UNIVERSITY OF ESWATINI

DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND PLANNING

FINAL EXAMINATION, MAY/JUNE 2019

BSc., B.A. (Social Science), B.A. (Humanities), B.Ed., B.Ed. (Science) Secondary

TITLE OF PAPER: ADVANCED GIS, REMOTE SENSING AND CARTOGRAPHY

COURSE NUMBER: GEP312

TIME ALLOWED: THREE (3) HOURS

INSTRUCTIONS:

1. ANSWER THREE QUESTIONS
2. SECTION A IS COMPULSORY
3. ANSWER ANY TWO QUESTIONS FROM SECTION B
4. ILLUSTRATE YOUR ANSWERS WITH EXAMPLES AND USE APPROPRIATE TERMINOLOGY

ALLOCATION OF MARKS: QUESTION 1 (COMPULSORY) CARRIES 40 MARKS, WHILE THE REST CARRY 30 MARKS EACH

THIS PAPER SHOULD NOT BE OPENED UNTIL PERMISSION IS GRANTED BY THE INVIGILATOR

SECTION A: COMPULSORY

QUESTION 1

a) Discuss the key considerations and/or guidelines one would need to follow when using unmanned aerial vehicles or drones for remote sensing in the Kingdom of Eswatini. (20 marks)

b) Discuss the advantages and disadvantages of using unmanned aerial vehicles or drones in remote sensing. (20 marks)

(40 marks)

SECTION B : ANSWER ANY TWO QUESTIONS

QUESTION 2

a) Discuss, using illustrations and examples, the major advantages of remote sensing over ground-based or physical data collection and measurement systems. (20 marks)

b) Compare and contrast passive and active remote sensing systems. (10 marks)

(30 Marks)

QUESTION 3

Using appropriate illustrations or diagrams, describe the characteristic spectral reflectance curves for the following features:

i) Water (8 marks)

ii) Soil (9 marks)

iii) Vegetation (13 marks)

(30 Marks)

QUESTION 4

a) Define the following terms:

i) Interpolation (3 marks)

ii) Perigee (3 marks)

iii) Sun-synchronous orbit (3 marks)

iv) False colour composite (3 marks)

b) Discuss any **ONE (1)** algorithm or method that is used in the supervised classification of remotely-sensed imagery. (18 marks)

(30 Marks)

QUESTION 5

Discuss in detail, using example applications, **ONE (1)** space-based remote sensing instrument or sensor. This should include information on resolutions.

(30 Marks)