



NATIONAL OPEN UNIVERSITY OF NIGERIA

FACULTY OF SCIENCES

DEPARTMENT OF ENVIRONMENTAL SCIENCE AND RESOURCE MANAGEMENT

Plot 91, Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja

2023_1 POP EXAMINATION..

COURSE CODE: ESM 392

COURSE TITLE: REMOTE SENSING AND RADIATION PRINCIPLES

CREDIT: 2 Units

TIME ALLOWED: 2 Hours

Instruction: Attempt question number ONE (1) and any other TWO (2) questions. Question number one (1) carries 30 marks, while the other questions carry (20) marks each.

- QUESTION 1** a. Give a brief explanation of remote sensing.
b. State the regions of electromagnetic spectrum.
c. Explain the processes of electromagnetic radiation.
d. State and explain the processes involved in electromagnetic remote sensing.
e. Distinguish between active and passive sensors.
f. State the advantage of aerial photographs over on-site surveys

- QUESTION 2** a. State three (3) modes of energy transfer.
b. Expatiate on the visible portion of the electromagnetic spectrum.
c. Define the term Radiation.

- QUESTION 3** a. Categorize and provide examples of remote sensing platforms.
b. Describe the process of atmospheric absorption.
c. Explain the atmospheric scattering process of mie scatter.

- QUESTION 4** a. State three (3) effects of energy interaction with earth surface features.
b. Describe the term “wavelength dependency”.
c. Define spectral reflectance, $R\lambda$ mathematically.

- QUESTION 5** a. State the factors affecting spectral reflectance on soil.
b. Expatiate on sun-synchronous or polar orbiting satellite.
c. Describe panchromatic imaging system.