? (1 mark)

A. Case-control study

B. Cohort study

C. Cross-sectional study

D. Experimental study

15. Which of the following is NOT a type of bias in biostatistics? (1 mark)

A. Selection bias

B. Recall bias

C. Confounding bias

D. Random bias

16. Which of the following is NOT a type of measure of diseases frequency? (1 mark)

A. Prevalence

B. Incidence

C. Mortality rate

D. Attributable risk

17. Which of the following is NOT a type of study design used in health economics? (1 mark)

A. Cost-effectiveness analysis

B. Cost-benefit analysis

C. Cost-utility analysis

D. Cohort study

18. Which of the following is NOT a type of association biostatistics? (1 mark)

A. Positive association

B. Negative association

C. Correlation

D. Casual association

19. Which of the following is NOT a type of surveillance used in epidemiology? (1 mark)

A. Active surveillance

B. Passive surveillance

C. Syndromic surveillance

D. Experimental surveillance

20. Which of the following is NOT a type of epidemiological study design? (1 mark)

A. Cross-sectional study

B. Case-control study

C. Cohort study

D. Experimental study

SECTION B: SAQS (40 MARKS)

QUESTION TWO

1. Define the following term "incidence rate" and explain how it differs from prevalence. (4 marks)
2. What is the purpose of confidence interval in statistics analysis? (4 marks)
3. Explain the concept of" herd immunity" and its relevance in epidemiology. (4 marks)
4. Differentiate between sensitivity and positive predictive value in the context of diagnostic testing. (4 marks)
5. Describe the purpose of case-control study and provide an example of research question suitable for this study design. (4 marks)
6. Briefly explain the concept of the "p-value" in hypothesis testing. (4 marks)
7. What is the purpose stratified random sampling in epidemiological research? (4 marks)
8. Define "odds ratio" and explain its interpretation in case-control study. (4 marks)
9. How does cross-sectional study differ from a cohort study in terms of data collection and study design? (4 marks)
10. Why is randomization important in clinical trials, and what potential biases it help to minimize (4 marks)

SECTION C: LAQs

QUESTION THREE (40 MARKS)

1. Discuss the concept of confounding in epidemiology studies. Provide examples of confounding variables, explain how they can distort study results, and discuss strategies for identifying and controlling confounding in research. (20 marks)
2. Explore the concept of surveillance in epidemiology. Discuss the importance of surveillance systems in monitoring and controlling infectious diseases, providing specific examples of how surveillance contributes to public health. (10 marks)
3. Examine the role of statistical measures such as sensitivity, specify, and predictive values in evaluating the performance of diagnostics tests. Provide a comprehensive discussion on how these measures inform clinicians and researchers about the accuracy and utility of diagnostics tests in different settings. (10 marks)