



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

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: JUNE 2019	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
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MODERATOR:	Mr. Miguel Vallejo

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

PERMISSIBLE MATERIALS

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

THIS QUESTION PAPER CONSISTS OF 6 PAGES (Including this front page)

Question 1

- 1.1 Define the term spatial data. Differentiate spatial and non-spatial data. Provide one example for each. (6)
- 1.2 Data as a component of a Geographical Information System (GIS) plays a vital role in any GIS system. List and briefly explain the stages of working with geographical data in a GIS approach. (6)
- 1.3 Mention two differences between Geographic Information (GI) and maps. (2)
- 1.4 Identify and describe the type of diagram presented in the Figure 1. (3)

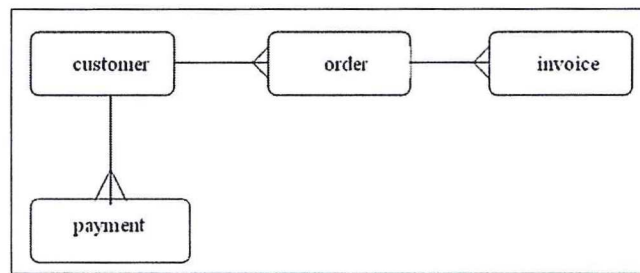


Figure 1

- 1.5 The image below displays the aerial view of the Walvisbay lagoon. Explain the term geographic phenomena and list the three main characteristics of a geographic phenomena. Provide examples of each characteristic based on Figure 2. (7)

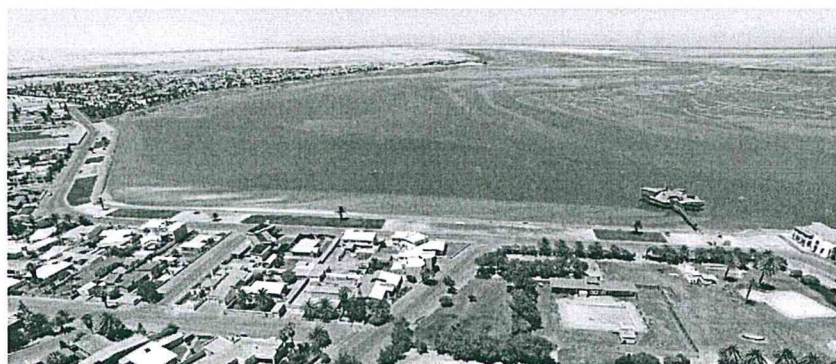


Figure 2 (Source: Travel Notes)

- 1.6 Name one purpose of a context diagrams (CD). (1)

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Question 2

2.1 Name the two components of a coordinate system. (2)

2.2 Identify and explain the characteristics of the map projections as in Figure 3 and 4. (4)

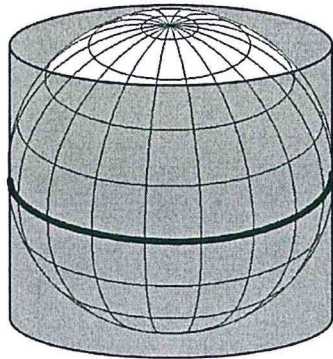


Figure 3

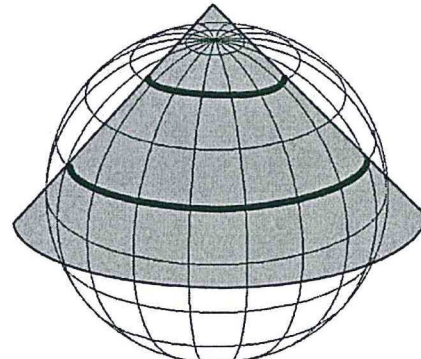


Figure 4

2.3 Briefly discuss the importance of Datum. (4)

2.4 What is a transverse projection? (3)

2.5 Identify and briefly describe what Figure 5 is representing. (4)

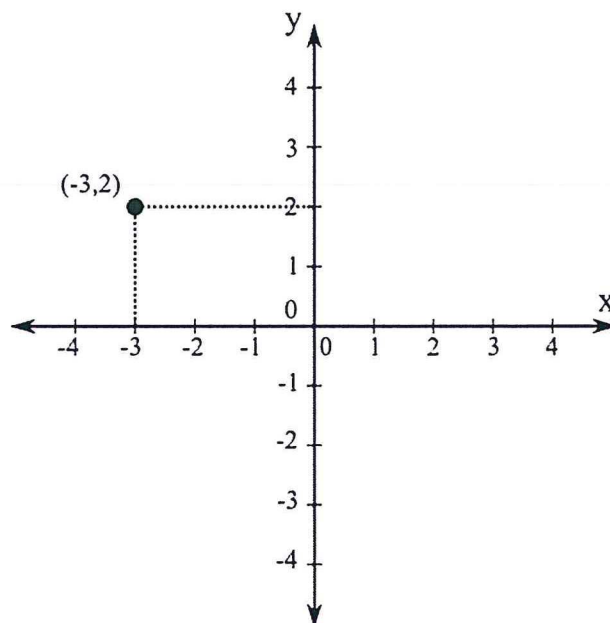


Figure 5

2.6 Complete the below parameters of the Namibian Lo Coordinate System. (5)

Projection : _____

Central Meridians: _____

Origin of latitude : _____

Ellipsoid: _____

Direction increase: _____

2.7 Name two criterias that will dictate on the type of map projection class a user will select. (2)

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Question 3

3.1 Figure 6 below indicates an aerial photo taken by a drone at the flooded areas (5)
around Marka, located right on the Malawi – Mozambique border. The image
shows how structures have been affected as a result of the extensive flooding and
heavy rainfall.

Based on the image, provide five clear questions that can be answered with a
Geographic Information System (GIS).

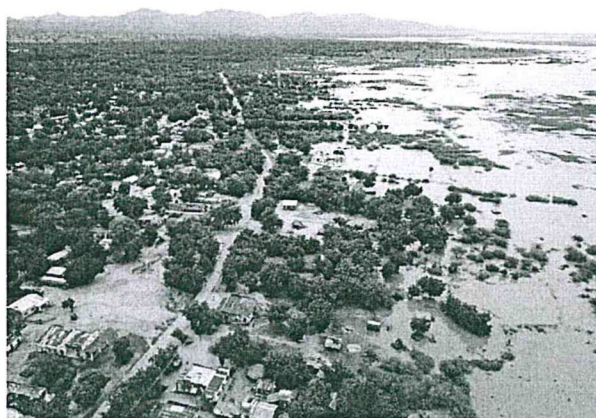


Figure 6

Source: UNICEF/UN0288660/Juskauskas, Kunje & Chipukunya

- 3.2 Describe the term spatial analysis and name three GIS analytical functions that can be applied to the scenario in Figure 6. (4)
- 3.3 Identify and briefly describe the two major differences between raster and vector data models. (6)
- 3.4 Provide three disadvantages of a raster data type in comparison with vector data type. (3)
- 3.5 Using as a reference the table of attributes presented in Figure 7, write a query that will display all the schools records in the Otjiwarongo circuit. (3)

FID	Shape	LAYER	CSCHOOL	NEW_NAME	CLUSTER	CIRCUIT
0	Point	Schmap	7000	W.Du Piessis SS	W du Piessis	Gobabis South
1	Point	Schmap	7001	Grootfontein SS	Grootfontein Secondary	Grootfontein
2	Point	GPS	7002	Karasburg SS	Karasburg Secondary	Keetmanshoop South
3	Point	GPS	7003	P.K.de Vlieters SS	Suderig	Keetmanshoop North
4	Point	GPS	7004	Mariental SS	Mariental Secondary	Mariental
5	Point	Schmap	7005	Otjiwarongo SS	Otjiwarongo Secondary	Otjiwarongo
6	Point	GPS	7006	Duijo SS	Khorihas Secondary	Khorihas
7	Point	GPS	7008	Swakopmund SS	Swakopmund Secondary	Swakopmund
8	Point	GPS	7010	Etosha SS	Etosha Secondary	Oshana
9	Point	Schmap	7011	Academia SS	Secondary 4	Windhoek 1
10	Point	GPS	7012	Centaurus SS	Secondary 1	Windhoek 2
11	Point	GPS	7013	Delta SS	Secondary 2	Windhoek 3
12	Point	Schmap	7014	Jan Mohr SS	Secondary 3	Windhoek 3
13	Point	Schools	7043	J.G. vd Wath SS	JG van der Wath	Otjiwarongo
14	Point	GPS	7110	Iseke SS	Silumbi	Ngoma
15	Point	GPS	7111	Isize SS	Isize	Bukalo
16	Point	GPS	7114	Kabbe SS	Kabbe	Bukalo

Figure 7

- 3.6 Identify the language used to create the query above in Question 3.5 and indicate what type of a GIS query was performed above. (2)
- 3.7 The understanding of data is crucial when working with it in a GIS. List three possible functions that you can do in a GIS to understand the data characteristics and attributes. (3)

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Question 4

- 4.1 Provide three functions of maps. (3)
- 4.2 What is the general relationship between scale and spatial accuracy? (2)
- 4.3 What are some of the constraints related to traditional (non-GIS) paper mapping as compared to a GIS based digital map? List four constraints. (4)
- 4.4 Identify and describe five functional elements of a map. (10)
- 4.5 Describe the meaning of classification in context of mapping. (2)
- 4.6 List four criteria's that can influence the classification decision or methods to be applied. (4)

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