

SECTION A: COMPULSORY QUESTION

QUESTION 1

- a) Discuss the effects that atmospheric interference has upon EM energy (16 marks).
 - b) Explain the implications of atmospheric interference for satellite sensor design with respect to the choice of spectral bands and atmospheric windows. (12 marks)
 - c) Use a simple diagram to illustrate the colour additive process and comment on the importance of understanding colour interaction when interpreting analogue colour composite (multi-spectral) images. (12 marks)
- (40 marks)**

SECTION B: ANSWER ANY TWO QUESTIONS

QUESTION 2

- a) Define the following:
 - (i) Transmittance (2 marks)
 - (ii) Absorptance (2 marks)
 - (iii) Irradiance (2 marks)
 - b) Explain the advantages and disadvantages of IKONOS and QuickBird over Landsat or SPOT? (15 marks).
 - c) Using examples, describe the operations of active and passive remote sensing. (9 marks).
- (30 marks)**

QUESTION 3

- a) Describe and sketch how Range Resolution and Azimuth are measured. (15 marks)
 - b) Use appropriate examples to explain how moisture affects the reflectiveness of a target to RADAR? (15 marks)
- (30 marks)**

QUESTION 4

- a) What is the difference between supervised, unsupervised and hybrid classification techniques? (9 marks)
 - b) Describe, using examples, the characteristics of sensors that are appropriate for classification and mapping of broad ecosystem types (e.g. rainforest, temperate forest, grassland, etc...). (12 marks)
 - c) Briefly describe the post-classification approach to change detection (9 marks).
- (30 marks)**

QUESTION 5

- a) Discuss the techniques and emerging methods used in remote sensing. (15 marks)
 - b) Describe the key skills that are necessary for a person to qualify for a professional career in remote sensing in the 21st century. (15 marks)
- (30 marks)**