W1-2-60-1-6

JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY
UNIVERSITY EXAMINATIONS 2021/2022
EXAMINATIONS FOR THE DEGREE OF MASTER OF SCIENCE IN EPIDEMIOLOGY
PEH 3103: EPIDEMIOLOGICAL METHODS

DATE: JULY/AUGUST 2022 **TIME: 3 HOURS**

Q1. Describe the types of epidemiologic studies (25 marks)

Q.2

i. Discuss the application of Epidemiology in Public Health and Clinical Practice (15 Marks).

ii. Within 10 days after attending a June wedding, an outbreak of cyclosporiasis occurred among attendees. Of the 83 guests and wedding party members, 79 were interviewed; 54 of the 79 met the case definition. The following two-by-two table shows consumption of wedding cake (that had raspberry filling) and illness status.

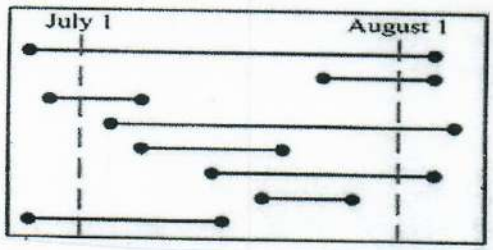
		Ill	Well	Total
Ate wedding cake?	Total	54	25	79
	Yes	50	3	53
	No	4	22	26

Calculate the following; (2 Marks each)

a) Incidence proportion
b) Food-specific attack rate
c) The association between wedding cake and illness
d) The attributable proportion for wedding cake
e) Odds ratio

Q.3

a) Explain the **pros** and **cons** of a prospective cohort study (13 Marks)
b) Use the following diagram for Question Q.3. Assume that the horizontal lines in the diagram represent duration of illness in 8 different people, out of a community of 700.



i. Determine the prevalence of disease during July? (2 marks)
ii. Determine the incidence of disease during July? (2 marks)
iii. Determine the cumulative Incidence of the disease? (2 marks)

c) 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 and interpret the resulting odds ratio for the association between inside storage of maize and illness (6 Marks).

Q.4

i. Describe and explain the process of designing and conducting Randomized-Controlled Trials (RCTs) (15 Marks).
ii. Explain the concept of Epidemiological triad (5 Marks)
iii. Using the table below, demonstrate how you would obtain / and;

	Disease	**No Disease**	
Cases	a	b	a+b
Controls	c	d	c+d

a) An Odds Ratio
b) Interpret the results (5 Marks)

Q.5

Broadly describe the epidemiological study designs under the following.

i. Categories (2 Marks)
ii. Types (5 Marks)
iii. Advantages and Disadvantages of each (18 Marks)

Q.6

i. Explain the nature of Analytical Epidemiology (10 Marks)
ii. Differentiate between descriptive and analytic epidemiology (6 Marks)
iii. With specific examples, define the following as used in epidemiology (9 Marks).
   a) Confounders
   b) Risk Ratio
   c) Prevalence