

**FACULTY OF COMMERCE  
DEPARTMENT OF ECONOMICS  
MASTER OF SCIENCE DEGREE IN HEALTH ECONOMICS  
EPIDEMIOLOGY MEC 520 (3)  
EXAMINATION DURATION 3 HOURS**

**INSTRUCTIONS**

1. This paper carries six questions
  2. Answer any four (4) questions.
  3. All questions carry 25 marks.
  4. Cell phones are not allowed in the examination room.
  5. A calculator is allowed in the examination room.
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15 NOV 2024

**QUESTION 1**

You are an Epidemiologist in the national office, and you receive reports of a district facing an outbreak of cholera, which appears to have started in an overcrowded and underserved refugee camp and has spilled over to the host community.

For now, it appears to have largely affected children under 15 years but is affecting some older adults. Even without in-depth analysis of the data, the affected populations appear to be those who are religious decliners or living in hard-to-reach areas with limited access to health services.

While the District Health Team acknowledges that the situation is concerning, they are in the middle of a twice postponed mass measles campaign and say they are unable to spare the manpower to investigate. Partners exist in the district; however, their support is focused on nutrition activities.

Describe your priority response actions, including who you would collaborate with to address this unfolding emergency, what strategies you would use, and what you would be aiming for.

[25 marks]

**QUESTION 2**

Describe giving examples the key tenets of the event-based surveillance system and its applicability in Covid-19 surveillance

[25 Marks]

**QUESTION 3**

Hypothesis generation is the most important step of an outbreak investigation. Discuss [25 marks]

**QUESTION 4**

As an epidemiologist you are confronted with the following information of an outbreak of Typhoid Fever in Harare and you are requested by the minister to summarize the data and make recommendations. The suburbs represented were the top 5 with cases and the data was of the 9<sup>th</sup> of April 2019

Outbreak start date: 20 Oct 2018.

	Total	<15 years	15+ years	Female	Male
<b>Harare Total</b>	1800542	599580	1197360	930880	869662
<b>Mbare</b>	90750	30220	60348	46918	43832
<b>Budiriro</b>	136531	45465	90793	70587	65945
<b>Glen View</b>	128037	42636	85145	66195	61842
<b>Kuwadzana</b>	181364	60394	120607	93765	87599
<b>Mufakose</b>	62459	20799	41535	32291	30168

Table 1: Population dynamics

Suburb	Total	Female	Male	<15 years	15+ years
<b>Mbare</b>	217	100	117	102	115
<b>Budiriro</b>	215	91	124	117	98
<b>Glen View</b>	344	163	181	192	152
<b>Kuwadzana</b>	52	24	28	18	34
<b>Mufakose</b>	340	152	182	160	180
<b>Others</b>	958	599	691	605	693
<b>Total</b>	2126	1129	1323	1194	1272

Table 2: Number of Typhoid cases

[25 marks]

**QUESTION 5**

John Snow is often described as the father of epidemiology. Describe John Snow's contribution to the field of epidemiology [25 marks]

**QUESTION 6**

- a. An epidemiologist is often faced with terms and the Covid-19 pandemic made many terms very famous. However, if used out of context epidemiological terms may be

dangerous. Using Covid-19 as an example explain the following terms describing the implications of each:

- i. Public health emergency of international concern
- ii. Epidemic
- iii. Endemic
- iv. Pandemic

[12 marks]

- b. 10 people are randomly selected from a population and their weights are measured in kilograms as 82.3, 67.3, 68.6, 57.7, 67.3, 60.5, 61.8, 54.5, 73.2 and 85.9. Calculate the mean, median, variance, standard deviation, and standard error for the sample.

[13 marks]