∩AMIBIA U∩IVERSITY
OF SCIE∩CE A∩D TECH∩OLOGY

FACULTY OF NATURAL RESOURCES AND SPATIAL SCIENCES

DEPARTMENT OF GEO-SPATIAL SCIENCES AND TECHNOLOGY

QUALIFICATION: DIPLOMA IN GEOMATICS, DIPLOMA IN PROPERTY STUDIES, BACHELOR OF GEOMATICS, BACHELOR OF GEOINFORMATION TECHNOLOGY, BACHELOR OF REGIONAL & RURAL DEVELOPMENT, BACHELOR OF PROPERTY STUDIES	
QUALIFICATION CODE: 06DGEM, 27DPRS, 07BGEM, 07GITB, 07BRAR, 08BPRS	**LEVEL:** 5
COURSE CODE: GES512S	**COURSE NAME:** GEOGRAPHIC INFORMATION SYSTEMS 1
SESSION: JULY 2019	**PAPER:** THEORY
DURATION: 3 HOURS	**MARKS:** 100

SUPPLEMENTARY / SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Mr. Erich Naoseb
MODERATOR:	Mr. Miguel Vallejo

INSTRUCTIONS
1. Answer ALL the questions.
2. Write clearly and neatly.
3. Number the answers clearly.

PERMISSIBLE MATERIALS

1. Examination paper
2. Examination script
3. Calculator, ruler, pencil, eraser

THIS QUESTION PAPER CONSISTS OF 5. PAGES (Including this front page)

Question 1

Complete the missing words from each of the sentences below. Do not rewrite the sentences, just write the correct missing word next to the question number.

1.1   An _____ is a collection of interrelated components or parts that gather,   (1)
archive, process, manipulate and distribute information in an organization.

1.2   Because maps are flat, some of the simplest projections are made onto geometric   (1)
shapes that can be flattened without stretching their surfaces. These are called

_____.

1.3   A _____ is tangential to the globe at one point only.   (1)

1.4   The network of intersecting lines of latitude and longitude is called the _____.   (1)

1.5   In Namibia, the _____ is the country's mapping agency.   (1)

1.6   In systems development techniques a _____ is a pictorial representation of the   (1)
path which data takes from its initial interaction with the system until it completes any
interaction.

1.7   We can define a _____ as a value that identifies a position relative to a   (1)
coordinate axis.

1.8   An _____ correctly represents area sizes of the sphere on the map.   (1)

1.9   _____ refers to the smallest distinguishable ground feature that can be   (1)
detected in the image.

[9]

Question 2

2.1   How would you describe a Geographical Information System (GIS) to someone who   (3)
has never heard of it? Provide one example of a GIS software.

2.2   Identify and describe five functional elements of a GIS.   (10)

2.3 Geographical Information Systems (GIS) provide a range of capabilities to handle   (4)
georeferenced data. List four of these capabilities.

2.4 Define the following terms:

Geocoding: (2)

GIS Polygon: (2)

Datum: (2)

2.5 Name three functions performed by Information Systems.   (3)

2.6 Name three main components of geospatial data.   (3)

2.7 Differentiate between a map and a database.   (2)

                                                                                  [31]

Question 3

3.1 Name two main GIS concepts and describe them by means of simple and clear   (8)
drawings.

3.2 Briefly differentiate between vector and raster data in terms of the type of   (6)
geographic phenomena they represent and the means to represent the geographic
phenomena.

3.3 Define the term Systems Development Life Cycle (SDLC) and list any two phases that   (3)
can be involved.

3.4 Systems analysis can be a very complex and confusing work, therefore modelling   (3)
techniques provide the mechanism for doing this. List the three modelling techniques
for systems analysis.

                                                                                  [20]

Question 4

4.1   Name and describe the type of overlay operation presented in Figure 1.   (4)

Figure 1

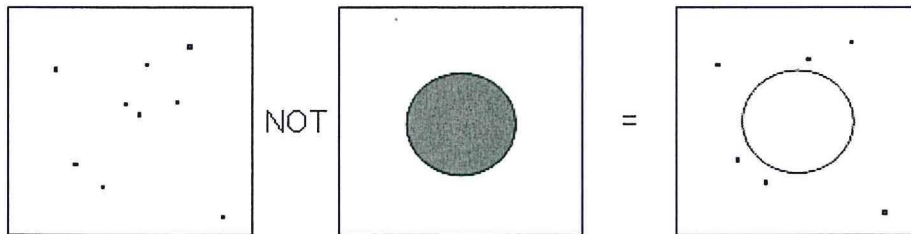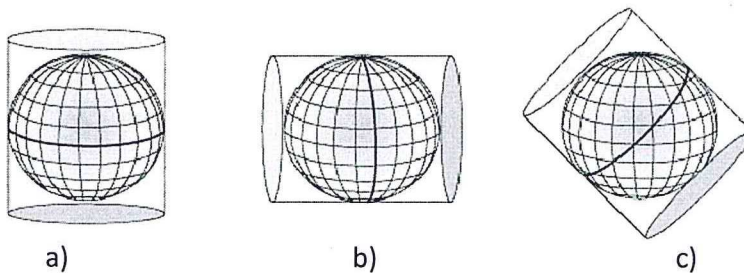4.2   Name the three projection aspects presented below.   (3)

a)   b)   c)

4.3   What is the meaning of projection aspect?   (2)

4.4   Name three categories of map projections based on the properties that are preserved   (3)
      in a map.

4.5   Why are most geographic information (GI) projected to a two-dimensional, Cartesian   (2)
      coordinate system?

4.6   Match the geographic information (GI) analysis types in column A with the correct   (4)
      related GIS operations in column B. Write the correct Related GIS operations next to
      the GI analysis type.

	A	B
	GI Analysis Types	**Related GIS Operations**
1	Combination	Spatial query and attribute query
2	Distance transformation	Connectivity, adjacency, visibility
3	Query	Overlay
4	Neighboring	Buffer

4.7   What is a common application of buffers?   (2)

[20]

Question 5

5.1   Suppose you have to produce a map that will indicate the number of registered voters   (6)
      per region for the upcoming 2019 Namibia general elections. What type of map and
      other GIS outputs will you produce? Motivate your answers.

5.2   Based on the data type used in the map type mentioned in Question 5.1 to indicate the   (4)
      number of voters per region, indicate the data type used and name three rules for the
      classification of the data type used.

5.3   Name four essential map elements that should be inserted in the map created in   (4)
      Question 5.1

5.4   Name two factors that will determine your choice of a map scale.   (2)

5.5   If one has two maps, one at a scale of 1: 10, 000, and another at a scale of 1: 1,000, 000.   (4)
      Which of the two maps has a larger-scale? Differentiate between large and small scale
      maps.

[20]