GWANDA STATE UNIVERSITY

FACULTY OF ENGINEERING AND ENVIRONMENT

DEPARTMENT OF GEOMATICS AND SURVEYING

Photogrammetry and Remote Sensing

ESG 2210

Examination Paper

June 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. (a) Describe and explain the applicability of photogrammetry and remote sensing in geomatics and Surveying[12]

   (b) Using fig 1, calculate the Normalized Difference Water Index and briefly explain the results [13].

Green Band

2.5	1.3	1.3	0.9
0.5	2.6	1.4	0.9
0.5	1	2.9	0.9
0.5	1	2	3

Near Infrared Band

0.99	0.6	0.95	1
0.33	1	0.95	1
0.33	0.5	2	1
0	0.55	1.75	1.3

2. (a) With aid of a well labeled diagram, explain the remote sensing system[15]

   (b) Explain the difference between active and passive remote sensing techniques, providing examples of each (10)

3. (a) Define scattering in the context of remote sensing and explain the types of scattering mechanisms encountered in the atmosphere (13).

   (b) Explain the concept of atmospheric windows in remote sensing and their significance in data acquisition (12)

4. (a) Discuss the behavior of different phenomena on the earth's surface as a result of interaction with electromagnetic spectrum. Support your answer with aid of a diagram (15).

   (b) Describe the attributes of an image, concept of pixel size and its relationship with image resolution (10).

5. (a) Explain the concept of image enhancement in remote sensing and discuss its significance in improving visual interpretation (10).

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