



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF ENGINEERING AND SPATIAL SCIENCES

DEPARTMENT OF ARCHITECTURE AND SPATIAL PLANNING

QUALIFICATION: BACHELOR OF GEOINFORMATION TECHNOLOGY	
QUALIFICATION CODE: 07BGEI	LEVEL: 7
COURSE CODE: GMN621S	COURSE NAME: GEOINFORMATION MANAGEMENT
DATE: JULY 2022	PAPER: THEORY
DURATION: 3 Hours	MARKS: 100

SECOND OPPORTUNITY / SUPPLEMENTARY EXAMINATION QUESTION PAPER	
EXAMINER:	MRS ROXANNE MURANGI
MODERATOR:	MR MIGUEL VALLEJO

<p style="text-align: center;">INSTRUCTIONS</p> <ol style="list-style-type: none">1. Write your student number on each answer sheet used.2. Answer ALL the questions.3. Read each question carefully before attempting to answer.4. Write clearly and neatly.5. Materials allowed: non-programmable calculator, Ruler, Pen, Pencil, Eraser (rubber).

THIS PAPER CONSISTS OF FOUR (4) PAGES (EXCLUDING THIS COVER PAGE)

Question 1

Needs assessment is the first phase in the GIS planning and implementation cycle.

- a) In your own words, describe the purpose of a needs assessment exercise. (6)
- b) Name and discuss the three main outputs of a needs assessment exercise. (6)
- c) Give two examples each of guiding questions that you would ask during a needs assessment at three different levels of functions/management. (6)

[18]

Question 2

The establishment of a GIS is a complex process which needs careful planning, based on a thorough analysis of the respective institution and its requirements. This is influenced by the type, purpose, and level of GIS implementation.

List four main types of GIS implementation levels in an organisation. For each, explain what reasons could trigger the “Thinking about Implementing a GIS” at that level. (8)

[8]

Question 3

The Logical Framework is an approach to project planning that was developed as a tool for detailed planning with clearly defined objectives that can be measured by using appropriate indicators. List the ten (10) in the development of a logical framework in their correct logical sequence. (No explanations please). (10)

[10]

Question 4

During the physical design stage in GIS planning, three important system requirements aspects will influence how the GIS will eventually function.

- 4.1 Explain what influences these three aspects. (3)
- 4.2 When choosing a Client-server architecture, what factors would you consider in arriving at the right choice? (2)
- 4.3 In the past, GIS data storage was a very big challenge compared to today. Why was this a problem and how has it suddenly not become a major issue anymore? (3)
- [8]**
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Question 5

The quality of a GIS analysis depends on the quality of data and the skills of the person doing the analysis.

- 5.1 Briefly explain the four main types of spatial errors that are possible in GIS. (8)
- 5.2 Explain the three common logical models for GIS Database designs. (6)
- [14]**
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Question 6

Namibia is busy implementing a National Spatial Data Infrastructure (NSDI) Policy and the Namibia Statistics Agency (NSA) is mandated by the Statistics Act, No. 9 of 2011 to implement this.

- 6.1 Outline the relevance/importance issues of implementing the NSDI in Namibia. (8)
- 6.2 Define what you understand by spatial data infrastructure (SDI) and name two types. (2)
- 6.3 A Spatial Data Infrastructure (SDI) facilitates and coordinates the exchange and sharing of spatial data between key stakeholders in a spatial data community. Explain three critical success factors of implementing a National Spatial Data Infrastructure. (6)

[16]

Question 7

- 7.1 What is a “B/C Ratio”? What does the abbreviation stand for and what is the b/C Ratio used for? (Or, in other words: What does the B/C Ratio indicate in an economic project analysis?) (3)
- 7.2 List the various working steps, which are required to produce a B/C ratio in their correct sequence. Briefly explain each step with one or two short sentences. Note: Just follow exactly the procedure that was used for the National Park Exercise. (8)

[11]

Question 8

- 8.1 Let us assume that one of the important regular outputs of your GIS will be thematic maps of an area which measures exactly 400 km in North-South and 270 km in East-West direction. Let us also assume that you have a printer that can only print up to a maximum format of DIN A3 (42 cm x 29.7 cm) and that a strip of 1 cm on all four sides of the A3 sheet cannot be printed. What would be the maximum scale at which you could print these maps, showing the entire 400 km x 270 km area on one DIN A3 sheet? Note: A correct final figure result will only be counted if is accompanied by a reproducible and correct calculation. (4)
- 8.2 A typical soccer field has an area of about 70 m x 100 m.
 - a) How big is that soccer field in square meters (sq. m)? (1)
 - b) How big is that soccer field in hectares (ha)? (1)
 - c) How big is that soccer field in a square kilometre (sq. km)? (1)
 - d) How big will that soccer field be on a map 1: 25,000? (Please give length and width in mm and the map area in sq. mm!) (4)

- e) According to cartographic rules, the minimum size of a polygon should be 25 square millimetres (sq. mm). Assuming this as the 'minimum displayable area', would a map scale of 1: 15,000 be sufficient to display the soccer field correctly?

For all questions, please note that a correct result will only be counted if supported by a reproducible and correct calculation! Hence, please do PRESENT your calculation! (4)

[15]
