

2019

MSc

2nd Semester Examination

RS & 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.

(Turn Over)

Thermal and Microwave Remote Sensing**Group : A**

Answer any 2 (two) questions out of four questions carrying 02 marks each

Write a brief note on

- (1) Name factors that control radiant temperature.
- (2) Define thermal inertia.
- (3) How the geometrical and electrical properties of the target influence the radar return?
- (4) How a narrow beam width can be achieved by synthesizing a virtual Antenna length ?

Group : B

Answer any 2 (two) questions out of four questions carrying 04 marks each

- (5) Explain properties of Black Body, Gray Body and Selective Radiators with Proper illustrations .
- (6) Define Kinetic and Radiant temperatures and derive relationship between them.
- (7) Discuss in detail about 'urban heat island' indicating its cause and diurnal heating effect on different land-classes.
- (8) Explain range and azimuth resolution of a real aperture radar (RAR). HOW does polarization help in radar remote sensing ?

Group : C

Answer any 1 (one) question out of two questions carrying 08 marks each

(9) How do you calculate LST from satellite data? Explain with computation flow chart.

(10) Discuss the nature of relief displacement in a radar image. What is a radar hologram in a SAR system? How it is used to produce a miniature image of the original? (4+2+2)

Hyper Spectral Remote Sensing & LIDAR 20

Group-A

Answer any two question : 2x2

- (1) What do you mean by bad bands and bad lines?
- (2) Which region of EMR is being used for bathymetric mapping and why?
- (3) What do you mean by LIDAR laser footprint?
- (4) What is pineal purity index ?

Group-B

Answer any two questions: 2x4

- (5) Briefly explain SAM.
- (6) How would you determine the accuracy of LDAR derived elevation information ?
- (7) Measure across track point spacing (Pepacing) of a LIDAR dataset where,

$$PRF = 1,20,000/\text{sec}$$

$$H = 750 \text{ m}$$

$$\text{Instantaneous scan angle} = 15^\circ$$

$$\text{Instantaneous angular scanning speed} = 200 \text{ rad/sec}$$

(8) Briefly explain the process of end member collection from hyper spectral image.

Group-C

Answer any ONE question : 1x8

9.a) What is spectroscopy and how it is related with hyper spectral remote sensing?

b) Briefly discuss the advantages of hyper spectral remote sensing over multispectral remote sensing. 3+5

10.a) Write down the characteristics of first space borne hyper spectral sensor 3+5

b) Briefly discuss the applications of LIDAR data.