



**DEPARTMENT OF CIVIL ENGINEERING  
COLLEGE OF ENGINEERING  
ANNA UNIVERSITY, CHENNAI – 600 025**



**END SEMESTER EXAMINATION APRIL 2011  
SIXTH SEMESTER GEOINFORMATICS (R 2008)  
GI 9354 – PHOTOGRAMMETRY II**

**Time : 3.00 hrs**

**Max. Marks : 100**

- Instructions:** 1. Answer all questions under PART-A and PART-B respectively  
2. Assume suitable data wherever necessary  
3. Draw neat sketches wherever required

**PART – A**

**10 x 2 = 20 Marks**

1. What are the components of Analog Stereo Plotter?
2. Differentiate between Analog Plotters and Analytical Plotters.
3. What are the advantages of orthophoto?
4. Bring out the differences between Rectification and Differential Rectification.
5. What are the advantages of aero triangulation?
6. What is an Universal Plotter?
7. Derive the equation for the determination of horizontal and vertical angle from a terrestrial photo.
8. What are the uses of close range photogrammetry?
9. What are the different sources of digital images?
10. Differentiate between analytical and digital photogrammetry.

**PART – B**

**5 x 16 = 80 Marks**

11. a. i. Discuss in detail about online orthophoto production. **10**  
ii. What are the advantages of offline orthophoto production **4**  
iii. What are the viewing Systems Employed in stereo plotters? **2**
12. a. i. Explain in detail about Numerical Relative Orientation. **12**  
ii. Explain the steps involved in interior orientation. **4**

**(or)**

- b. i. After relative orientation, the base components are  $b_x=225\text{mm}$ ;  $b_y=-8.16\text{mm}$ ;  $b_z=6.76\text{mm}$ . The data for two control points are as follows. 10

Point	Ground	Ground	Ground	Model	Model	Model
	X (m)	Y (m)	Z (m)	x (mm)	y (mm)	z (mm)
1	670296.3	223343.7	1243.66	302.55	716.25	144.66
2	670766.9	223347.2	1275.24	325.70	318.02	172.22

The map scale is 1/1250. Compute the base components necessary to bring the model to map scale.

- ii. Outline the steps of two projector method of relative orientation. 6
13. a. i. Explain in detail about semi analytical aero triangulation. 12
- ii. Explain about collinearity condition. 4
- (or)
- b. i. Derive and explain about three dimensional conformal co-ordinate transformation. 16
14. a. i. Two horizontal terrestrial photos were taken with a phototheodolite having a focal length of 164.95mm. The horizontal base line length was 76.2m and the exposure station elevations were 268.95m and 260.73m above mean sea level for the left and right exposures, respectively. Angles  $\delta$  and  $\delta'$  were measured as  $69^\circ 30'$  and  $66^\circ 10'$ , respectively. Images of object point A were measured on both photos with the following results:  $x_a=46.23\text{mm}$ ,  $y_a=41.07\text{mm}$ ,  $x'_a=-17.83\text{mm}$ , and  $y'_a=48.20\text{mm}$ . Calculate the X and Y coordinates of point A in a rectangular coordinate system with origin at second exposure station and the X axis in the plane of the base line. 12
- ii. Differentiate between photo theodolite and stereometric camera. 4
- (or)
- b. i. Derive parallax equation for close range photogrammetry. 8
- ii. Discuss about establishing control for the close range photogrammetry. 8
15. a. i. Explain about configuration and requirement of peripheral devices for digital photogrammetric work station. 12
- ii. What are the advantages of digital photogrammetry? 4
- (or)
- b. i. Write short notes on
- a) Automatic measurement of fiducial marks 8
- b) Automated surface modelling 8