



**PAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

DEPARTMENT OF LAND AND SPATIAL SCIENCES

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| QUALIFICATION: BACHELOR OF GEOINFORMATION TECHNOLOGY | |
| QUALIFICATION CODE: 07BGEI | LEVEL: 7 |
| COURSE CODE: GDG621S | COURSE NAME: GEODEMOGRAPHICS |
| SESSION: JUNE 2023 | PAPER: 1st OPPORTUNITY |
| DURATION: 3 HOURS | MARKS: 100 |

| FIRST OPPORTUNITY EXAMINATION QUESTION PAPER | |
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| EXAMINER(S) | Mr Miguel Vallejo Orti |
| MODERATOR: | Ms Celeste Espach |

| INSTRUCTIONS |
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| <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 in the field of Geodemographics:

- 1.1 Geodemography (2)
- 1.2 Reverse ecological fallacy (3)
- 1.3 Clustering (3)
- 1.4 Geocoding (2)
- 1.5 Moran Index (3)

[13]

Question 2

- 2.1 Define the concept of a neighbourhood in the context of geodemographics and mention the three geographical scales which are typically used for geodemographic analysis. (3)
- 2.2 List the 10 inner characteristics defined by Glaster and provide one example of each. (10)

[13]

Question 3

- 3.1 What are geodemographic classifications? (4)
- 3.2 What are the suggested steps in geodemographic classification? (7)

[11]

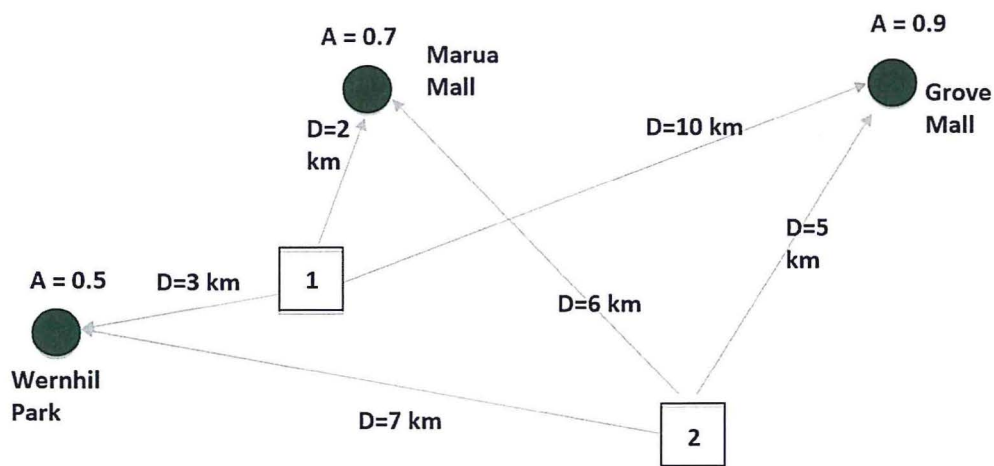
Question 4

4.1 What is the Huff Model? (3)

4.2 Using the Huff Model formula and using the information displayed in Figure 1, answer the following questions: (8)

- To which Mall trade area belongs a person living in position 1?
- To which Mall trade area belongs a person living in position 2?

Justify your answer with the corresponding calculations.



Assume that the Attractiveness and Distance have the same weight in your empirical model.

[11]

Question 5

Answer the following questions regarding catchment profiling methods:

5.1 Define catchment profiling. (3)

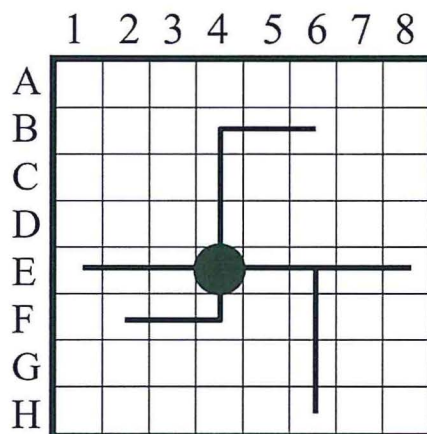
5.2 There are three different ways of devising a catchment around a particular store or outlet. List and briefly explain each of them. (3)

5.3 You want to estimate the catchment area of a store according to the maximum

permitted drive time to the store. Identify by their Row-Column codes (E.g. A3) those pixels belonging to the catchment area of the central store assuming: (5)

- that each pixel represents 30 km x 30 km,
- the average velocity for all the roads is 10 km/h, and
- the maximum allowed travel time from any location to the store is 3 h.

Justify your answer with corresponding calculations and/or explanations. Marks will not be provided unless the results are well justified.



[11]

Question 6

6.1 What is the K-means algorithm? Describe it in general terms. (3)

6.2 Describe step by step how K-means works. (7)

[10]

Question 7

7.1 Namibia is at the top of countries regarding inequality. A popular way of expressing inequality graphically is through a Lorenz diagram. The Lorenz

diagram plots the cumulative share of consumption expenditure against the cumulative share of households.

(7)

Using the data inside table 1, draw the Lorenz Diagram.

| Households | Expenditure |
|------------|-------------|
| 50% | 4000 |
| 10% | 1000 |
| 60% | 5000 |
| 100% | 12000 |

Table 1

- 7.2 What is (approximately) the maximum monthly expenditure of the richest 40% of Namibian people? Please mark it in the Lorenz curve depicted in 7.1. (3)
- 7.3 What is (approximately) the maximum monthly expenditure of the poorest 40% of Namibian people? Please mark it in the Lorenz curve depicted in 7.1. (3)

[11]

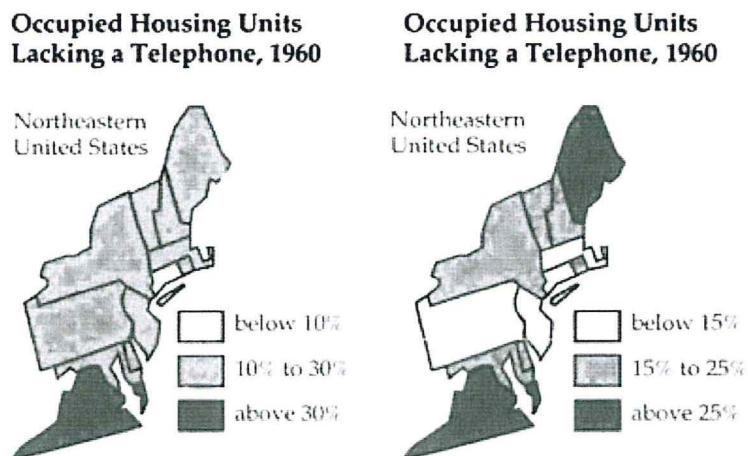
Question 8

- 8.1 Define the Multiple Deprivation Index (MDI) and list the different domains involved in its calculations. (7)
- 8.2 List the different numerators used to calculate the housing deprivation domain and services deprivation domain of the MDI respectively. (4)
- 8.3 Calculate the Bodu Mass Index (BMI) of a person with a body mass of 70 kg and a height of 1.8 m. Justify your result with calculations/explanations. (2)

[13]

Question 9

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



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

[7]