BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE AND ENGINEERING

SCHOOL OF GEOSCIENCES, DISASTER & DEVELOPMENT

GEOSCIENCES DEPARTMENT

MASTER OF SCIENCE DEGREE IN NATURAL RESOURCES MANAGEMENT AND ENVIRONMENTAL SUSTAINABILITY

MG509: ENVIRONMENTAL REMOTE SENSING/GEOGRAPHIC INFORMATION SYSTEMS

EXAMINATION JUN 2025 **TIME: 3 HOURS**

ANSWER ONE (1) QUESTION FROM SECTION A AND TWO (2) QUESTIONS FROM SECTION B. USE ILLUSTRATIONS WHERE RELEVANT. MARKS FOR EACH QUESTION ARE INDICATED IN BRACKETS [ ].

Section A: Choose one (1) question

1. a) Compare and contrast vector and raster data models in GIS. [5]

   b) Deliberate any five elements of visual image interpretation. [10]

   c) With the aid of a well labelled diagram, describe the spectral response pattern of vegetation [10]

2. a) Explain the importance of atmospheric windows in remote sensing. [5]

   b) Explain any two of the following: i) spatial resolution, ii) temporal resolution and iii) active sensors. [10]

   c) Justify the application of change detection in vegetation monitoring. [10]

Section B: Choose two (2) questions

3. With reference to the developments in GIS and remote sensing discuss the notion that lack of data is no longer a challenge in natural resources management and environmental sustainability [25]

4. Explain the procedure for application of GIS in site suitability analysis for a location of chemical processing plant in any part of Zimbabwe.

5. a) With the aid of a formulae, define the term normalised difference vegetation index (NDVI). [5]

   b) Describe the application of NDVI in monitoring land use and land cover changes in Zimbabwe [20]

END OF EXAMINATION