FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

DEPARTMENT OF LAND AND SPATIAL SCIENCES

QUALIFICATION:	
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	

QUALIFICATION CODE: 06DGEO, 06DIPS, 06DPRS, 07BGEI, 07BGEO, 07BLAM, 07BNRS, 07BORR, 07BRAR, 07BTAR, 07BURP, 08BOPS, 08BPRS	LEVEL: 5
COURSE CODE: GES512S	COURSE NAME: GEOGRAPHIC INFORMATION SYSTEMS 1
SESSION: JANUARY 2025	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

SECOND OPPORTUNITY/SUPPLEMENTARY EXAMINATION QUESTION PAPER	
EXAMINER	Ms Ivonne Makando
MODERATOR:	Mr Erich Naoseb

THIS QUESTION PAPER CONSISTS OF (4) PAGES
(Excluding this front page)

INSTRUCTIONS

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

PERMISSIBLE MATERIALS

1. Examination paper.
2. Examination script.
3. SCalculator, ruler, pencils, eraser

Question 1 State if the following statements are True or False.

1.1.   The Raster Data Model relates to picture elements.   (1)

1.2.   The Equivalent projection refers to equal area in map projection categories.   (1)

1.3.   Map elements such as a legend, scale bar, and north arrow are legally required for all printed maps.   (1)

1.4   The prime meridian and the equator serve as the baselines of the geographic coordinate system.   (1)

1.5.   A GIS operation that combines the geometries and attributes of the input layers to create the output is known as erase.   (1)

1.6.   A map cannot be printed from ArcMap without elements like a legend and north arrow.   (1)

1.7.   Layers may contain features or surfaces.   (1)

1.8.   A phenomenon that populates the study area is known as a geographic object.   (1)

1.9.   Features have no shape and size.   (1)

1.10.   GIS stands for Geographical Institution System.   (1)

                                                                                              [10]

Question 2

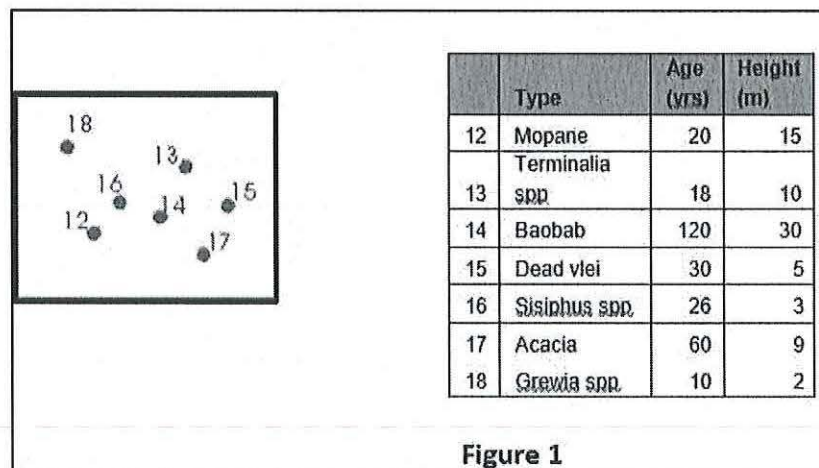2.1.   What is the purpose of a Geographical Information System (GIS)? Provide an example of a GIS.   (4)

2.2.   A GIS (Geographic Information Systems) is a computer-based systems that provides four capabilities relative to spatial data. Name the four capabilities.   (4)

2.3.   Discuss 3 of the five questions a GIS can answer.   (6)

2.4.   Discuss briefly Data as one component of GIS.   (3)

2.5.   Describe the difference between vector and raster data models in GIS. Provide examples of when each might be used.   (6)

2.6.   Why is 1:200,000 considered a smaller scale than 1:200 in cartography?   (2)

                                                                                                                        [25]

Question 3

3.1.   Differentiate between a coordinate and a coordinate system.   (4)

3.2.   When is it necessary to use point geometry to model a geographic phenomenon?   (2)

3.3.   Based on **Figure 1** below, which GIS concept is displayed? Explain the concept mentioned.   (3)

	Type	Age (yrs)	Height (m)
12	Mopane	20	15
13	Terminalia spp.	18	10
14	Baobab	120	30
15	Dead vlei	30	5
16	Sisiphus spp.	26	3
17	Acacia	60	9
18	Grewia spp.	10	2

Figure 1

3.4.   Briefly explain what a datum is.   (3)

3.5.   What is the relationship between a geoid and an ellipsoid?   (2)

3.6.   Which term describes a surface that can be laid flat without stretching or tearing? Name three types of such a surface onto which the reference sphere is projected.

                                                                                                                        (4)

3.7.   Which term is used for map projections that preserve shape, area, distance and direction?   (2)

3.8. The choice of the map projection class depends largely on the general shape of the mapping area. Please identify and describe the three projection classes below
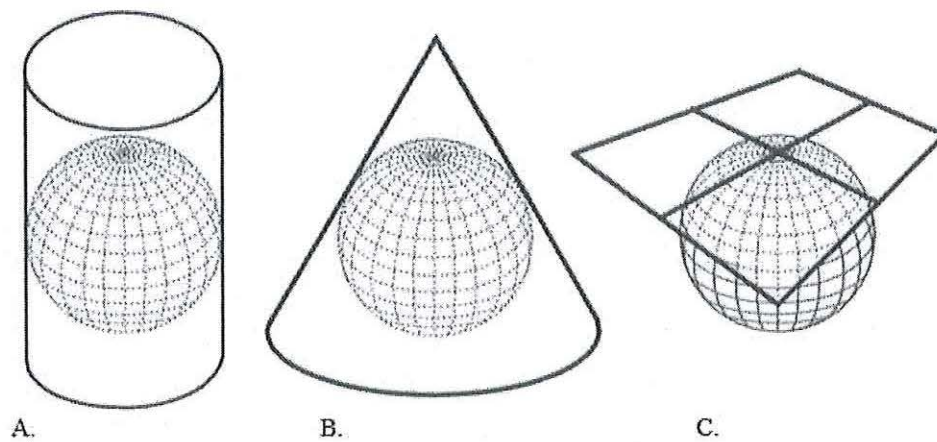
(6)

A. B. C.

Figure 2

3.9. What are the two most important factors to consider when choosing a map projection? (2)

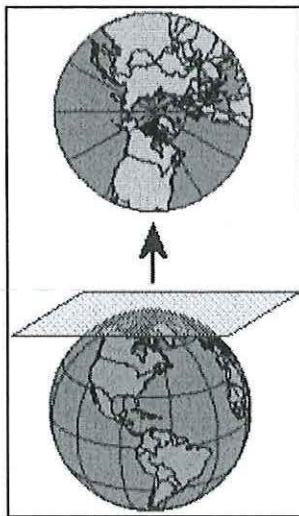3.10. Name and describe the type of projection represented by Figure 2 below. (4)

Figure 3

[32]

Question 4

4.1.   What does SQL stand for, and how is it used in GIS?   (2)

4.2.   What is geocoding in GIS, and why is it important   (3)

4.3.   What is the fundamental difference between raster and vector data models in GIS?   (2)

4.4.   Explain how pixel size influences the accuracy of a raster dataset.   (3)

4.5.   Provide two advantages and disadvantages of raster data, as well as two advantages and
        disadvantages of vector data.   (4)

4.6.   In Geographical Information Systems (GIS) (ArcMap), entering data in attribute tables is
        done in two common ways. Explain the two methods used to enter data in an attribute table.
                                                                                             (2)

4.7.   Name and explain two types of thematic maps.

4.8.   You are tasked to create a map that will show the farms the government of Namibia has
        resettled landless people between 1990 and 2010. Name three basic principles of designing
        a map   (3)

                                                                                             [23]