Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech(ECE)/SEM-8/EC-804D/2012

2012

REMOTE SENSING

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$

   i) The relationship between the wavelength (λ), frequency (ν) and velocity of light (c) of EMR is based on the formula

   a) $c = \lambda\nu$ b) $c = \lambda/\nu$

   c) $\lambda = c\nu$ d) $\lambda = c/\nu$.

   ii) The amount of energy characterizing a photon is determined using Plank's general equation

   a) $Q = h/\nu$ b) $Q = h\nu$

   c) $h = Q\nu$ d) $\nu = Qh$.

iii) In atmospheric window the visible light region range is

a) 0·4 – 1·0 μm b) 0·4 – 2·0 μm

c) 0·4 – 0·7 μm d) 0·4 – 3·0 μm.

iv) An ideal remote sensing needs

a) an isotropic energy source

b) a monochromatic energy source

c) a non-uniform energy source

d) a uniform energy source.

v) A filter can transmit or reflect a specified range of

a) wavelength b) light

c) energy d) frequency.

vi) Dispersing element is

a) Filter b) Prism

c) Spectrometer d) Detectors.

vii) LIDAR stands for

a) Lazer Detection And Ranging

b) LED Detection And Ranging

c) Light Detection And Ranging

d) Liquid Detection And Ranging.

viii) Polarization refers to the orientation of the

a) E-H fields b) H-field

c) Transverse E-field d) E-field.

ix) Digital photogrammetry is applied to digital images that are stored and processed in a

a) Computer b) Processor

c) Memory d) None of these.

x) For representing 3D earth's surface we use

a) Photogrammetry

b) DTM or DEM generation

c) Orthorectification

d) Y-parallax.

xi) Radargrammetry is a method that derives a topographic map from two overlapping

a) LIDAR images b) SONAR images

c) Rarad images d) Digital images.

xii) Digital image processing is carried out using

a) Mainframe-based b) Microcomputer-based

c) Minicomputer-based d) All of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. What is remote sensing ? Explain about distance remote sensing. 2 + 3

3. Distinguish between active and passive remote sensing.

4. What do you understand by digital image ?

5. What is radargrammetry ?

6. Write about the advantages of GIS over DBMS.

GROUP – C
(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. a) What are Thematic maps ?

   b) Write about the role of Digital Image Processing technology in Remote Sensing.

   c) What is a Multi Spectral Remote Sensing System ?

   5 + 5 + 5

8. What do you understand by digital image ? What is sensor ? Explain about different sensors used in remote sensing.

   8 + 7

9. What is photogrammetry ? Explain the photogrammetric process with a suitable workflow diagram. What is the difference between LIDAR and photogrammetry ? 2 + 9 + 4

10. Define GIS. Describe the key components of GIS. Describe GIS in the context of information infrastructure. 2 + 7 + 6

11. Write short notes on any *three* of the following : 3 × 5

    a) Role of Shadow to measuring height

    b) Limitations of GIS

    c) Management of project

    d) 4D GIS

    e) GPS

    f) Microwave remote sensing system.