AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF PUBLIC HEALTH
DEPARTMENT OF COMMUNITY HEALTH
MASTER OF PUBLIC HEALTH
END OF SEMESTER EXAMINATION AUGUST 2024

UNIT CODE: MPH 713
UNIT NAME: PRINCIPLES OF EPIDEMIOLOGY
DATE: **24th April 2024**
TIME: Three Hours   **Start:** 1600 Hours   **Finish** 1900 Hours

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. The question on Section A is 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 Virtual Assessment System (VAS) 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 +254723800089 or Head of Department on Tel +254720573449
12. For adverse incidences please write an email to: amiu.examinations@amref.ac.ke

SECTION A: COMPULSORY QUESTIONS (25 Marks)

Question 1.

a. Define "Case Definition" as used in outbreak investigations **(5 Marks)**

b. List 3 strengths and 2 limitations of a randomized controlled study designs **(5 Marks)**

c. Explain five different classifications for modes of disease transmission. **(5 Marks)**

d. A new screening test has been developed that can detect prostate cancer in men. List down 5 pieces of information you need to know before deciding if the screening test should be used to test asymptomatic men for prostate cancer at the community? **(5 Marks)**

e. List down the necessary conditions for "confounding" in epidemiological studies? **(5 Marks)**

SECTION B: ANSWER ANY THREE (3) QUESTIONS (75 Marks)

Question 2.

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 six-month period and compare the number of episodes experienced by infants in the two groups.

a). What type of study is this? **2 Marks**

b). list down 2 advantages of using this type of study design **5 Marks**

c). List down 2 disadvantages **5 Marks**

d). List down 3 possible Bias and 2 confounders that the researcher is likely to experience **10 Marks**

e.) Using the epidemiologic triangle (agent, host and environment) that you have learnt describe cholera outbreak as an example **3 Marks**

Question 3.

The following data were obtained on 100 women newly diagnosed with ovarian cancer and a sample of 100 demographically-similar women seeking care at the same location as the women with cancer.

Abdominal bloating	Type of patient	
	Ovarian cancer	Other
YES	43	8
NO	57	92

	100	100	

Calculate the following
   a. Specificity   **5. Marks**
   b. Sensitivity   **5. Marks**
   c. Positive predictive value **5 Marks**
   d. Negative Predictive Value **5Marks**
   e. *Is* HIV self-testing a screening test or a diagnostic test? (***List down 5 reasons to support your answer)***

Question 4.

List down 5 types of study design biases and how to control for each one them in the following epidemiological study designs

   a. Case control study design   **10 Marks**
   b. The cohort study design   **10 Marks**
   c. Explain double blinding/masking as used in clinical trials **5 Marks**

Question 5.
Multiple observational studies have shown evidence that male circumcision can reduce the risk of acquiring HIV.
a. List down **Two** reasons why randomized trials were necessary before recommending circumcision as an HIV prevention intervention   **5 Marks**
b. Using the Hill's criteria to establish the observed association, explain using at least FIVE HILLS criteria in the male circumcision study as an example **20 Marks**

Question 6.
In a cohort study to establish the association between oral contraceptive (OC) use and the risk of developing bacteriuria in women, the researcher was able to observe the following information as indicated in the table

Oral Contraceptive use	Yes	No	Total
Yes	**27**	**455**	**482**
No	**77**	**1831**	**1908**
Total	**104**	**2286**	**2390**

   i.   Calculate incidence in the exposed   **2.5 Marks**
   ii.   Calculate incidence in the none exposed   **2.5 Marks**
   iii.   Calculate the relative risk   **5 Marks**
   iv.   calculate the attributable risk   **5 Marks**
   v.   Explain what the Relative Risk Magnitude means in this study   **5 Marks**

vi.   Explain other study design that would be appropriate to apply besides the cohort study design in the above example   **5 Marks**