



ZIMBABWE EZEKIEL GUTI UNIVERSITY

COLLEGE FOR LIFELONG LEARNING

**FACULTY OF SCIENCE, TECHNOLOGY, AGRICULTURE AND FOOD
SYSTEMS**

EXAMINATION PAPER

Diploma in Strategic Mine Safety, Health and Environment

MODULE CODE : DSMS124
MODULE TITLE : GIS and Remote Sensing
DURATION : 2 Hours
LEVEL : 1.2
DATE : 11 JUN 2025

INSTRUCTIONS TO CANDIDATES:

1. No cell phones are allowed in the examination venue.
2. Answer any two (2) questions
3. The number of marks for each question or part question is shown in brackets []
4. Begin each answer on a new page.
5. **DO NOT OPEN THIS PAPER UNTIL THE INVIGILATOR INSTRUCTS YOU.**

Answer any two (2) questions

1. Discuss how each component contributes to the process of collecting and interpreting data from the Earth's surface in Remote Sensing. **(25 marks)**
 - i) Energy Source
 - ii) Sensor
 - iii) Atmospheric Interaction
 - iv) Data Recording
 - v) Data Transmission and Processing
 - vi) Interpretation and Analysis
 - vii) Applications

2. a) What are the fundamental principles of cartography that should be considered when constructing a map? Discuss how these principles influence the effectiveness and clarity of the map. **(15 marks)**
b) Explain the significance of data collection and preprocessing in the GIS process. What challenges might arise during these initial stages, and how can they impact the overall analysis? **(10 marks)**

- 3 a) What is Spatial Analysis in GIS **(5 marks)**
b) Describe how do these components work together to facilitate spatial data analysis and decision-making in GIS? **(20 marks)**
 - i) Hardware
 - ii) Software
 - iii) Data
 - iv) People

4. a) Describe the concepts of absorption, reflection, and transmission of incident radiation in the context of Remote Sensing. **(6 marks)**
b) Explain the types of satellite orbits in Geographic Information Systems (GIS) **(6 marks)**
 - i) Geostationary
 - ii) Polar
 - iii) Sun-synchronous

c) Discuss the applications of Radar in remote sensing. How does Radar technology complement LiDAR in environmental monitoring and mapping? (13 marks)

THE END

3/1 AM