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**B.E./B. Tech. (FT) DEGREE END SEMESTER EXAMINATIONS NOV-DEC 2012  
GEOINFORMATICS ENGINEERING BRANCH  
GI 9024 AIRBORNE LASER TERRAIN MAPPING  
REGULATIONS 2008 SEMESTER VI**

**Max. Marks 100**

**Max. Time 3 Hrs.**

Note: Answer ALL Questions.  
Assume Suitable data if required  
Illustrate with sketches wherever necessary

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

1. What is Differential Absorption LiDAR (DIAL) and how is it used in Meteorological application
2. With a neat sketch define Laser beam divergence and Laser foot print
3. Explain the governing equation to compute range of pulse and continuous wave laser scanner
4. List any two data formats in which Airborne laser scanner data is stored
5. What are the ground geometric features used for Strip Adjustment
6. With a neat sketch differentiate Digital Elevation Model and Digital Surface Model
7. With a neat sketch explain the intensity of information of Airborne Laser data
8. Briefly write about the data volume of Airborne Laser Data acquisition
9. Define the control point requirements of Airborne LiDAR data acquisition
10. Give the specification of a typical Large format digital camera used in tandem with LiDAR Scanner

**PART B ( 5 x 16 = 80 Marks )**

11. a. Discuss the utility of Airborne LiDAR derived DEM for Orthoimage Production (8)  
b. Explain with neat sketches, why Airborne Laser Scanning is preferred over photogrammetry in surveying a desert area, monitoring glaciers and in mapping a wet land with poor accessibility (8)
12. a. i. With neat sketches explain the how Laser of a particular wavelength is produced (8)  
ii. With a neat sketch explain the need and utility of Range Correction Factor (8)  
(OR)
12. b.i. With a neat sketch explain the typical parameters of any one commercially available airborne LiDAR scanner and Terrestrial LiDAR scanner. (10)  
ii. Under what circumstances Terrestrial LiDAR Scanner require a Position and Orientation System(6)
13. a. i. With neat sketches explain the influence of factors like Flying Height, Scanning Angle, Ground Reference Stations, PDOP of positioning system, Pulse Repetition Frequency and Speed of Aircraft, Landuse/cover in Project Planning of Airborne Laser Scanning data acquisition (10)  
ii. Write in detail the planimetric accuracy and altimetric accuracy achievable for any two current Airborne Laser Scanner (6)  
(OR)
- 13.b.i. Discuss in detail the various methods of scanning patterns used by Airborne Laser Scanners and discuss the merits of each one of them (10)  
ii. With neat sketches explain the data structure of LAS format and its advantages (6)
14. a. With neat sketches explain in detail the various 3Dimensional Co-ordinate transformations required in integrating data collected using GPS, IMU and Laser Scanner, for the purpose of Geolocating Laser foot prints.  
(OR)
14. b. With respect to a case study explain in detail various steps and processes involved in generating bare earth digital elevation model from Digital Surface Model.
15. a.i. List the various application domains of Airborne Laser Scanner derived DEM with an example in each application domain. (6)  
ii. With neat sketches discuss in detail the utility of Airborne Laser Scanner data in Telecommunication Modelling. (10)  
(OR)
- 15.b. With neat sketches describe in detail the various steps and processes involved in the preparation of 3D City Model.