



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: 09MNRM	LEVEL: 8
COURSE CODE: GRS811S	COURSE NAME: GIS AND REMOTE SENSING IN PRACTICE
DATE: JULY 2023	
DURATION: 3 HOURS	MARKS: 84

SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Prof. Vera De Cauwer
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INSTRUCTIONS
<ol style="list-style-type: none">1. Number your answers clearly.2. Show your detailed working for each calculation.

PERMISSIBLE MATERIALS

1. Calculator

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

Question 1**[8]**

- a) What is the difference between vector and raster data?
- b) Give an example of a vector file and a raster file.

Question 2**[22]**

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

1. Electromagnetic radiation with a long wavelength has a low frequency.
2. A satellite image contains geospatial information in vector format.
3. Longitude varies from 0° at Greenwich to 180° east or west.
4. Electromagnetic radiation travels at the speed of sound (343 m/s).
5. Satellite images record the light absorbed by objects.
6. It is advised to always use illumination from the southwest to display hill shades on a map.
7. Coordinates of latitude represent the X-axis for the grid of latitude and longitude lines covering the world.
8. You can not open a QGIS project on a computer without having the GIS data used in the project.
9. The latitude at the equator is 90°.
10. GPS data is vector data and most often in gpx format.
11. UAV's are unmanned aerial vehicles that normally fly at lower altitudes than aeroplanes.
12. If you double-click a shape file in file explorer, it will not open.
13. An isohyet is a line that joins points of equal elevation.
14. Sentinel is a satellite sensor collecting multispectral data at low resolution.

Question 3**[5]**

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

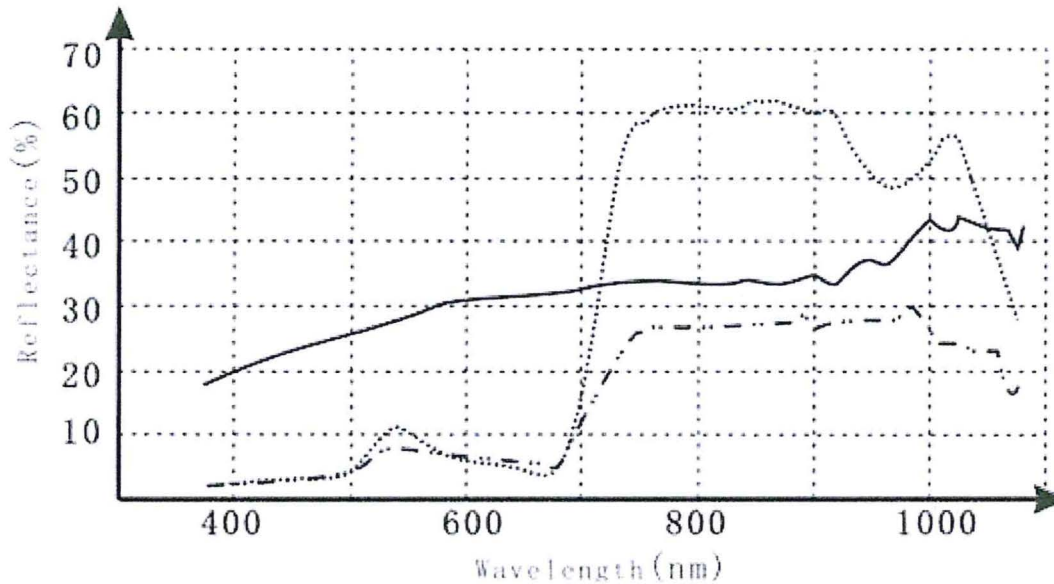
Question 4**[5]**

What is the difference between active and passive remote sensing sensors? Give one example of both.

Question 5**[10]**

The following figure 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 6 [4]
 What is the SMART system? Explain briefly and indicate the availability.

Question 7 [8]
 Elevation data is very useful for natural resource managers and can be imported into a GIS.

- a) What is the difference between a DSM and a DEM?
- b) What type of aerial photos are needed to create a DEM?
- c) What are the data of the Shuttle Radar Topography Mission (SRTM)? Indicate the resolution in which the data is available.

Question 8 [10]
 Describe the different methods to create GIS data.

Question 9 [12]
 Convert the following coordinates to decimal format. Indicate clearly which coordinate is latitude and which is longitude.

1. 25° 59' 57" S, 23° 4' 32" E
2. N 50° 25.1251', W 19 ° 43.8381'