



**NAMIBIA UNIVERSITY  
OF SCIENCE AND TECHNOLOGY**

**FACULTY OF HEALTH, NATURAL RESOURCES AND APPLIED SCIENCES**

**SCHOOL OF AGRICULTURE AND NATURAL RESOURCE SCIENCES**

**DEPARTMENT OF NATURAL RESOURCES SCIENCES**

<b>QUALIFICATION: BACHELOR OF NATURAL RESOURCES MANAGEMENT HONOURS</b>	
<b>QUALIFICATION CODE:</b> 08BNRH	<b>LEVEL:</b> 8
<b>COURSE CODE:</b> GRS811S	<b>COURSE NAME:</b> GIS AND REMOTE SENSING IN PRACTICE
<b>DATE:</b> JULY 2025	
<b>DURATION:</b> 3 HOURS	<b>MARKS:</b> 100

<b>SECOND OPPORTUNITY EXAMINATION QUESTION PAPER</b>	
<b>EXAMINER(S)</b>	Prof. Vera De Cauwer
<b>MODERATOR:</b>	Ms. Foibe Nelao Johannes

<b>INSTRUCTIONS</b>
<ol style="list-style-type: none"><li>1. Answer ALL the questions.</li><li>2. Write clearly and neatly.</li><li>3. Number the answers clearly.</li></ol>

**PERMISSIBLE MATERIALS**

1. Calculator

**THIS QUESTION PAPER CONSISTS OF 2 PAGES** (Excluding this front page)

**Question 1**

[15]

Convert the following coordinates to decimal format. Indicate clearly which coordinate is latitude and which is longitude.

1.  $46^{\circ} 18.9' S, 20^{\circ} 54.8' E$
2.  $S 2^{\circ} 45.12515', E 19^{\circ} 29.25817'$
3.  $18^{\circ} 59' 55'' S, 23^{\circ} 4' 22'' W$

**Question 2**

[4]

Point A is situated at  $19^{\circ}05' S, 18^{\circ}22' E$  and point B at  $19^{\circ}35' S, 18^{\circ}22' E$ . What is the distance in metric units between the two points? Explain in detail.

**Question 3**

[7]

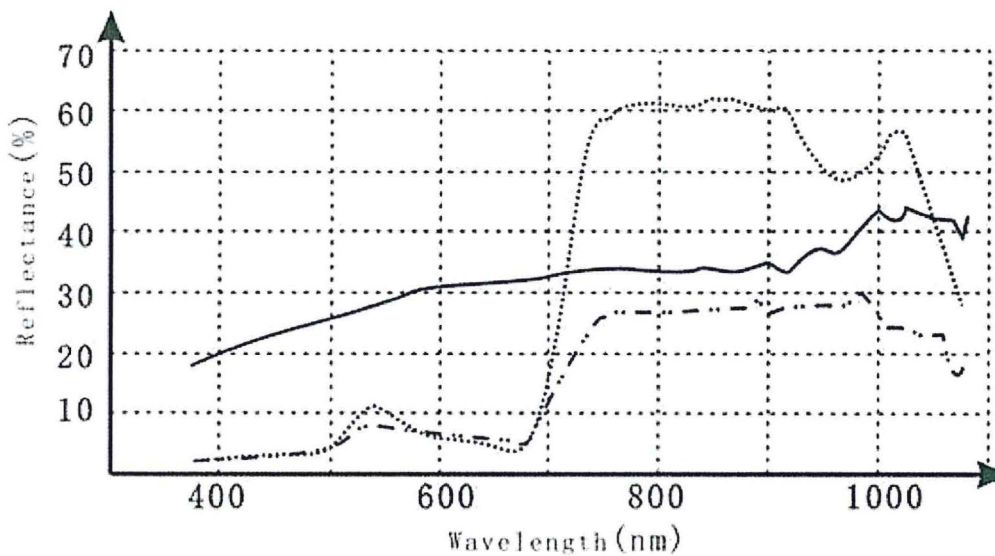
In the practical exercises, you have visually identified and digitised vegetation types on remote sensing images of Otjiningwa. What is the difference with identifying vegetation types through supervised image classification of images?

**Question 4**

[11]

The figure below shows three different lines, each from a different land cover type.

1. What do you call the graph represented in the figure ?
2. What land cover type does each of the three lines (full, ... dots, -.- dash-dot) in the graph represent? Explain in detail why (for each line).



**Question 5****[24]**

Indicate if following statements are True or False. If false, correct the statement.

1. Each image layer in a GIS has an attribute table.
2. The distance between two meridians of longitude is a constant.
3. A contour line is an isopleth.
4. The ID field in a GIS attribute layer is always an integer.
5. The vertical images taken during all UAV flights can be used to create a DEM.
6. Electromagnetic radiation with a long wavelength has a low frequency.
7. Longitude values always range between 0° and 90°.
8. Green plants absorb green light.
9. Terrain relief can be recorded by RADAR systems.
10. Satellite images record the light absorbed by objects.
11. Electromagnetic radiation travels at the speed of sound.
12. You can determine NDVI with data from a RGB camera.
13. Thermal radiation from animals and humans is emitted in the visible light range.
14. The red band of MODIS is suitable to detect fires.

**Question 6****[9]**

You are collecting samples at sampling stations placed every 10 kilometres along a transect. The transect runs along a meridian of longitude, starting at latitude -20° and ending at latitude -22°.

- a) What is a transect?
- b) Are you performing a random or a systematic sampling?
- c) How many sampling stations do you have? Explain our answer.

**Question 7****[5]**

What is a GIS metadata file? Give three types of information that can be stored in such a file.

**Question 8****[6]**

Describe the difference between active and passive remote sensing sensors. Give one example of each type of sensor.

**Question 9****[13]**

Describe the different methods to create GIS data in raster and vector format.

**Question 10****[6]**

What is cartography? Why is it such an important discipline?

