

AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF PUBLIC HEALTH
DEPARTMENT OF COMMUNITY HEALTH
MASTER OF PUBLIC HEALTH
END OF SEMESTER EXAMINATION APRIL 2025

UNIT CODE: MPH 713

UNIT NAME: PRINCIPLES OF EPIDEMIOLOGY

DATE: XX April, 2025

TIME : Two (3) Hours

TIME: Three Hours

Start: 17:00 Hours

Finish 19:00 Hours

Date:

INSTRUCTIONS

1. This exam is marked out of 100 Marks
2. This Examination comprises TWO Sections
Section A: Compulsory Question (25 Marks)
Section B: Long Answer Questions (75 Marks)
3. All questions in Section A are compulsory and Answer any THREE questions in Section B
4. This online exam shall take 3 Hours
5. Late submission of the answers will not be accepted
6. Ensure your web-camera is on at all times during the examination period
7. No movement is allowed during the examination
8. Idling of your machine for 5 min or more will lead to lock out from the exam
9. The Learning Management System (LMS) has inbuilt integrity checks to detect cheating
10. Any aspect of cheating detected during and or after the exam administration will lead to nullification of your exam
11. In case you have any questions call the Invigilator on Tel +254720573449
12. For adverse incidences please write an email to: amiu.examinations@amref.ac.ke

SECTION A: COMPULSORY QUESTION (25 MARKS)

1. Define Bias as used in Epidemiological studies **5 Marks**
2. Explain two reasons why Breast cancer meets all criteria for **disease to screen** in a population **(5 marks)**
3. Explain five characteristics of a good screening test **(5 Marks)**
4. Use the following choices for the characteristics or features listed below: **(4 Marks)**

A. Incidence

B. Prevalence

_____ Measure of risk

_____ Generally preferred for chronic diseases without clear date of onset

_____ Used in calculation of risk ratio

_____ Affected by duration of illness

5. To study the causes of an outbreak of aflatoxin poisoning in Africa, investigators conducted a case-control study with 40 case-patients and 80 controls. Among the 40 poisoning victims, 32 reported storing their maize inside rather than outside. Among the 80 controls, 20 stored their maize inside. Calculate odds ratio for the association between inside storage of maize and illness. **6 Marks**

SECTION B (Set 5 Questions)

ANSWER ANY THREE (3) QUESTIONS (75 Marks)

Long Answer Questions

1.
 - i. Using one relevant example explain how you would randomize 3000 participants from a pool of 5000 eligible participants into **two** study arms, from screening to study arm assignment **(10 Marks)**
 - ii. Discuss the role of randomization process and Blinding/masking in clinical trials study design **(15 Marks)**
2. Define “Case Definition” as used in outbreak investigations and discuss five important steps in investigating a communicable disease outbreak **(25 Marks)**
3.
 - i. Discuss five types of biases in research and how to control/mitigate them **15 marks**
 - ii. List 3 strengths and 3 limitations of a cross sectional study design **10 Marks**
4. Using relevant examples distinguish between screening and diagnostic tests. **10 Marks**

- i. In the examples of the sensitivity and specificity below

		Disease		
Test result		Present	Absent	
	Positive	34		Total Positive results =49
	Negative		282	Total Negative results=292

Calculate the following

- i. Sensitivity **5 marks**
 - ii. Define Predictive value as used in screening tests **5 Marks**
 - iii. Differentiate between false positive and false negative test results **5 Marks**
5. i. During the previous year, nine residents of a community died from cervical cancer. List at least 5 reasons that might justify an outbreak investigation. **(10 Marks)**
- ii. Investigators conducted a case-control study of histoplasmosis among industrial plant workers in Nebraska. The following table shows the number of case-patients and controls who worked in Building X, near a recently excavated site

	Cases	Controls	Total
Building X	15	8	23
Other Building	7	23	30
Total	22	31	53

Calculate this measure. **(5 Marks)**

- iii. Using one relevant example describe how RCTS can be used in Policy formulation and programming **(10 marks)**