



**GWANDA STATE UNIVERSITY**  
**FACULTY OF ENGINEERING AND ENVIRONMENT**  
**DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL SCIENCE**

**TECHNIQUES IN GEOGRAPHY AND ENVIRONMENTAL SCIENCE**

**NES 1102**

**Main Examination Paper**

**June 2024**

This examination paper consists of 2 pages

**Time Allowed: 3 hours**

**Examiner's Name: Mr. T. Musisi**

**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.
4. Use Chiredzi 1:50000 topographic map to answer question **1**

## **SECTION A: MAPWORK [COMPULSORY]**

1a) With reference to a map legend

i) Define it [1]

ii) What is its other name? [1]

iii) Identify any one natural feature on the map legend [1]

b) Calculate

i) The bearing of spot height 559 from spot height 551 [2]

ii) Six-figure grid reference of Svuure dip tank [2]

iii) Ground distance of Jinjiri River from where it crosses Easting 55 and where it crosses Northing 08 [2]

c) i) Describe the main physical and human features on the map extract [5]

ii) Suggest two factors that attracted the establishment of Chiredzi Ranch North [2]

iii) Two economic activities that can be carried out at Manjirenji Recreational Park and justify the reasons for each of these activities [4]

iv) Draw a sketch map of the area south of Northing 08 [4]

## **SECTION B [ANSWER ANY THREE QUESTIONS]**

2 a) i) Distinguish between non-quantitative and quantitative maps [4]

ii) Explain the common mode of illustration in quantitative maps [9]

b) Describe the construction procedure of any two of the following mapping techniques: dot maps, choropleth maps, isoline maps, and proportional symbols map [12]

3. You are a statistician with the Grain Marketing Board and you want to present the amount of maize that was distributed from your depot in 2004.

a) State a suitable quantitative method you would employ for your data presentation [2]

b) Describe in detail the steps you would follow to present the data [13]

c) Examine the strengths and weaknesses of the technique used [10]

4a) Describe the different methods of expressing map scales:

i) Statement Scale [2]

ii) Ratio Scale [3]

iii) Line Scale [3]

b) What is the difference between a cadastral and a topographical map? [8]

c) Describe the five key features of a map [5]

d) What are the major uses of a map? [4]

5. The annual rainfall figures for a district for a 10-year period are given below.

1300 834 800 960 790 558 890 920 914 914

i. Calculate the mean and the standard deviation of the data [8]

ii. Find the median and the modal rainfall figures [5]

iii. Describe the method you would use to diagrammatically show the data [6]

iv. What are the advantages and disadvantages of using the method in iii) above [6]

6a. The following data shows the relationship between the salary of employees at a certain company and their number of years of service

No. of years (X)	5	10	15	20	25	30
Salary in \$ (Y)	395	490	585	680	775	890

i) Estimate the equation of the regression line [6]

ii) Using the above equation, estimate the salary of employees with 6 and 14 years of service [2]

iii) Estimate the years of service of employees who earn \$800 and \$500 [2]

b. Define the following terms as used in Transport Network Analysis

i) Beta Index [5]

ii) Alpha Index [5]

iii) The Shortest Path Matrix [5]

**THE END**

