



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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MAIN EXAMINATION

SEPTEMBER –DECEMBER 2021

FACULTY OF SCIENCE

DEPARTMENT OF COMMUNITY HEALTH AND DEVELOPMENT

REGULAR PROGRAMME

DCHD 212: EPIDEMIOLOGY

Date: DECEMBER 2021

Duration: 3 Hours

- INSTRUCTIONS:** Write your number on every page
 - Answer ALL Questions in the booklet provided
- Write legibly

SECTION A: SHORT ANSWER 13 QUESTIONS (ANSWER ALL QUESTIONS):

30

MARKS

1. Define “epidemiology”. **(2 marks)**
2. List three objectives of epidemiology. **(3 marks)**
3. Distinguish between Diagnostic test and screening test **(2 marks)**
4. Distinguish between observational and interventional studies. **(4 marks)**
5. List any four types of observational studies. **(4 marks)**
6. Nancy and John have visited the hospital. Nancy has fever, joint pains, headache and is vomiting. On the other hand, John looks fine and has no signs. When their blood is tested, malaria parasites are confirmed in both of them. How can you explain this? **(2 marks)**

7. List any four factors that may lead to an increase of incidence of a disease.

(4

marks)

8. List any four differences between incidence and prevalence. (4 marks)

9. Disease burden can be expressed as a ratio or a rate. Between 2000 and 2017, WHO reported that the number of maternal deaths per 100,000 live births dropped by about 38% worldwide. This is an example of?

(1

mark)

10. The definition of epidemiology is sometimes summarized as “5 Ws”: 1- Who; 2- Where; 3- When; 4- Why; and 5- What (can be done). Analytical epidemiology is concerned with which of these? (1 mark)

11. A retrospective study design where subjects are sampled by disease status and is often used when the investigator is interested in rare diseases is called? (1 mark).

12. A study design that can be either retrospective or prospective and is often used when the investigators are interested in rare exposures is known as? (1 mark)

13. A study design where disease status and presence / absence of both exposure and disease assessed at the same point in time is known as? (1 mark)

SECTION B: LONG ANSWER QUESTIONS: Answer Any TWO Questions 40 Marks

14. You have been employed in an NGO working with the community to reduce childhood diarrhoea and improve sanitation. The project conducts research activities to make decisions.

15. In your own words briefly describe the epidemiological triad [also known as the Traditional

16. model of causation of infectious diseases]. You might want to support your description with

17. a figure or diagram.

18. In your own words briefly describe the epidemiological triad [also known as the Traditional

19. model of causation of infectious diseases]. You might want to support your description with

20. a figure or diagram.

- i. Briefly discuss the determinants of this health state that you will mostly be studying. **(12 marks)**
- ii. If a study on the above problem was carried out among 300 children, among whom, 100 had diarrhea, draw a simple table showing how the sickness will likely be distributed among all the children by applying the concepts of the study of variables. **(8 marks)**

1. You want to evaluate the use of Creatine Kinase (CK) as a diagnostic test for acute myocardial infarction (AMI). This test was conducted on 360 consecutive patients admitted to the intensive care unit with suspected AMI. A CK LEVEL OF 80 iu was selected as normal. Each person was also diagnosed by a team of expert cardiologists who did not know the result of the CK determination. The results are summarized below:

	AMI present	AMI absent	Total
CK result positive	215	16	231
CK result negative	15	114	129
Total	230	130	360

- a) Use the information above to answer the questions below on validity and reliability of diagnostic tests.
 - i. The prevalence of the disease in the study population is: **(2 marks)**
 - ii. Calculate the sensitivity of the CK test. **(2 marks)**
 - iii. Calculate the specificity of the CK test. **(2 marks)**
 - iv. What is the positive predictive value of the test? **(2 marks)**
 - v. What is the negative predictive value of the test? **(2 marks)**

- b) The following data is from a cross sectional study on the determinants of typhoid infection among a population of 380 study participants. The diagnosis of typhoid was carried out on a blood sample drawn from a simple random population attending Mama Lucy Hospital. The disease pattern was compared with a risk factor: type of drinking water. The results are presented in the table below.

	With Typhoid	Without typhoid	Total
Boiled water	20	260	320
Not boiled water	80	20	100
	100	280	380

- i. Calculate the relative risk associated with the type of drinking water. **(4 marks)**
 - ii. Determine the odds ratios associated with the type of drinking water. **(4 marks)**
 - iii. Interpret the results (odds ratio) in (ii) above. **(2 marks)**
1. In the study of epidemiology, various study designs are used
- i. List the types of study designs from the least to the strongest in increasing knowledge of disease associations and exposures. **(4 marks)**
 - ii. Define a cross-sectional study and outline any three strengths of cross-sectional studies. **(8 marks)**
 - iii. Outline any three weaknesses of cross-sectional studies. **(3 marks)**
 - iv. Define a case control study and outline any three sources of controls in such studies. **(5 marks)**

END

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