NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

DEPARTMENT OF LAND AND SPATIAL SCIENCES

QUALIFICATIONS: DIPLOMA IN GEOMATICS, BACHELOR OF GEOMATICS, BACHELOR OF GEOINFORMATION TECHNOLOGY, DIPLOMA IN LAND ADMINISTRATION, BACHELOR OF LAND ADMINISTRATION, BACHELOR OF TOWN AND REGIONAL PLANNING, BACHELOR OF PROPERTY STUDIES, DIPLOMA IN PROPERTY STUDIES, BACHELOR OF REGIONAL & RURAL DEVELOPMENT BACHELOR OF NATURAL RESOURCE MANAGEMENT, BACHELOR OF NATURAL RESOURCE MANAGEMENT IN NATURE CONSERVATION	
QUALIFICATIONS CODES: 06DGEO,07BGEO, 06DLAD, 07BLAM, 07BTAR, 06DPRS, 08BPRS, 07BRAR, 07BNRS, 07BNTC	**LEVEL:** 5
COURSE CODE: GES512S	**COURSE NAME**: GEOGRAPHIC INFORMATION SYSTEMS 1
DATE: NOVEMBER 2023	**SESSION:** 1
DURATION: 3 HOURS	**MARKS:** 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER:	MS ROXANNE MURANGI
MODERATOR:	MR MIGUEL VALLEJO

INSTRUCTIONS

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.

PERMISSIBLE MATERIALS

1. Pen
2. Pencil
3. Ruler and Eraser

This paper consists of four (4) pages (excluding this cover page)

Question 1

Define the following terms in the GIS context:

1.1. Topography (2)

1.2. Polygon overlay (2)

1.3. Datum (2)

1.4. Geographic analysis (2)

1.5. Geocode (2)

[10]

Question 2

2.1. You have been contracted to provide GIS consultancy service to Erongo Regional Council on acquiring a Geographical Information System (GIS) software. Your first task is to convince the Chief Regional Officer and his three officials that GIS is an ideal tool for planning and decision-making. Write a short memo to the Council explaining:

a) What GIS is. (3)

b) The different functions of a GIS. (8)

c) Provide five advantages of using GIS instead of traditional paper maps and manual analysis. (5)

2.2. A sophisticated GIS can answer five types of questions. Briefly discuss the questions "What if (modelling)?", "Where it is?", and "What is at?". Provide one example for each question. (6)

2.3. Differentiate between spatial data and non-spatial data. Provide two examples for each. (4)

2.4. Explain the two types of GIS concepts. (4)

2.5. Explain what a GIS layer is. Outline any five additional GIS principles. (6)

[36]

Question 3

3.1. What is the difference between a coordinate and a coordinate axis? (2)

3.2. Explain the differences between geographic and projected coordinate systems. (8)

3.3. Map projections are classified into four categories. Identify the type of map projection class and the point of tangency category shown in Figure 1 and Figure 2. Briefly explain the process. (6)

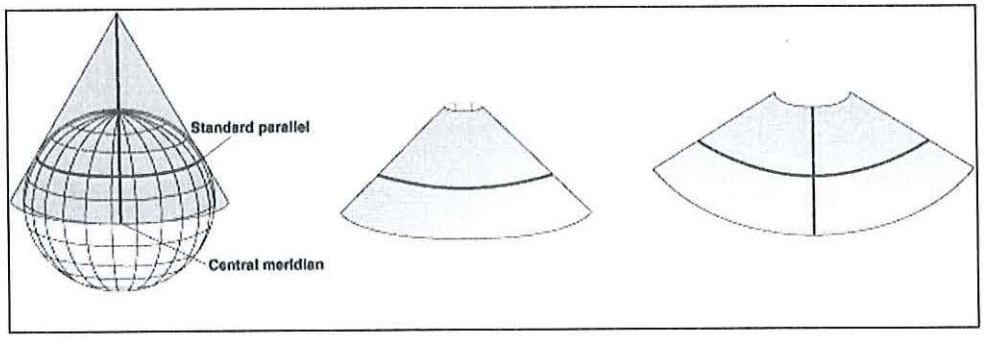

Figure 1

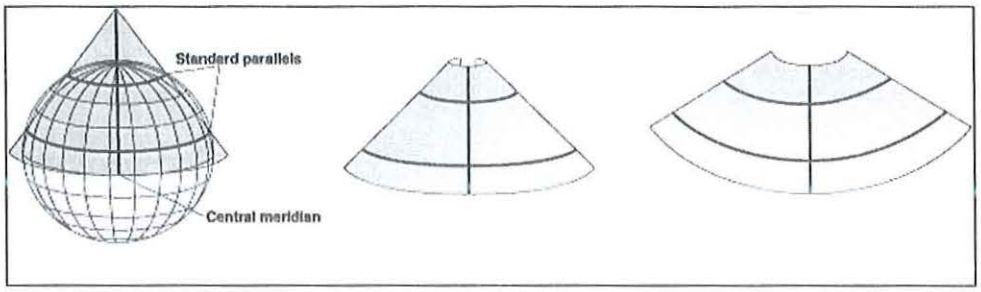

Figure 2

3.4. Briefly explain how a UTM zone is defined in terms of its central meridian, standard meridian, and scale factor. (5)

3.5. How are negative coordinates avoided in a UTM coordinate system? (3)

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Question 4

4.1. A variety of methods exist for creating vector data including digitizing, GPS data collection, geocoding, and scanning. Briefly discuss the digitizing and geocoding methods and outline three problems of paper map digitization. (5)

4.2. Explain what spatial analysis is. (2)

4.3. There are four categories of GIS analytical functions. Briefly discuss retrieval and classification functions. Provide an example for each. (4)

4.4. Identify and briefly discuss the type of overlay function shown in Figure 3. (3)

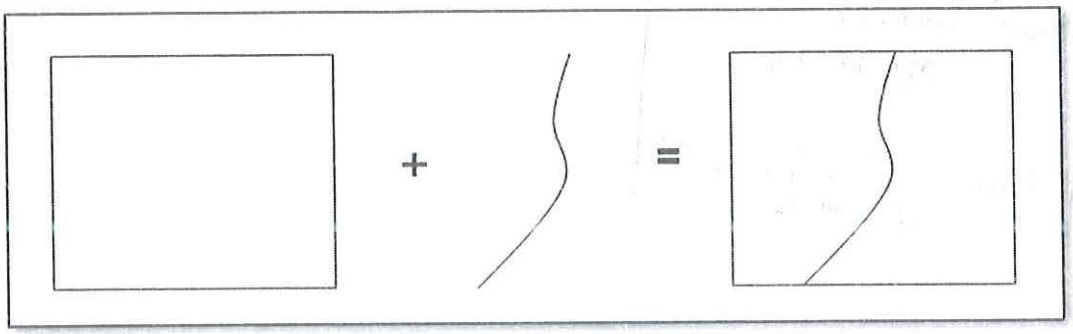

Figure 3

[14]

Question 5

5.1. During the map production process, what do the main classification decisions refer to? (3)

5.2. Data accuracy is a statement of how closely a set of data represents the real world. Name any indicator aspects that can be used to describe accuracy. (4)

5.3. There are three types of thematic maps. Briefly explain what a choropleth map is Provide two examples and the data type used to display the data. (4)

5.4. Briefly discuss what an isoline map is. Provide any three types of isoline maps. (5)

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