2018

M.Sc.

2nd Semester Examination

REMOTE SENSING AND GIS

PAPER—RSG-202

Subject Code—34

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

Thermal and Microwave Remote Sensing

[Marks : 20]

Answer any *two* questions. 2×10

1. Explain the surface scattering patton with different surface roughness. Write down the nature of volume scattering and penetration depth microwave with example.

Describe different components of a typical real aperture radar system and their functionality. 2+3+5

2. What are the different directions and angles of an incident microwave energy ? What is polarization ? What is the difference between a real aperture radar and a synthetic aperture radar. What do you mean by constructive and destructive interference in a SAR system ? 4+1+2+3

3. What is a radar hologram in a SAR system. How it is used to produce a miniature image of the original ? Discuss the nature of relief displacement in a radar image explain with reference to Foreshortening and Layoner. 2+3+5

4. (a) What are black body, grey body and selective radiators ?

(b) Define Spectral Emissivity and Kinetic Temperature.

(c) Mention factors influencing emissivity of an object. 3+3+4

Group–B

Hyperspectral Remote Sensing & LIDAR

[Marks : 20]

Answer any *two* questions. 2×10

1. Differentiate between hyperspectral and multispectral remote sensing.

Briefly discuss the specifications of Hyperion sensor.

Which hyperspectral sensor was used in Indian Moon Missions (chandrayaan) ? How many bands were used in that sensor ? 5+3+1+1

2. Explain the procedure and key input parameters for FLAASH atmospheric correction. What do you know about LIDAR antenna attitude ? Estimate the value of point spacing across track (Pspacing) where,

Pulre repetition frequency = 1,50,000/rec.

h = 1400 mts.

Instantaneous angular scanning speed = 2 rad/rec.

Instantaneous scan angle = 15°. 4+3+3

3. Which regions of EMR are used in LIDAR sensors for torographic and bathymetric mapping ?

What do you mean by pulse repetition frequency ?

Differentiate between DSM and DTM.

Explain the imprtance of LIDAR multiple returns with suitable illustration. 2+2+2+4

4. What do you mean by MNF and PPI ? Briefly discuss the areas of application of hyperspectral remote sensing. 4+6
