GWANDA STATE UNIVERSITY

FACULTY OF ENGINEERING AND ENVIRONMENT

DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL SCIENCE

STATISTICS FOR GEOGRAPHERS

NES 2105

Main Examination Paper

June 2024

This examination paper consists of 2 pages.

Time Allowed: 3 hours

Examiner's Name: Mr. Magenge

INSTRUCTIONS

1. Answer any FOUR questions

2. Each question carries 25 marks.

3. Credit will be given to answers that are clear, illustrated, concise, and grammatically well-constructed.

1a. Define the following terms:

i. Population [2]
ii. Sample [2]
iii. Variable [2]
iv. Data [2]

b. Explain the difference between qualitative and quantitative variables, giving relevant examples of each. [6]

c. Discuss the importance of understanding the type of data being analysed in statistical research, and provide examples of how data type affects the choice of statistical methods. [12]

2a. A survey was conducted to determine the favorite ice cream flavors among 50 participants. The results are as follows:

Chocolate: 20

Vanilla: 15

Strawberry: 10

Mint: 5

i. Calculate the percentage distribution of ice cream flavors based on the survey results.[8]
ii. Draw a pie chat to represent favorite ice cream flavors from the above data. [9]

b. Draw a multiple bar chart to represent the import and export of Sugar (values in $) for the Years 2016 to 2020 as shown in the table below.

Year	**Imports**	**Exports**
2016	7930	4260
2017	8830	5225
2018	9780	6150
2019	11720	7340
2020	12150	8145

[8].

3. From the given data below 16, 25, 14, 18, 21, 23, 19, 18, 21, 49 Calculate

a) Mean [3]

b) Median [2]

c) Mode [2]

d) Range [2]

e) Variance [4]

f) Standard deviation [4]

g) Lowe quartile [3]

h) Upper quartile [3]

i) Inter-quartile [2]

4 a. Define a discrete probability distribution. [5]

b. Explain the difference between a probability mass function (PMF) and a cumulative distribution function (CDF). [10]

c. Consider a fair six-sided die. Construct the probability distribution table and graph for the outcomes of rolling the die once. [10]

5a. Define correlation coefficient and explain its significance in statistical analysis. [6]

b. Calculate the Pearson correlation coefficient for the following data pairs: (2, 4), (3, 6), (4, 8), (5, 10), (6, 12). [15]

c. Interpret the value of the correlation coefficient obtained in part (b). [4]

6a. Define Hypothesis testing and outline steps for hypothesis testing [6]

b. Explain the following terms giving examples on how they are used in quantitative statistics

i. Outlier [3]
ii. Skewness [3]
iii. Mean [3]

c. Provide an example of a real-life scenario where hypothesis testing could be applied. [10]

THE END