NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

DEPARTMENT OF LAND AND SPATIAL SCIENCES

QUALIFICATION: BACHELOR OF GEOINFORMATION TECHNOLOGY	
QUALIFICATION CODE: 07BGEI	**QUALIFICATION LEVEL:** 7
COURSE CODE: GMN621S	**COURSE NAME:** GEOINFORMATION MANAGEMENT
SESSION: JULY 2025	**PAPER:** THEORY
DURATION: 3 HOURS	**MARKS:** 100

SECOND OPPORTUNITY/SUPPLEMENTARY EXAMINATION QUESTION PAPER	
EXAMINER:	Ms Ivonne Makando
MODERATOR:	Prof Oluibukun Ajayi

THIS QUESTION PAPER CONSISTS OF (3) 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. Calculator, ruler, pencils, eraser

Question 1

1.1. What is the role of a datum in map projection? (2)

1.2. What does WGS 84 stand for, and why is it widely used in GIS? (2)

1.3. In GIS, what does the term "precision" mean when referring to data quality? (2)

1.4. Fill in the Blanks: The SMART acronym stands for S_____, M_____, A_____, R_____, and T_____. (5)

1.5. Define metadata and list two key elements commonly included in GIS metadata. (3)

1.6. Explain how spatial data accuracy and completeness affect analysis results. (2)

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Question 2

2.1. Define a Logical Framework (LogFrame) and explain its purpose in GIS project planning. (3)

2.2. Differentiate between the Problem Tree and Objective Tree in the LogFrame approach. (2)

2.3. Briefly describe the purpose of a GANTT Chart in GIS project planning. (2)

2.4. Why does conceptual data design come before technical system specification in GIS planning? (2)

2.5. Describe what a mind map is and explain one way it can be used in GIS planning. (2)

2.6. Using the nine steps of GIS development, explain how you would design a GIS for flood mapping in Windhoek. (20)

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Question 3

3.1. Discuss three potential challenges when introducing a technological innovation. (6)

3.2. Discuss three reasons why proper planning of a GIS is needed. (6)

3.3. List the five different GIS Project levels. (5)

3.4. List the six components of GIS Planning. (6)

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Question 4

4.1. A pipeline is 6.5 cm long on a map with a scale of 1:100,000. Calculate the real-world distance in kilometres. (4)

4.2. A rectangular plot measures 3.5 cm by 2.5 cm on a map with scale 1:50,000. Calculate its real-world area in hectares. (6)

4.3. A satellite image covers a 60 km × 60 km area with a spatial resolution of 10 m.
a) Calculate how many pixels the image contains.
b) If each pixel uses 2 bytes of storage, estimate the total image size in megabytes (MB). (8)

4.4. Convert the following coordinates from DMS (Degrees, Minutes, Seconds) to Decimal Degrees:
Latitude: 22° 45′ 30″ S
Longitude: 17° 03′ 15″ E (4)

4.5. Differentiate between the Relational and Object-Oriented logical data models used in GIS by completing the table below. (8)

Data Model	How Data is Stored	Key Advantage
Relational Model		
Object-Oriented Model		

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