

4/10/13

Roll No.

--	--	--	--	--	--	--	--	--	--

**B.E / B.Tech ( Full Time ) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2013**

**GEO INFORMATICS ENGINEERING**

**II Semester**

**GI 8201 Optical and Thermal Remote Sensing**

**(Regulation 2012)**

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

**PART-A (10 x 2 = 20 Marks)**

1. What is meant by volume scattering?
2. List the atmospheric windows in optical region.
3. State the factors influencing the selection of a particular type of sensor.
4. What is meant by stereo data product?
5. What is meant by thermal remote sensing?
6. What does the DN value indicate in case of thermal imageries?
7. What is meant by virtual dimensionality in hyperspectral remote sensing?
8. Define 'Spectral Library'.
9. What is LiDAR remote sensing?
10. State applications of LiDAR remote sensing.

**Part – B ( 5 x 16 = 80 marks)**

11. (i) Discuss the causes of haze in satellite imageries. (8)  
(ii) Describe the characteristics of various regions of electromagnetic spectrum with respect to remote sensing applications. (8)
12. a) Explain the principle of geosynchronous and sun synchronous satellites with examples.  
**OR**  
b) Explain the principle of operation any two high resolution satellite sensors.
13. a) What are the image degradation sources in thermal remote sensing? Explain in detail.  
**OR**  
b) With a case study, explain the applications and advantages of thermal remote sensing.
14. a) Explain any two techniques employed for the calibration of hyperspectral data.  
**OR**  
b) Describe the concept of Hughes's phenomenon in hyperspectral remote sensing.
15. a) Explain the principle and typical parameters of LIDAR system.  
**OR**  
b) Explain the steps involved in any two image enhancement techniques.

- 13a. i. Explain the methods of establishing photogrammetric ground control points. (10)  
ii. What are factors to be considered for cost estimation for taking aerial photography? (6)
- (OR)
- 13b. i. A rectangular area 20.5km in north-south direction by 12.5km in the east-west direction is to be covered with aerial photography having a scale of 1:8000. End lap and side lap are to be 80% and 30% respectively. A camera having a 230mm square format is to be used. Compute the total number of photograph in the project, assuming that the flight strips are parallel with the east and west project boundaries and that the coverage of the first and flight lines is 50% within the project boundary. Also add two photos at the ends of each strip to ensure complete coverage. (14)  
ii. Discuss stereoscopic neat model. (2)
- 14a. i. Derive an expression for parallax equations. (12)  
ii. Discuss parallax bar constant? (4)
- (OR)
- 14b. i. Derive expressions for auxiliary tilted photo coordinates and scale of tilted photograph. (16)
- 15a. i. Compute the area of triangular parcel of land whose sides measure 54.12mm, 87.57mm and 70.61mm on a vertical photograph taken with a 152.4mm focal length. The flying height is 3100m above datum and the average ground elevation of the terrain is 925m. (16)
- (OR)
- 15b. i. What are the basic characteristics of photographic images that are considered in photographic interpretation and give an example of how each may be used to identify a particular object? (12)  
ii. Discuss the latest trends in image interpretation. (4)