NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF ENGINEERING AND SPATIAL SCIENCES

DEPARTMENT OF ARCHITECTURE AND SPATIAL SCIENCES

QUALIFICATION: DIPLOMA IN LAND ADMINISTRATION, DIPLOMA IN PROPERTY STUDIES, BACHELOR OF LAND ADMINISTRATION, BACHELOR OF PROPERTY STUDIES, BACHELOR OF NATURE RESOURCE MANAGEMENT	
QUALIFICATION CODE: 06DGEM, 06DLAD, 06DPRS, 07BLAD, 08BPRS, 07BNRS	**LEVEL:** 5
COURSE CODE: GES512S	**COURSE NAME:** GEOGRAPHIC INFORMATION SYSTEMS 1
SESSION: JULY 2022	**PAPER:** THEORY
DURATION: 3 HOURS	**MARKS:** 100

SECOND OPPORTUNITY / SUPPLEMENTARY EXAMINATION QUESTION PAPER	
EXAMINER	MRS. 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. 5. Materials allowed: Ruler, Pen, Pencil, Eraser (rubber)

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

Question 1

Define the following terms:

1.1 Projected coordinate system (2)

1.2 Georeferencing (2)

1.3 Feature class (2)

1.4 Database (2)

1.5 GIS (2)

1.6 Ellipsoid (2)

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Question 2

2.1 Data is one of the components of a Geographic Information System (GIS). Name and explain the phases of working with spatial data in a GIS. (6)

2.2 Explain data storage and maintenance as one of the functions of a Geographic Information System (GIS). (5)

2.3 A Geographical Information System (GIS) can work with spatial and non-spatial data. Name three ways in which data input in a geographical Information system can be broken down. (3)

2.4 How does GIS software (e.g., ArcGIS for Desktop) differ from Google Maps? (4)

2.5 A GIS has main two advantages over other Information Systems. Outline these advantages. (2)

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

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Question 3

3.1 What are the three most important factors to consider when choosing a map projection? (3)

3.2 Which term describes a surface that can be laid flat without distortion? Name three types of a surface used by cartographers. (4)

3.3 The diagram below in Figure 1 shows the developable surface of the Lambert conformal conic projection with two standard parallels. Answer the following questions:

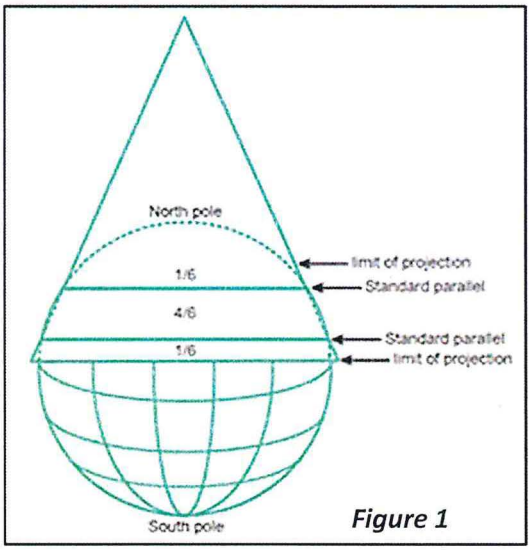

Figure 1

a) Which developable surface is used? (2)

b) Is it a tangential or a secant projection? (2)

c) What is the position of the developable surface? (2)

d) Describe some of the scale distortion characteristics created by this projection. (4)

e) Are areas correctly represented? Explain why. (1)

f) Define and describe the UTM coordinate system. What type of developable surface is used with a UTM projection? (3)

g) What are UTM zones, and where is the origin of a zone in the southern hemisphere? (5)

h) How are negative coordinates avoided in UTM? (4)

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Question 4

4.1 Explain the meaning of the term "Proximity analysis. (2)

4.2 Define the term network analysis and list the two major types of network analysis (3)

4.3 Raster data is generally divided into two categories, thematic data, and image data. Differentiate between thematic data and image data. (2)

4.4 Name three advantages the vector data model has over the raster data model. (3)

4.5 Vector overlay can be done in different forms, name and explain the vector-based overlays. (6)

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Question 5

5.1 Classification is a fundamental operation for data analysis and pattern discovery in Geographical Information Systems. Briefly explain data classification. (2)

5.2 Explain the Selection by Location Query. Name three possible options that you can use in a Selection by Location Query. (4)

5.3 Map scales are represented in three forms. List these forms. (3)

5.4 Explain the three types of thematic maps. Provide two examples for each and the data type used to display the data. (9)

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