NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF ENVIRONMENTAL SCIENCE

DEPARTMENT OF GEOSPATIAL SCIENCE

REMOTE SENSING (EGR 1101)

Main Examination Paper

December 2024

This Examination Paper consists of 2 pages

Time Allowed: 3 hours

Total Marks: 100

Special Requirements: Nil

Internal Examiner: Ms Z. Dzinotizei

External Examiner: Dr M. Shekede

INSTRUCTIONS

1. Answer **QUESTION ONE** and any **THREE** others
2. Each question carries 25 marks

MARK ALLOCATION

QUESTION	**MARKS**
1.	25
2.	25
3.	25
4.	25
5.	25
6.	25
TOTAL	**100**

1. (a) Explain the relationship between electromagnetic radiation's wavelength, frequency and velocity. **[10 Marks]**

   (b) Explain the Plank's law and highlight its importance in remote sensing. **[10 Marks]**

   (c) With the aid of an equation, explain the relationship between energy radiated from a black body and temperature. **[5 Marks]**

2. Identify and explain any **FIVE** environmental fields that depend on remote sensing.

3. (a) Is remote sensing the same as Earth Observation? Discuss. **[12 Marks]**

   (b) Describe the modes of operation for RADAR and LIDAR remote sensors. **[13 Marks]**

4. Describe and explain the **SEVEN** stages of the remote sensing process.

5. Describe the interactions of electromagnetic radiation with the atmosphere and Earth's surface features and their implications on feature detection.

6. Describe the evolution of remote sensing science and technology in the study of the earth's features.