JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

UNIVERSITY EXAMINATIONS 2023/2024

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF MASTER OF SCIENCE IN GLOBAL HEALTH, PUBLIC HEALTH, MOLECULAR MEDICINE, MEDICAL MICROBIOLOGY, MEDICAL VIROLOGY

PEH 3100/TID 3103: PRINCIPLES OF EPIDEMIOLOGY/EPIDEMIOLOGY

DATE: AUGUST 2023　　　　　　　　　　　　　　　　**TIME: 3 HOURS**

INSTRUCTIONS:　ANSWER ANY FOUR QUESTIONS

1a). How can descriptive epidemiological studies examine the following health issues in

　　Kenya

　　i.　Increasing traffic injuries among "bodaboda" riders both in urban and rural settings
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　(5 Marks)
　　ii.　Increase in obesity among city dwellers (5 Marks)
　　iii.　Surge in diabetes among youths (5 Marks)

1b). In a recent study of dental erosion in 5-year-old children, 202 healthy school-attending children were selected for study. The investigators recorded the erosion level on their maxillary deciduous incisors and whether or not their communities used fluoridated water. The results are summarized in the table below:

	Evidence of erosion	No evidence of erosion	Total
Fluoridated area	46	30	**76**
Non-fluoridated area	77	37	**114**
Total	123	67	**190**

　　i.　What is the incidence rate of erosion over the five years for the two groups of children? You may assume their teeth were free of erosion at birth. (2 Marks)
　　ii.　What is the rate difference between the fluoridated areas and nonfluoridated areas?
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　(2 Marks)

　　iii.　What is the relative risk for those in the nonfluoridated group? (Hint: The nonfluoridated group are the exposed children. (2 Marks)
　　iv.　Based on your data above, does fluoridation appear to confer a risk of increased dental erosion or a protective tendency? Justify your response by appealing to the numeric value you calculated in part iii. (4 Marks)

2a). Briefly discuss case control studies including their merits and draw backs (15 Marks)

2b). Under what circumstances can prevalence of a disease in a population decrease (6 Marks)

2c). In your understanding, how are incidence and prevalence of a disease related? (4 Marks)

3a). Distinguish between primordial and primary prevention giving an example in each case.
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　(4 Marks)

3b). Briefly discuss the purpose of secondary prevention? (6 Marks)

3c). Specific protection and health promotion are approaches for primary prevention, discuss (15 Marks)

4a). Epidemiology plays a vital role in policy evaluation. Discuss how the field epidemiology might inform policy evaluation of laws that regulate cigarette smoking in public places (15 Marks)

4b). Briefly discuss merits and demerits of standardized mortality ratios (SMR) (10 Marks)

5a). Discuss objectives of epidemiology as a field of study? (15 Marks)

5b). Within few days after attending a 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 table shows consumption of wedding cake (that had raspberry filling) and illness status.

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

i. Based on the above information, calculate the overall cyclosporiasis attack rate among the wedding attendants that were interviewed. (2 Marks)
ii. The fraction 50/54 is a/an? Why? (2 Marks)
iii. The fraction 50/53 is a/an? Why? (2 Marks)
iv. What is the best measure of association to use in this data set? (1 Mark)
v. Calculate your measure you chose in (iv) above and briefly interpret your result (3 Marks)

6a). Contrast the prevalence and incidence of a disease (10 Marks)

6b). In reference to screening programs, what is your understanding of Lead Time Bias and Length Time Bias? (10 Marks)

6c). Distinguish between mass screening and high-risk screening? (5 Marks)