

**UNIVERSITY OF SWAZILAND**  
**DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND**  
**PLANNING**

**RE-SIT EXAMINATION, MAY 2018**

**B.Sc., B.A. (Social Science), B.A. (Humanities), 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**

**GEP312: ADVANCED GIS, REMOTE SENSING AND CARTOGRAPHY – MAY 2018**

**SECTION A  
COMPULSORY**

**QUESTION 1**

- (a) Discuss how the Geographic Information System and Remote Sensing complement each other. (20 marks)
- (b) Describe the 4 types of resolutions used in describing remote sensing data acquisition and analysis. (20 marks)
- (40 Marks)**

**SECTION B  
ANSWER ANY TWO QUESTIONS**

**QUESTION 2**

Explain how a detailed understanding of plant phenology can be used to improve a remote sensing project plan (data acquisition plan) and data analysis (visual or image processing) procedures. (30 Marks)

**QUESTION 3**

Using an appropriate illustration or diagram, 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) What is the difference between a datum and a projection? (15 marks)
- b) When mapping sensitive data, what are some techniques that can be used to hide details of the data? (15 marks)
- (30 Marks)**

**QUESTION 5**

(a) Define the following terms:

- (i) Remote sensing (3 marks)
- (ii) Passive sensor (3 marks)
- (iii) Reflectance (3 marks)
- (iv) Swath (3 marks)
- (v) False colour composite (3 marks)
- (vi) Instantaneous field of view (IFOV) (3 marks)

(c) Discuss the colour additive theory. (12 marks)

**(30 Marks)**