Uva Wellassa University, Sri Lanka
End Semester Examination – Aug./Sep. 2011
(SCT)

MRT 341-2 Remote Sensing and Geographic Information Systems

Time: Two (02) hours

Total six (06) questions
Answer **five (05)** questions only
Use appropriate sketches/diagrams to illustrate your answers
Each question carries 20 marks

01) i. Write a detailed account on the evolution of "Remote Sensing Technology" over the past century, highlighting their applications and technological advancements. (10 marks)

ii. Giving examples, discuss the advantages of using remote sensing techniques for earth observation. List their major limitations. (10 marks)

02) i. Explain (a) Electro-Magnetic (EM) radiation, (b) characteristics of the EM spectrum and (c) atmospheric windows of EM spectrum. (10 marks)

ii. Describe different regions of EM spectrum that are used in remote sensing applications. (05 marks)

iii. Give detailed accounts on different types of interactions of EM radiation with (a) atmosphere, (b) objects on earth's surface. (05 marks)

03) Write short notes on the following.

a. Spectral, spatial, radiometric and temporal resolution of a remote sensing system (08 marks)
b. Passive Vs. active remote sensing (04 marks)
c. Specular and diffuse reflection (04 marks)
d. Reflectance properties of vegetation (04 marks)

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04) i. Distinguish between "geostationary" and "sun-synchronous" satellite orbits. Describe their applications with examples.

(05 marks)

ii. Explain "swath" and "orbit cycle" of an earth observing satellite.

(05 marks)

iii. Describe "along-track" and "across-track" scanning methods.

(10 marks)

05) i. Discuss different types of remote sensing platforms with suitable examples.

(06 marks)

ii. Briefly describe two multi-spectral remote sensing systems that employ discrete detectors and scanning mirrors.

(06 marks)

iii. Explain how a passive remote sensing system would generate a digital image of the earth's surface by capturing and recording the reflected energy.

(08 marks)

06) i. What are the two types of data models used in GIS? Using examples describe how they represent real-world features. Discuss advantages and disadvantages of the two models.

(08 marks)

ii. Briefly explain planar, conic and cylindrical map projections. Discuss the distortions associated with each projection.

(06 marks)

iii. What are the purposes of GIS? How would you apply GIS for a water OR mineral exploration project?

(06 marks)