



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF ENGINEERING AND SPATIAL SCIENCES

DEPARTMENT OF ARCHITECTURE AND SPATIAL SCIENCES

QUALIFICATION: BACHELOR OF GEOINFORMATION TECHNOLOGY	
QUALIFICATION CODE: 07BGEI	LEVEL: 7
COURSE CODE: GDG621S	COURSE NAME: GEODEMOGRAPHICS
SESSION: JULY 2022	PAPER: 2 nd OPPORTUNITY
DURATION: 3 HOURS	MARKS: 100

SECOND OPPORTUNITY/SUPPLEMENTARY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Mr Miguel Vallejo Orti
MODERATOR:	Ms Celeste Espach

INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL the questions.2. Write clearly and neatly.3. Number the answers clearly.

PERMISSIBLE MATERIALS

Calculator, ruler, pencil and eraser.

THIS QUESTION PAPER CONSISTS OF 6 PAGES (Including this front page)

Question 1

Please explain the meaning of the following terms/concepts in the field of Geodemographics:

- 1.1 Charles Booth's Descriptive map (3)
- 1.2 Poverty (3)
- 1.3 Body Mass Index (3)
- 1.4 Stratified sampling (2)
- 1.5 Enumeration areas (2)

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Question 2

- 2.1 Explain in your own words the statement 'Birds of a feather flock together'. (2)
- 2.2 What is Spatial autocorrelation and what does it measures? (3)
- 2.3 How do you interpret a result of $MI = 0.7$ in Moran Index and a result of $MI = -0.8$? (2)

[7]

Question 3

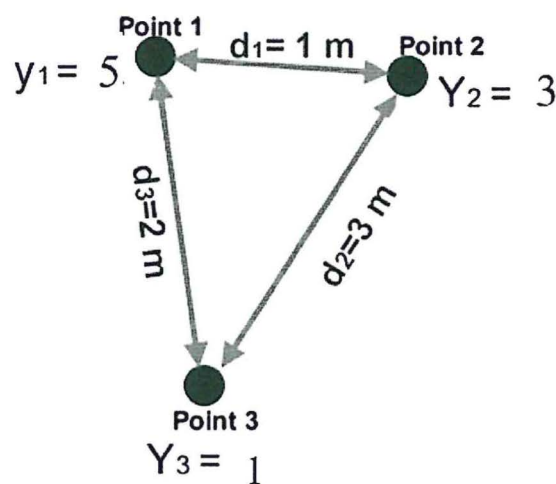
- 3.1 Define thematic maps. (4)
- 3.2 List and briefly describe the different types of thematic maps. (8)

- 3.3 List the three main limitations to the use of thematic GIS maps for neighbourhood classification. (6)

[18]

Question 4

- 4.1 The Spatial Autocorrelation (Global Moran's I) tool measures spatial autocorrelation based on both feature locations and feature values simultaneously.



$$MC = \frac{n}{\sum_{i=1}^n \sum_{j=1}^n c_{ij}} \frac{\sum_{i=1}^n \sum_{j=1}^n c_{ij} (y_i - \bar{y})(y_j - \bar{y})}{\sum_{i=1}^n (y_i - \bar{y})^2}$$

Draw the connectivity matrix (Cij) according to the dataset presented above.

Remember that the elements of this matrix are related to the distances between points following the next criteria:

- If $d \leq 2 \rightarrow c=0$
 - If $d > 2 \rightarrow c=1$
- (5)

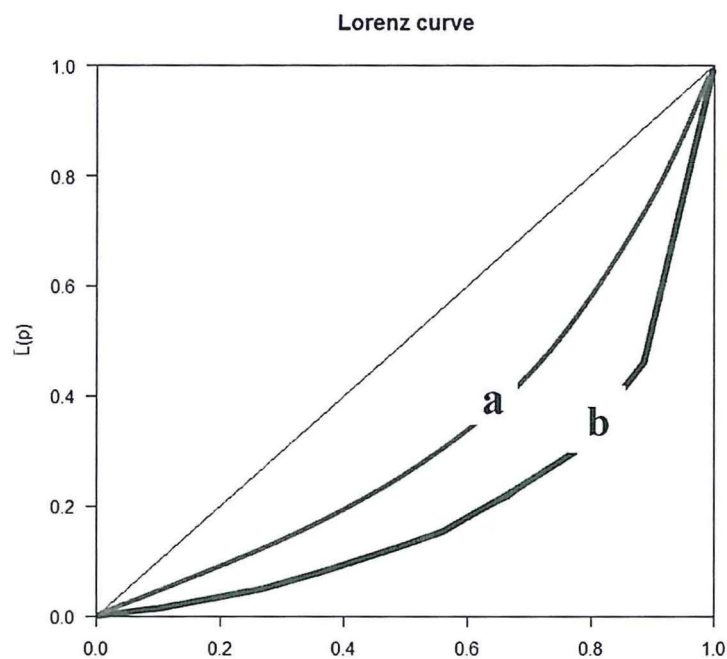
- 4.2 Calculate the Moran's I coefficient. Please write by hand all your intermediate calculations (only the result of MC is not valid and will not be marked). Notice that the values for the measurements linked to Points 1, 2, and 3 will correspond to the last three digits of your student number (A, B, C) (6 marks). (10)

- 4.3 Interpret your result for MC. Is your dataset clustered, dispersed, or random? Why?
(1mark) (3)

[18]

Question 5

- 5.1 Explain what a Lorenz Curve is and the information it displays. (4)
- 5.2 In the figure below you can visualise two Lorenz curves (a and b). Which curve represents a more unequal society in terms of maximum monthly expenditure? Justify your answer. (4)



- 5.3 Which percentage of the population accumulates the 50% of maximum monthly expenditure in curve b? (3)
- 5.4 How much of the maximum monthly expenditure accumulate 90% of the population in curve a? (3)

[14]

Question 6

- 6.1 Define the Multiple Deprivation Index (MDI) and list the different domains involved in its calculations. (7)
- 6.2 List the different numerators used to calculate the material deprivation domain and education deprivation domain of the MDI respectively. (4)
- 6.3 Calculate the BMI of a person with a body mass of 60 kg and a height of 1.6 m. (4)
- [15]**
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Question 7

- 7.1 List the different phases to develop and collect data by using questionnaires. (5)
- 7.2 What are the two types of questions that can be included in a questionnaire? List and briefly explain each of them. (4)
- 7.3 List three aspects which can bias the result of a questionnaire, providing one example of each. (6)
- [15]**
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