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

MPH 713:   **PRINCIPLES OF EPIDEMIOLOGY**
DATE: **26th April 2023**
TIME: **Start: 4 PM**   **Finish 7 PM**

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 for this exam on Tel. 0723800089 and or the Head of Department on Tel +254720573449
12. For adverse incidences please write an email to: amiu.examinations@amref.ac.ke

SECTION A COMPULSORY (25 MARKS)

a. List 3 differences between analytical and observational study designs? (6 Marks)
b. List down 5 key features of a randomized control study? (5 Marks)
c. List down differences between a cohort study and a case-control study (5 Marks)
d. Name a study design you would recommend to use in studying the prevalence of malnutrition among children living in an informal settlement of Kibra? (2.5 marks) provide a reason for your choosing the study design above (2.5 marks)
e. List down **two** necessary conditions for "confounding" in epidemiological studies? (4 marks)

SECTION B: ANSWER <u>ANY THREE (3)</u> QUESTIONS

Q1.

a. 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. What is the resulting odds ratio for the association between inside storage of maize and illness? **(5 Marks)**
b. Define disease case definition as used in epidemiology **(5 Marks**
c. List five criteria for classifying whether a person has Cholera **(5 Marks)**
d. Using relevant examples differentiate between a false positive and a false negative result **(4 marks)**
e. List down 3 implications of false positive and false negative results in public health **(6 Marks).**

Q2.

a. List 5 specific applications of epidemiology in public health **(5 Marks)**

b. Using either Malaria **OR** HIV as an example outline the chain of infection by identifying. (Where applicable)
   i. Reservoirs: (4 Marks)
   ii. Portals of exit: (4 Marks)
   iii. Modes of transmission: (4 Marks)
   iv. Portals of entry: (4 Marks)
   v. Factors in host susceptibility (4 Marks)

Q3.

a.) Differentiate between Primary Prevention and Secondary Prevention as applied in Epidemiology
(5 Marks)

b). How do you minimize biases in a prospective cohort study?

(5 Marks):

c. Define **Blinding/Masking** as used in clinical trials (5**marks**)

d. List down strengths and limitations of two main epidemiological study designs **(10 Marks)**

Q4. Using **TWO relevant** examples distinguish between screening and diagnostic tests. (**10 Marks**)

ii. 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

a. Sensitivity   **3 marks**
b. Specificity   **3 marks**
c. Calculate positive predictive value **4 Marks**
d. Define Predictive value as used in screening tests   **5 Marks**

Q5. You are studying the relationship between exclusive breastfeeding and gastrointestinal infection among HIV-uninfected infants born to infected mothers. You decide to recruit a group of women who have chosen to breastfeed exclusively and a group of women who have chosen to formula feed. You ask the women to record the number of diarrheal episodes their infants have over a 6- month period and compare the number of episodes experienced by infants in the two groups.

i. Name the study design ? Explain your answer (**5Marks)**
ii. Explain in detail how you will recruit the study participants into the study bearing in the following **guiding principles (20 Marks)**
   a. Participants selection and screening phase
   b. Participants assignment into the study groups
   c. Follow up and risk/outcome measurement/assessment (relative risk)