GWANDA STATE UNIVERSITY

FACULTY OF ENGINEERING AND ENVIRONMENT

DEPARTMENT OF GEOMATICS AND SURVEYING

Photogrammetry and Remote Sensing

ESG 2210 / NGE2206

Examination Paper

November 2024

This examination paper consists of 2 pages

Time Allowed: **2 hours**

Total Marks: **100**

Examiner's Name: Mr N.S. Maphosa

INSTRUCTIONS

1. **Choose and Answer any 4 questions**

1. Compare and contrast ground-based, airborne, and space-based remote sensing platforms in terms of their characteristics, applications, and limitations. Provide examples to support your answer (25)
2. Using fig 1below, calculate and explain the scientific basis of using NDVI for estimating vegetation vigor and amount. [25]

   Fig 1.

   Red Band

0.2	0.2	0.5
0.2	0.85	0.5
0.6	0.75	0.5

   Near Infrared Band

0.9	0.9	0.5
0.9	0.85	0.5
0.2	0.2	0.5

3. (a) With aid of examples of various satellite missions, explain the concept of image resolution (15).

   (b) Provide examples of remote sensing applications where high-resolution imagery is crucial for accurate analysis and interpretation (10)

4. (a) Discuss the different image enhancement techniques used in remote sensing, such as contrast stretching, histogram equalization, and spatial filtering (15)

   (b) Describe the process and applications of drone technology in Land Surveying (10).

5. Discuss the concept of image fusion in remote sensing and explain its significance in integrating data from multiple sensors or resolutions. Explain the advantages and limitations of each image fusion technique (25)