

B.E (Full Time) DEGREE END SEMESTER EXAMINATIONS, APR / MAY 2011
GEO INFORMATICS
THIRD SEMESTER

21

GI-272 – PHOTOGRAMMETRY –I

(REGULATION 2004)

Time : 3 hr

Max Mark : 100

Instructions: Question No.11 under Part – B is compulsory

Answer ALL Questions

Part – A (10 x 2= 20 Marks)

1. Classify the aerial photography based upon 'angle of view'.
2. What is the importance of shutter speed in aerial photography?
How is it controlled in aerial cameras?
3. How is the photo scale at any image point expressed?
4. A stereo pair is already oriented and base line marked under a mirror stereoscope. How is the parallax bar used to find the ground height difference between any two points whose images appear on the aerial photographs?
5. What is 'Vertical Exaggeration'? On what factors does it depend?
6. How are the photo coordinates refined for lens distortion and film shrinkage?
7. What is meant by 'Post Pointing' ? How is it important in photogrammetric mapping?
8. With clear diagrams, illustrate 'Crab' and Drift'.
9. What are the purpose of 'rectification' of aerial photographs?
10. List the photo-interpretation elements and illustrate any one with examples.

Part – B (5 x 16 = 80 Marks)

11. Points A and B are at elevations 317 m. and 379 m. above datum respectively. The coordinates are as below in a vertical aerial photograph

$$\begin{array}{ll} x_a = 68.27 \text{ mm} & x_b = -87.44 \text{ mm} \\ y_a = -32.37 \text{ mm} & y_b = 26.81 \text{ mm} \end{array}$$

Find the horizontal ground length AB if the flying height is 4275 m. above datum. The focal length of the camera is 152.35 mm.

12. a. Derive a relationship for the absolute parallax of an image point appearing in a stereo pair when its ground elevation is known.

Or

- b. Calculate the height of a pole if images of its top and bottom are 10.22 cm. and 9.86 cm. from the principal point of a vertical photograph if the flying height above the base of the pole is 950 m. What would be its height displacement if the flying height is changed to 1050 m.?

13. a. Explain the various steps of processing of aerial negatives to produce positive paper prints of the same size as negative.

Or

- b (i). Sketch the cross section of an aerial camera. Name the various parts mentioning their utility. (10)

- b (ii). A shutter speed of 1/500 sec. with f-4 stop was used for an optimal exposure. Calculate the correct f-stops if the shutter speeds are changed to 1/1000 sec. and 1/250 sec. respectively. (6)

14. a. How are aerial mosaics classified? How are they prepared? Mention their characteristics.

Or

- b. An area 35 km. in the north-south direction and 23 km. in the east-west direction is to be photographed with a 150 mm. focal length camera on a 230 mm. by 230 mm. format. The flight lines are to be oriented in the east-west direction. The first flight line is located inside the north boundary a distance equal to $\frac{1}{4}$ of the width of coverage of a photograph and the last flight line is located inside the south boundary by the same amount.

The average photo scale is to be 1:15000. The end lap is 60% and side lap is 30%.

Calculate the total number of photographs to cover the area. Calculate the exposure time interval if the aircraft speed is 250 km/hr.

15. a. Explain the construction and operating principles of a vertical sketch master. Where and when is it used?.

Or

- b (i). Explain the various 'Photo-interpretation keys' and their utility. (8)

- b (ii). What instruments would you suggest for setting up an image interpretation laboratory? (8)