National Open University of Nigeria
Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi - Abuja
Faculty of Science
OCTOBER, 2019_2 EXAMINATIONS

COURSE CODE: ESM 392
COURSE TITLE: REMOTE SENSING
CREDIT: 2 Units
TIME ALLOWED: 2 Hours
Instruction: Attempt question number ONE (1) and any other THREE (3) questions. Question number one (1) carries 25 marks, while the other questions (15) each marks.

1a) Succinctly discuss the following remote sensing platforms   **(8marks)**
- Land-Based platforms   (**2marks**)
- Aerial platforms   (**2marks**)
- Satellite platforms   (**4marks**)

1b) Outline the various techniques of pre-processing digital images   **(4marks)**

1c) List the remote sensors on board space borne platforms   **(9marks)**

1d) 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.   **(4marks)**

2a) Explain the following digital image enhancement procedure   **(12marks)**
- Contrast Enhancement   (**2marks**)
- Intensity, Hue and Saturation Transformations   (**4marks**)
- Density Slicing   (**2marks**)
- Non-directional Filters   (**1mark**)
- Spatial Filtering   (**1mark**)

2b) In filtering of random noise outline the steps used spots elimination after Sabins (1987)
                                                                         (3marks)

3a) What is a scale   **(1mark)**
3b) List the visual variables in aerial photograph   **(6marks)**
3c) Highlight the application methods applied in convolution filtering   **(4marks)**
3d) Explain the basic processes involved in electromagnetic remote sensing   **(4marks)**

4a) Name the types of scales in aerial photograph   **(2marks)**
4b) Describe the restoring periodic line striping   (**3 marks**)
4c) Give a detailed explanation on the techniques for correcting for atmospheric scattering
                                                                         (**10marks**)

5a) Define aerial photography   **(3marks)**
5b) Describe the characteristics that define the electromagnetic spectrum (ES)   **(5marks)**
5c) Draw a well-labelled diagram of the electromagnetic spectrum   **(7marks)**