

2015

M.Sc. 1st Semester Examination

REMOTE SENSING & GIS

PAPER—RSG-101

Full Marks : 40

Time : 2 Hours

The figures in the margin indicate full marks.

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

Illustrate the answers wherever necessary.

Use separate Answerscripts for each group.

Group—A

Fundamental and Physics of Remote Sensing

[Marks : 20]

1. Answer any two questions : 2×10

- (a) At what heights do geostationary satellite operate ?
- (b) Why is clear non turbulent water blue/green in the visible part of the spectrum and black in the near infrared ?

(Turn Over)

- (c) What are the two forms of selective scattering in the atmosphere and how does selective scattering differ from non-selective scattering ?
- (d) What is the most significant feature of the spectral signature of vegetation in the 0.4 – 1 ; 1 μm wave band ?
2+2+3+3
2. (a) What is 'spectral reflectance curve' ? Sketch the spectral reflectance curve for vegetation in the visible, NIR and MIR ranges. 2+4
- (b) What is meant by spectral signature of an earth feature ? How it helps in differentiating earth features ?
2+2
3. (a) What are the implications of the "Stefan-Boltzman" and "Wien's" displacement law in remote sensing ?
- (b) Explain why choice of time of day is important in planning acquisition of thermal images.
- (c) What is black body radiation ? 4+4+2
4. Write short notes on any *two* : 2 \times 5
- (a) Advantages and Limitations of Remote Sensing,

- (b) Kirchhoff's Law of Comissivity,
- (c) Radiant and Kinetic temperature,
- (d) Atmospheric windows.

Group—B

Platform and Sensors

[Marks : 20]

1. Answer any *two* questions from the following : 2×10
- (a) With the help of a neat diagram explain Semimajor, Semiminor axes and Eccentricity of an orbiting satellite.
 - (b) Write Kepler's laws to describe an artificial satellite orbiting the earth.
 - (c) Define escape velocity. 4+4+2
2. (a) What are basic differences between multispectral and hyperspectral images ?
- (b) How important are laboratory spectra in understanding the remote sensing images ?
- (c) How energy, frequency and wavelength are related in EM energy propagation ? 3+3+4

3. What do you mean by resolution ? Explain different types of resolution citing examples. Explain FCC. 2+5+3
4. (a) What types of sensors are used in Oceanographic / Ocean studies.
- (b) Discuss on the Launch Vehicles in Indian context with examples. 5+5
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