

**National Open University of Nigeria**

**Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja**

**Faculty of Science**

**NOVEMBER, 2018 EXAMINATIONS**

**COURSE CODE: ESM 392**

**COURSE TITLE: REMOTE SENSING**

**CREDIT: 2 Units**

**TIME ALLOWED: 2 Hours**

**INSTRUCTION: Answer Question ONE (1) and any other THREE (3) Questions**

1a.Distinguish between energy interaction in the atmosphere and with earth surface features**.(4x2=8mks)**

b.Energy interaction with earth surface features gives rise to the energy balance equation**.(Discuss)(4x2=8mks)**

c. Distinguish the types of aerial photographs and state the various uses of each**.(9 marks)**

2a. What is image rectification and restoration.(5mks)

bExplain briefly the processes of carrying out digital image restoration and justify the rationale for doing it in remote sensing.(5mks)

cList the various techniques of pre-processing digital images(5mks)

3a. Each type of remote sensor reacts to energy bands of specific frequency and wavelength. Discuss this statement, highlighting the designated sensors and their capabilities within a certain range of the electromagnetic energy. (2mks each=8mks)

b. Eight of the current sensors that are on board space borne platforms are? (4mks).

c. List the forms in which remote sensing platforms can be classified**. (3mks)**

4a**.** Define the following terms used in photogrammetry(5mks)

1. Principal point
2. Flight line
3. Over lap
4. Stereo pair

b. Examine the 2 ways of obtaining the scale of an aerial photograph(5mks)

c. Compute the scale of an aerial photograph taken with an aerial camera of focal length 152mm and from a flying height of 830m above sea level, over an area of average height of 50m above sea level(5mks)

5a.Discuss the various characteristics of photographic images**. (5mks)**

b.Identify 2 ways of mapping from aerial photographs**.(2.5mks x 2 =5mks)**

c.How do we achieve the following on a pair of overlapping aerial photographs: i. Principal Point(pp) ii. Conjugate principal point (cpp) **?(2.5mks x 2 =5mks)**