2015

M.Sc.

2nd Semester Examination

REMOTE SENSING AND GIS

PAPER—RSG-202

Full Marks : 40

Time : 2 Hours

The figures in the right-hand 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 answer book for each Group.

Group–A

(*GIS*)

[Marks : 20]

Answer any *two* questions. 2×10

1. (i) Define black body, grey body and selective radiators with illustration.

(ii) "Good absorber are good emitter, good reflectors are poor emitter' — explain the statement with the Kirchoff's Radiation Law.

(c) Describe diurnal temperature cycle. 3+5+2

2. (i) 'When an iron rod is heated it glows' — describe the phenomenon with the Wien's Displacement Law.
   (ii) What is the peak wavelength for a lamp that glows at 1800°C ?
   (iii) What are factors that affect Radiant Temperature ? 5+2+3

3. Mention some distinct advantages and disadvantages of microwave domain vis-a-vis optical remote sensing. Explain the fundamental differences between a synthetic aperture radar (SAR) and a real aperture radar (RAR). Describe how the geometrical and electrical properties of the target influence the radar return ? 3+2+5

4. With the help of a neat diagram briefly describe the 'Range' and 'Azimuth' resolution of a SLR system. What is the nature of relief displacement in radar image and why ? What is 'Speckle' ? 6+3+1

Group–B

(*Data Storage*)

[Marks : 20]

Answer any *two* questions. 2×10

1. What do you mean by imaging spectroscopy ? Explain the advantages and disadvantages of hyperspectral remote sensing.

   Which hyperspectral sensor was used in Indian Meon Mission, Chandrayan-I and what are the salient characteristics of this sensor ?

   What do you mean by 'bad band' and 'bad line' of hyperspectral data ?

2. Explain the process of end member collection from hyperspectral imagery. What is SAM ? How far hyperspectral data is suitable for mineral exploration and what are the limitations ? 3+3+4

3. Briefly discuss the differences between RADAR and LIDAR technology of remote sensing. How the location of LIDAR sensor is determined ? Estimate the range of a LIDAR pulse while the travelling time of the pulse is 0.002 second. What is LVIS ? 3+3+2+2

4. How the horizontal accuracy of LIDAR pulse is measured ? What is the difference between DSM and DTM ? What are the advantages of Airborne Hyperspectral Remote Sensing over conventional Aerial Photography ? 3+2+5
