GROUP—B

Answer any **two** questions : 4×2=8

5. Explain the basic priniciples and advantages of LIDAR technology in remote sensing applications.

6. Highlight the applications of hyperspectral data in identification of rocks and minerals.

7. Explain the fundamental priniciples of spectroscopy and its relevance to hyperspectral remote sensing.

8. Briefly discuss the concepts of Minimum Noise Fraction and Pixel Purity Index in hyperspectral data analysis.

GROUP—C

Answer *any* **one** question : 8×1=8

9. Explain the components of a LIDAR system, including the laser and scanning system, as well as the laser location and LIDAR antenna attitude.

10. Discuss atmospheric corrections in hyperspectral data processing, including empirical and physics-based approaches and their impact on data quality. What are the limitations of hyperspectral datasets? 5+3

★★★

2024

M.Sc. 2nd Semester Examination

REMOTE SENSING & GIS

PAPER : RSG-202

(Advanced Remote Sensing)

Full Marks : 40

Time : 2 hours

Answer **all** questions.

The figures in the right-hand margin indicate marks.
Candidates are required to give their answers in their own words as far as practicable.
Illustrate the answers wherever necessary.

SECTION–A

PAPER : RSG-202.1

(Thermal & Microwave Remote Sensing)

GROUP—A

Answer any **two** questions : 2×2=4

1. How does emissivity impact the thermal properties of different surfaces in remote sensing applications?

2. Why different thermal laws are important to remote sensing?

3. What is the principle behind microwave remote sensing?

4. What are the strengths and weakness of microwave remote sensing in comparison to optical remote sensing?

GROUP—B

Answer any **two** questions : 4×2=8

5. Critically compare between apparent temperature and kinetic temperature of an object.

6. Write a note with suitable sketches on atmospheric windows in thermal infrared region.

7. Explain the concepts of Fore-shortening and Layover, including their causes and impact on microwave return visualization. Discuss the factors that influence Fore-shortening and Layover.

8. Evaluate the challenges and advantages of using microwave remote sensing for studying water-related phenomena.

GROUP—C

Answer any **one** question : 8×1=8

9. Explain the operation of radar, emphasizing polarization and spatial resolution. Mention the properties of RISAT. 5+3

10. Describe briefly Wien's Displacement law with suitable illustration. Describe the diverse applications of thermal remote sensing with examples. 4+4

SECTION–B

PAPER : RSG-202.2

(Hyperspectral Remote Sensing & LIDAR)

GROUP—A

Answer any **two** questions : 2×2=4

1. Mention the specifications of PRISMA data.

2. Which instrument is used for collecting spectral signatures from ground?

3. Differentiate between the types of LIDAR returns and their role in LIDAR data interpretation.

4. What are the functions of IMU?