



W1-2-60-1-6

**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY  
UNIVERSITY EXAMINATIONS 2019/2020**

**MASTER OF SCIENCE IN EPIDEMIOLOGY  
JKUAT-KEMRI PROGRAMME**

**TPH 3103: : APPLICATION OF EPIDEMIOLOGICAL METHODS**

**DATE: February 2020**

**TIME: 3 HRS**

**INSTRUCTIONS: ANSWER ANY FOUR (4) QUESTIONS**

Q1

- a) Describe the dimensions of data quality in health (12 marks)
- b) List the approaches used to strengthen data quality (8 marks)
- c) Outline the data entry process (5 marks)

Q2

- a) Citing relevant examples, describe the following classes of health indicators
  - i) Health status (5 marks)
  - ii) Health behavior (5 marks)
  - iii) Access to healthcare (5 marks)
- b) A complaint from community members in Ganze Sub-County, Klifi County was received by the CEC Health in the County regarding services offered by health facilities in the region. The CEC directed the Chief Officer-Health to investigate the matter. Being the County Epidemiologist you have been assigned the task of undertaking this work by the Chief Officer and report back. Discuss the Health System Performance Indicators you would consider important in this case. (10 marks)

Q3

- a) Discuss the various aspects of foodborne outbreaks (15 marks)
- b) Outline any 5 uses of public health surveillance (5 marks)
- c) Write brief notes on sentinel surveillance (5 marks)

Q4

- a) A community party was held on 12<sup>th</sup> December 2019 to celebrate the KCPE performance of class 8 pupils of a local primary school. After the party, the Public Health Officer in-charge of location reported the occurrence of an outbreak of acute gastrointestinal illness to the Medical Officer in the area, Dr Nancy Mwangangi. Consequently, Mr John Chanzo, the County Epidemiologist was assigned to conduct an investigation. All Persons that had been ill had attended the party. Additional reports revealed that persons that had not attended the party

had not become ill. Interviews regarding the presence of symptoms, including the day and hour of onset, and the food consumed at the party were completed on 100 persons known to have been present. A total of 58 persons who had experienced gastrointestinal illness were identified (Table 1).

Table 1: Attack rates by meal served during a community party on 12<sup>th</sup> December 2019

| Food-type   | Number of persons who ate specified item |      |       |                 | Number of persons who did not eat specified item |      |       |               |
|-------------|--|------|-------|-----------------|--|------|-------|---------------|
|             | Ill                                      | Well | Total | Attack rate (%) | Ill  | Well | Total | Attack rate % |
| Ugali       | 29                                       | 17   | 46    |                 | 29   | 25   | 54    |               |
| Mukimo      | 31                                       | 17   | 48    |                 | 27   | 25   | 52    |               |
| Chapati     | 28                                       | 22   | 50    |                 | 30   | 20   | 50    |               |
| Cabbage     | 33                                       | 27   | 60    |                 | 25   | 15   | 40    |               |
| Chicken     | 24                                       | 22   | 46    |                 | 34   | 20   | 54    |               |
| Beef-stew   | 5  | 5    | 10    |                 | 53   | 37   | 90    |               |
| Tea         | 13                                       | 11   | 24    |                 | 45   | 31   | 76    |               |
| Kachumbari  | 56                                       | 11   | 67    |                 | 2  | 31   | 33    |               |
| Water       | 25                                       | 22   | 47    |                 | 33   | 20   | 53    |               |
| Sukuma-wiki | 6  | 4    | 10    |                 | 52   | 38   | 90    |               |
| Fruit salad | 29                                       | 17   | 46    |                 | 29   | 25   | 54    |               |

Compute the attack rates and determine which food-type potentially led to food poisoning and interpret your findings (15 marks)

b) Describe the various data sources for public health surveillance (10 marks)

Q5

Discuss environmental risk analysis under the following themes:

- i) Classification
- ii) Model of risk assessment
- iii) Risk management strategies

(25 marks)

Q6

- a) Write briefly on random error and systematic error (10 marks)
- b) Distinguish between differential and non-differential misclassification (5 marks)
- c) Compare direct and indirect standardization (5 marks)
- d) Describe data coding approaches (5 marks)