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B.E /B.Tech (Full Time) DEGREE END SEMESTER EXAMINATION, NOV/DEC 2011

GEOINFORMATICS ENGINEERING BRANCH

THIRD SEMESTER

GI 272 PHOTOGRAMMETRY I

(Regulation 2004)

Time: 3 Hours

Maximum Marks: 100

Answer All Questions

PART A – (10 X 2 = 20 Marks)

1. Differentiate vertical and tilted photographs.
2. List different prisms used in photogrammetric instruments.
3. Why principal point differs from fiducial center?
4. An aerial camera makes an exposure at a shutter speed of 1/500 sec. If the aircraft speed is 480 km/hr. How far will the aircraft travel during the exposure?
5. What are the causes for y parallax in a stereo model?
6. Define the terms in tilted photographs: tilt and swing.
7. Differentiate crab and drift.
8. What are pre pointing and post pointing?
9. What are the advantages of aerial photo mosaics as compared to convention line and symbol map?
10. List the different equipment used for interpretation of aerial photographs.

PART – (5 X 16 = 80 Marks)

11. i. What are the seven 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. List the uses of Photogrammetry. (4)
- 12a. i. What are the characteristics of H and D, or D Log E curve? (6)
ii. Explain the step-by-step procedure for processing of black and white emulsions. (10)
(OR)
- 12b. i. Explain contact printing and projection printing. (6)
ii. Explain Scheimpflug Condition. Why is it necessary? (6)
iii. Discuss the different overlaps in aerial photography. (4)
- 13a. i. Name and discuss the various systematic errors which may exist in photographic coordinates. (12)
ii. Discuss stereoscopic neat model. (4)

(OR)

- 13b. i. A rectangular area 14.5km in north-south direction by 9.5km in the east-west direction is to be covered with aerial photography having a scale of 1:6000. End lap and side lap are to be 60% and 25% 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 75% with in the project boundary. Also add two photos at the ends of each strip to ensure complete coverage. (12)
- ii. Define: Equivalent focal length, Calibrated focal length and radial lens distortion. (4)

- 14a. i. Derive an expression for scale of a vertical photograph over variable terrain. (10)
- ii. Calculate the stereoscopic parallaxes of points a through d, given the following measured coordinate. (6)

Point	x (left photo)	x'(right photo)
A	59.94mm	-27.18mm
B	68.05mm	-21.61mm
C	99.57mm	9.91mm
D	100.37mm	8.52mm

Which point is the highest in elevation? Which is lowest?

(OR)

- 14b. i. Derive an expression for parallax equations. (12)
- ii. Discuss radial line triangulation. (4)

- 15a. Derive expressions for auxiliary tilted photo coordinates and scale of tilted photograph. (16)

(OR)

- 15b. i. A particular tilted aerial photograph exposed with a 152mm focal length camera has a tilt angle of $2^{\circ}45'$ and a swing angle of 140° . On this photograph, what are the auxiliary x' and y' photo coordinates for points a and b, whose photo coordinates measured with respect to the fiducial axes are $x_a = 69.27\text{mm}$, $y_a = -41.80\text{mm}$, $x_b = -54.72\text{mm}$, and $y_b = 106.38\text{mm}$? (10)
- ii. Discuss rectification of tilted photographs. (6)