



PAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH, NATURAL RESOURCES AND APPLIED SCIENCES

SCHOOL OF AGRICULTURE AND NATURAL RESOURCE SCIENCES

DEPARTMENT OF NATURAL RESOURCE SCIENCES

QUALIFICATION: BACHELOR OF NATURAL RESOURCE MANAGEMENT HONOURS	
QUALIFICATION CODE: 08BNRH	LEVEL: 8
COURSE CODE: GRS811S	COURSE NAME: GIS AND REMOTE SENSING IN PRACTICE
DATE: June 2024	
DURATION: 3 HOURS	MARKS: 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Prof. Vera De Cauwer
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INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL the questions.2. Write clearly and neatly.3. Number your answers clearly.4. Show your detailed work for calculations.

PERMISSIBLE MATERIALS

1. Calculator

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

Question 1

[18]

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

1. 20° 59' 57" S, 21° 8' 22" E
2. 22° 20.9' N, 15° 54.2' E
3. S 19° 25.1251', W 8° 19.4331'

Question 2

[6]

What is the difference between vector and raster data?

Question 3

[6]

What is a GIS metadata file? Indicate which of the listed items can be included in a GIS metadata file:

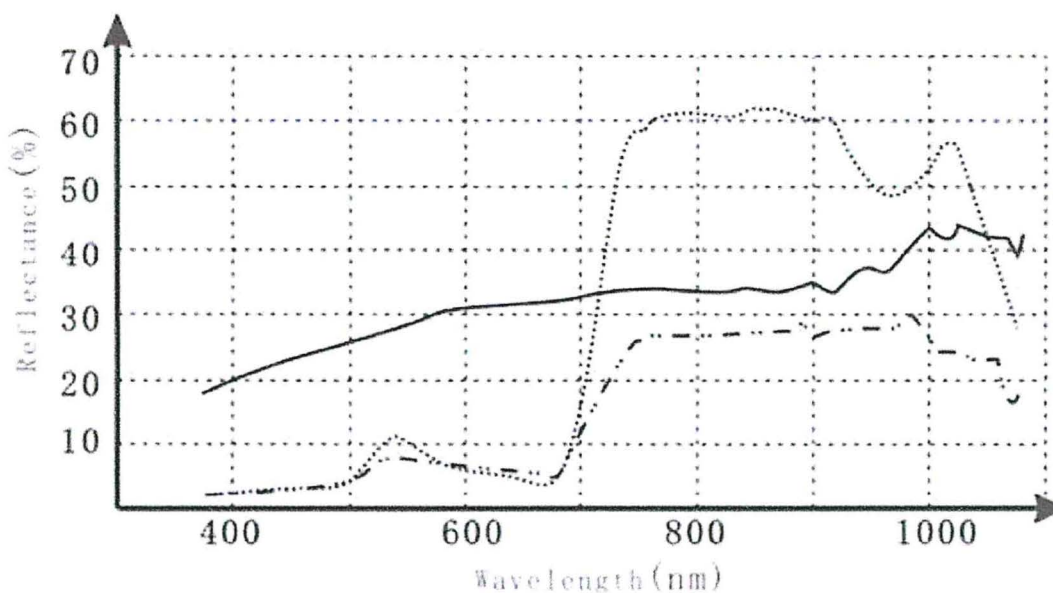
- Attribute table
- Extent
- Source
- Positional accuracy
- Polygon layer
- History.

Question 4

[10]

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**[7]**

- a) What is a vegetation index and how is it created?
- b) Why are vegetation indices used?
- c) Which is the most used vegetation index?
- d) What will be the land cover in areas where the vegetation index is smaller than 0.1?

Question 6**[9]**

- a) What does the acronym DEM stand for?
- b) What does a DEM contain/represent?
- c) Give two examples of sources of DEM data.
- d) How do you show the information of a DEM correctly on a map?

Question 7**[23]**

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

1. A file in gpx format contains GPS data and is a raster file.
2. A file in qgz format is a project file of QGIS and does not contain GIS data.
3. Active sensors depend on an external source of energy.
4. The ID field in a GIS attribute layer is always an integer.
5. Electromagnetic radiation with a short wavelength has a low frequency.
6. Electromagnetic radiation travels at the speed of sound.
7. The frequency of electromagnetic radiation is measured in Hertz.
8. Longitude varies from 0° at the prime meridian to 180° east or west.
9. Sentinel is a passive satellite sensor collecting multispectral data.
10. The latitude at the equator is 90°.
11. An isohyet is a line that joins points of equal elevation.
12. The distance between two meridians of longitude is a constant (always the same).
13. Lines are composed of at least two vertices that are connected.
14. The location 981,855 m S; 1,628,000 m W is expressed in geographical coordinates.
15. A map scale of 1:500,000 is larger than a map scale of 1:100,000.

Question 8**[15]**

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

Question 9**[6]**

Describe the two types of aerial photographs that are distinguished based on the position of the camera during recording.