



UNIVERSITY OF ESWATINI  
Faculty of Health Sciences  
Department of Environmental Health Science

DEGREE IN ENVIRONMENTAL HEALTH SCIENCE

**RE-SIT EXAMINATION PAPER 2020**

TITLE OF PAPER	:	FUNDAMENTALS OF EPIDEMIOLOGY
COURSE CODE	:	EHS207
DURATION	:	2 HOURS
MARKS	:	100
INSTRUCTIONS	:	READ THE QUESTIONS & INSTRUCTIONS CAREFULLY
	:	<b>QUESTION ONE IS COMPULSORY THEN ANSWER ANY OTHER THREE QUESTIONS</b>
	:	EACH QUESTION <b><u>CARRIES 25</u></b> MARKS.
	:	WRITE NEATLY & CLEARLY
	:	NO PAPER SHOULD BE BROUGHT INTO THE EXAMINATION ROOM.
	:	BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER.
	:	<b>INDICATE YOUR PROGRAM</b>

DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED BY THE INVIGILATOR.

### QUESTION 1

Epidemiology date to a number of years back and has translated from observational data to preventive action. Epidemiology has played a very pivotal role in providing the rational basis on which effective prevention programs can be planned and implemented and thus control of diseases. This has been based on the contribution by a number of land-mark including that of Edward Jenner and John Snow.

- a) Discuss the contribution by John Snow in details. [6]
- b) Detail the contribution by Edward Jenner into modern epidemiology. [6]
- c) Discuss Ignaz Semmelweis contribution to public health policy in terms of the following:
  - i) Observation and policy. [8]
  - ii) What caused the delay in the policy? [3]
  - iii) Lesson learnt in terms of prevention policies. [2]

**[25 MARKS]**

### QUESTION 2

The Minister of Health in Country X has recently reported that there is a need for health personnel to be more vigilant in monitoring the health of the population of this country. He urged that more attention should be paid in the reporting of the different health indicators both morbidity and mortality indicators.

- a) What is the value of morbidity data? Explain in depth. [4]
- b) However, such data (a) has its own drawbacks such as only considering the clinical cases. Thus the need to understand the ice berg effect. Discuss the ice berg concept at both cell and host response. [12]
- c) This stern warning from the minister comes after the reported outbreak of Measles in the country. It was reported that since the beginning of the month, out of the 45 678 under fives, in total, 1304 have been diagnosed with

Measles of which only 1137 were below the age of 5. Under 5s form 32% of the total children in the country.

- i) What type on morbidity indicators were use in the report? Explain. [2]
- ii) Calculate the burden of Measles among the under 5s. [2]
- iii) Females were mostly affected as they contributed 65% of the under5. Calculate the sex ratio. [2]
- iv) Epidemiologists have warned the public however about possible explanations of the observed prevalence rate of the cases. Give 3 possible factors to consider. [3]

**[25 MARKS]**

### **QUESTION 3**

In the previous year, it was reported that there was an outbreak of an unidentified disease in Country P. It was reported in the news that a number of people were reported to have reported to the hospital showing similar clinical signs of an unspecified disease. This lead to the clinical staff reporting to the environmental health unit about the observation. There was therefore a need to determine the possible source of exposure of the indicated symptoms. However, upon investigations, the officials failed to identify the source of factors associated with the reported symptoms.

- a) What are the possible explanations for failure to identify the sources of exposure for this disease? Explain them. [4]
- b) Discuss the steps that were conducted by the environmental Health unit in the investigation. [8]
- c) What is therefore the recommended way forward? Explain. [3]
- d) What is the name given to such cases and explain their role in Epidemiological studies. [4]
- e) There is need to conduct further studies in this community, explain the dimension of a research design. [6]

**[25 MARKS]**

#### QUESTION 4

The summer season is soon approaching thus the Malaria Control Program will be up and about strengthening their surveillance system and control measures. This includes placing much consideration on the four factors that play a role in causing the disease.

- a) Explain the 4 factors responsible for the cause of Malaria. Give relevant examples under each factor. [12]
- b) What are the objectives of the surveillance system? [5]
- c) Early this year, the country launched the "Zero Malaria" Fund. This comes after the country has managed to maintain the endemic cases low for a number of years. However, as a country there are still sporadic outbreaks from time to time. For instance, in the year 2014, there were 107 cases, 2015; 145 cases, 2016; 101 cases, 2017:83 cases and 2018 there were 87 cases.
  - i) What is meant by sporadic outbreaks? [2]
  - ii) What could be the possible explanation of the change in the number of cases? Explain. [3]
  - iii) What could be the possible for the rise in the number of cases in 2015? Explain. [3]

**[25 MARKS]**

#### QUESTION 5

- a) Church T recently hosted a women conference and invited a number of congregates to take part in the event. However, the conference ended tragically with 23 of the members admitted in the nearby hospital. Sadly, four of the 23 died in the hospital. It all started in the evening of the Saturday of the conference weekend. There were a group of ladies who called the Bishop to pray for some ladies who had just collapsed after complaining of stomach cramps. These were rushed to the hospital and while on the way, an ambulance had to be called as more were complaining of the stomach ache. In total 38 congregates were taken to hospital while others chose to go to their

respective homes. In total as per the registration, there were 275 congregates during the conference. When probed, it was suspected that it was the lunch they had. The lunch comprised of beef curry, chicken curry, rice and samp. The salads were coslow and beetroot salad. Those admitted, it was revealed that 25 ate the beef curry while the others ate the chicken curry. It was hypothesised that the culprit food was the coslow. A short questionnaire was given to the congregates who ate lunch. Out of the 273 congregates, 207 ate the coslow, of this 53 complained of the stomach ache while out of the remaining who did not eat the coslow, 6 complained of the stomach ache.

- i) Represent the above findings in a 2x2 table. [4]
- ii) What type of study is the above? Explain. [2]
- iii) Give 2 advantages and 2 disadvantages with precise explanation related to the scenario given. [6]
- iv) Is the association between the coslow salad and the stomach ache? Show all the calculations. [3]
- v) Why did the study reveal that some did not eat the said food but got ill? Give 3 possible explanations. [3]
- vi) How would you explain those who died while others recuperated? Give 3 explanations. [3]
- vii) Discuss 2 possible sources of biases for this study. [4]

**[25 MARKS]**