



GWANDA STATE UNIVERSITY

FACULTY OF ENGINEERING AND ENVIRONMENT

DEPARTMENT OF GEOMATICS AND SURVEYING

GEOGRAPHIC INFORMATION SYSTEMS AND REMOTE SENSING

EGS1112

Final Examination Paper

September 2023

This examination paper consists of 2 pages

Time Allowed: 3 hours

Total Marks: 100

Examiner's Name: Mr A Sibanda

INSTRUCTIONS

Answer ALL questions in chronological order

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QUESTION 1: Principles of Geographic Information Systems and Science			
[25]			
A	i)	What does GIS stand for and what is its purpose?	4
	ii)	State and explain the components of GIS.	10
	iii)	What are some of the challenges associated with collecting and analyzing GIS data?	5
B		How can GIS be used to support decision-making and planning in different contexts?	6
QUESTION 2: Geographic representations and data models			
[25]			
A	i)	What is a geographic representation?	3
	ii)	With the aid of illustrations describe Vector and raster data.	10
B	i)	What is georeferencing and why is it important in mapping and GIS?	5
C	i)	Define what a coordinate system is and give examples.	3
	ii)	What is topology and how is it related to GIS?	4
QUESTION 3: Introduction to Remote Sensing (RS)			
[25]			
A	i)	Define remote sensing.	3
	ii)	Describe the processes involved in using remote sensing to collect data and how it can be applied to analyse environmental changes.	5
	iii)	Provide an example of a real-world application where remote sensing has been used successfully to monitor and assess changes in an ecosystem.	5
	iv)	Using practical examples, explain the importance of remote sensing	10
QUESTION 4: Components for Remote Sensing (RS) and Imagery Interpretation			
[25]			
A	i)	What is an electromagnetic wave?	2
	ii)	What is the relationship between electromagnetic waves and remote sensing?	5
B	i)	What is a sensor platform and what are the main types of sensor platforms (describe) used in remote sensing?	8
	ii)	What is the difference between spatial resolution and spectral resolution in remote sensing imagery?	4
	iii)	What are some applications of remote sensing imagery interpretation in various fields?	6

END OF EXAMINATION