AMREF INTERNATIONAL UNIVERSITY

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF COMMUNITY HEALTH

MASTERS IN COMMUNITY HEALTH PRACTICE

END OF SEPTEMBER-DECEMBER TRIMESTER 2022 EXAMINATIONS

UNIT CODE: MPH 713

UNIT NAME: Principles of Epidemiology

Date: 9th December 2022

TIME : Two (3) Hours

Start: 4.00 PM Stop: 7.00 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 on Tel +254720573449
12. For adverse incidences please write an email to: amiu.examinations@amref.ac.ke

SECTION A: COMPULSORY QUESTION (25 MARKS)

1. List down five important steps in investigating a communicable disease outbreak. **(5 Marks)**
2. Explain two reasons why HIV meets all criteria for **disease to screen** in a population . **(5 marks)**
3. List down 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: LONG ANSWER QUESTIONS (24 MARKS EACH) ANSWER THREE QUESTIONS

6.
   i. Describe two necessary conditions for "confounding" in epidemiological studies? . **(5marks)**
   ii. **Explain** why a randomization process is important in clinical trials study design . **(5 Marks)**
   iii. Using one relevant example explain how you would randomize 3000 participants from a pool of 5000 eligible participants into **two** study arms **(10 Marks)**
   iv. Explain Blinding/masking as used in clinical trials (**5 Marks**)

7. i. Define "Case Definition" as used in Outbreak Investigations **5 Marks**
   ii. Use **ONE** of the following examples (HIV, Dengue Fever, COVID 19) to develop a case definition guide (**10 Marks)**
   iii. Describe the strength and limitation of the three main epidemiological study designs (**10 marks)**

8. i. Describe five strategies used to minimize biases in epidemiological studies **(15 marks**)

ii. List **5 Strengths and 5 Limitations** of a cross sectional study design (**10 Marks)**

9. i. Using 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 (**4 marks)**
b) Specificity (**4 marks)**
c) Calculate positive predictive value(**4 Marks**)
d) Define Predictive value as used in screening tests above (**3Marks)**
e) Differentiate between false positive and false negative test results (**5 Marks**)

10. i). During the previous year, nine residents of a community died from cervical cancer. List at least 4 reasons that might justify an outbreak investigation. (**8 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**

b). Describe the appropriate **measure of association**? **(4 Marks)**
c). Calculate this measure. (**8 Marks**)