2022

1st Semester Examination

REMOTE SENSING AND GIS

Paper : RSG 101

Full Marks : 40 Time : Two Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Paper : 101.1

(Fundamentals and Physics of Remote Sensing)

Group - A

Answer any *two* of the following questions : 2×2=4

1. What do you mean by spectral signature?
2. What is standard false color composite?
3. Write any two characteristics of Remote Sensing.
4. What do you mean by EMR?

Group - B

Answer any *two* of the following questions : 4×2=8

5. What is the difference between spectral and spatial resolution?

P.T.O.

6. Distinguish between kinetic temperature and radiant temperature.

7. What do you mean by wavelength-frequency-energy relationship of EMR?

8. What do you mean by the term Atmospheric windows? Give example.

Group - C

Answer any ***one*** of the following questions : 8×1=8

9. What are the implications of the "Stefan-Boltzman" and "Wiens's" displacement law in Remote Sensing? What is "black body" radiation? Define "signature" in the light of Remote Sensing. 4+2+2

10. Discuss the energy interaction processes in the Earth's atmosphere and the resultant impacts on space based remote sensing processes. 8

Paper : 101.2

(Platforms and Sensor)

Group - A

Answer any ***two*** of the following questions : 2×2=4

1. Differentiate between Whiskbroom and Push broom Sensors.

2. What are sun synchronous, geosynchronous and orbits?

3. Describe escape velocity.

4. What is Lidar point cloud?

Group - B

Answer any ***two*** of the following questions : 4×2=8

5. Discuss briefly about Imaging and Non-Imaging Sensors.

6. What are active and passive Earth observation satellites? Describe their typical orbital characteristics mentioning respective ascending and descending nodes.

7. State and illustrate Kepler's Laws of planetary motion.

8. Illustrate basic design/components of a RADAR system.

Group - C

Answer any ***one*** of the following questions : 8×1=8

9. Discuss about IRS satellite series and its application. 4+4

10. A satellite intended to orbit the earth at a height of 100 km above the surface of the earth. Calculate the Speed, Acceleration and Orbital period of the satellite. (Given : $M_{earth} = 5.98 \times 10^{24}$ kg; $R_{earth} = 6.37 \times 10^{6}$ m; $G = 6.673 \times 10^{-11}$ N m^2/kg^2). 8
