



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY
FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT**

DEPARTMENT OF LAND AND SPATIAL SCIENCES

QUALIFICATION: BACHELOR OF GEOINFORMATION TECHNOLOGY	
QUALIFICATION CODE: 07BGEI	LEVEL: 7
COURSE CODE: GDG621S	COURSE NAME: GEODEMOGRAPHICS
SESSION: JULY 2023	PAPER: 2nd OPPORTUNITY
DURATION: 3 HOURS	MARKS: 100

SUPPLEMENTARY/SECOND OPPORTUNITY 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 5 PAGES (including this front page)

Question 1

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

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|-----|-----------------------------------|-------------|
| 1.1 | Humanitarian Open Street Map team | (3) |
| 1.2 | Deprivation | (2) |
| 1.3 | Human Development Index | (3) |
| 1.4 | Snowball sampling | (3) |
| 1.5 | Proportional symbol maps | (3) |
| | | [13] |
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Question 2

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|-----|---|-------------|
| 2.1 | Explain the difference between the Human Development Index and the Multiple Deprivation Index. | (3) |
| 2.2 | How many domains are included in the MDI for Namibia? Please list them. | (7) |
| 2.3 | What is the MDI result for domain housing if the number of people living in a shack is 78 and the number of people living in formal houses is 97? | (2) |
| | | [12] |
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Question 3

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|-----|--|-----|
| 3.1 | What is the difference between thematic maps and reference maps? | (3) |
| 3.2 | List and briefly describe the different types of thematic maps. | (8) |

3.3 What are the three primary purposes that thematic maps serve? (6)

[17]

Question 4

Create your own schema for a geodemographic classification applied to the Risk of COVID-19 in Windhoek. Please remember to clearly outline the 9 suggested steps for this type of analysis. (9)

[9]

Question 5

One of the main tasks and challenges working with geodemographic data is the construction of indicators and the structuring of raw data. In this line, the following table contains raw data which needs to be transformed to generate a disaster risk indicator.

ID	Hospitals	Deaths	Infections	Population
1	4	30	100	4000
2	6	5	100	5000
3	10	29	70	900
4	1	2	5	10000

Make the required calculations to derive the following attributes:

5.1 Number of Hospitals per person. (4)

5.2 Rate of deaths and infections. (4)

5.3 Infections per 1000 people. (4)

- 5.4 Standardised values for each variable between 0 and 1 when 0 has a negative impact on the presence of risk and 1 has a positive impact. 1 means a risky situation while 0 is non-risky. (4)
- 5.5 Generate a combined indicator of disaster risk, concatenating the results of point 4. (4)
- [20]**
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Question 6

- 6.1 What is a sample? (2)
- 6.2 Mention and briefly describe two probabilistic and two non-probabilistic sampling methods. (4)
- 6.3 What is the probability of being selected in a random sampling of 5 samples applied to a population of 24 elements? (2)
- [11]**
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Question 7

- 7.1 What is spatial autocorrelation? Please explain it in your own words providing one example present in nature or relative to humans. (3)
- 7.2 Which index is used to quantify spatial autocorrelation? How would you interpret a resulting value of 0.9? (2)
- 7.3. Why is spatial autocorrelation important in geodemographics? (2)
- 7.4 Develop and calculate the result of the following summary (SUM) as part of the calculations required to derive spatial autocorrelation. Use the dataset Yi (4)

as hypothetical attributes for the input points.

$$Y_i = \{4,5,6,2,1\}$$

$$SUM = \sum_{k=0}^n (y_i - \bar{y})^2$$

[11]

Question 8

- 8.1 Find and explain the cartographic trick used by the cartographer to bias the reality through the following Thematic Map. Explain in your own words which technique was used and the potential effect on the audience's understandability or distortion in their interpretations. (4)



- 8.2 Which other cartographic techniques can be used to bias the audience perception on thematic maps? Name one technique and provide a graphical example (drawing a map). (3)

[7]