



**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR**

**FIRST YEAR FIRST SEMESTER EXAMINATIONS
FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN PUBLIC HEALTH**

COURSE CODE: HEM 115

COURSE TITLE: HEALTH INFORMATICS

DATE: 06/12/2022

TIME: 8:00a.m-10:00a.m

INSTRUCTIONS TO CANDIDATES

- Answer Questions ONE and ANY OTHER TWO.

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 4 Printed Pages. Please Turn Over.



QUESTION ONE (30 MARKS)-COMPULSORY

- a. Briefly explain what Epidemiology is and identify the key components. **4 Marks**
- b. Identify at least **FOUR** reasons as to why is epidemiology a big deal **6 Marks**
- c. Differentiate between descriptive and analytic epidemiology **4 Marks**
- d. Identify **FOUR** different ways through which diseases are transmitted, give at least an example of each. **4 Marks**
- e. Explain what you understand by case definition, identify the three different types of cases and show how they relate **6 Marks**
- f. The following are some inferential statistical tools/techniques. For each, indicate, when to use it; what does it tell you; what do the results look like and how would you interpret it? **10 Marks**
 - i. Correlation
 - ii. T-tests/ANOVA
 - iii. Chi-square
 - iv. Logistic Regression

QUESTION TWO (20 MARKS)

- a. Describe the chain of infection for foodborne disease caused by salmonella. **6 Marks**
- b. Using tuberculosis as an example, describe the four levels of prevention and actions required at each level for an appropriate and comprehensive preventive program. **7 Marks**
- c. Describe the types of public or environmental health problems that prevail in the developing countries (give at least three examples). **5 Marks**
- d. Briefly explain the value(s) of Health Service Statistics to an epidemiologist **2 Marks**

QUESTION THREE (20 MARKS)

- a. Epidemiologists often have to decide how to present or visualize data for ease of interpretation. Identify **TWO** visualization formats and state any three advantages of each. **4 Marks**
- b. Variables are measured on different measurement scales; enumerate the scales. **2 Marks**
- c. Using tuberculosis as an example, describe the four levels of prevention and actions required at each level for an appropriate and comprehensive preventive program. **6 Marks**
- d. Cross tabulation is a way of examining the relationship between two variables. State the procedure likely to be followed when you want to carry out cross tabulation with SPSS **5 Marks**
- e. Define the following terms using example **3 Marks**
 - i. Dependent variables
 - ii. Independent variables

QUESTION FOUR (20 MARKS)

- a. Identify the various data collection techniques that can be used in epidemiological study and enumerate each of their advantages and disadvantages. **6 Marks**

1. A sample of randomly selected students at MMUST was asked to indicate the category that best described how often they accessed campus Wi-Fi. The following was filed:

Wi-Fi usage Pattern	Count
Never	30
Rarely	15
Occasionally	50
Often	110
Daily	120

- Explain the possible data types for the two fields **6 Marks**
- Outline the steps for the construction of a pie chart for the above in SPSS **8 Marks**

QUESTION FIVE (20 MARKS)

T Test

Paired-samples statistics					
		Mean	N	Std. deviation	Std. error mean
Pair 1	Type A	1.3700	10	1.31913	.41715
	Type B	2.3700	10	1.98889	.62894

Paired-samples correlations				
		N	Correlation	Sig.
Pair 1	Type A and Type B	10	.605	.064

Paired-samples test									
		Paired difference			t	df	Sig. (2-tailed)		
		Mean	Std. deviation	Std. error mean	95% confidence interval of the difference				
					Lower	Upper			
Pair 1	Type A - Type B	-1.000	1.58815	.5022	-2.13609	.13609	-1.991	9	.078

- Precisely, interpret the results captured in the table shown above. **10 Marks**
- During statistical analysis, a researcher gets the following results (outputs) for various tests: $r = -0.05$, $r = 0.7$, $r = -0.85$ and in another test, get $p = 0.001$, $p = 0.65$ and $p = 0.048$. Identify the type of test the researcher did and interpret each of the results. **5 Marks**
- If you were a district health officer, how would you monitor the occurrence of measles and detect an epidemic in your district? **5 Marks**