2015

M.Sc. 1st Semester Examination

REMOTE SENSING & GIS

PAPER—RSG-103

Full Marks : 40

Time : 2 Hours

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Use separate Answerscripts for each group.

Group—A

Photogrammetry

[Marks : 20]

Answer any *two* questions : 2×10

1. Classify aerial photographs based on orientation of the camera axis. Define 'exposure station', 'optical axis', 'photo base' and 'isocentre'. How shape size and association help in delineation of different linear features of aerial photo. Depict the opposing role of shadow in image interpretation.

2+4+3+1

2. Illustrate the relief displacement of a tower in a vertical photograph and show how it is related to i) flying height of the aircraft ; ii) radial distance from the principal point ; iii) actual height of the tower.

Assume that the radial distance r_a to a point A is 63.84 mm and the radial distance r_b to a point B is 62.65 mm. Flying height H is 1300 m above datum, point A is 152 m above datum and point B is 168 m below datum. Find out the radial distance & direction one must lay off from point 'a' and 'b' to plot them in proper location. 6+4

3. How scale of an aerial photograph is related with flying height & focal length of the camera ?

In stereopair generation, why more than 50% overlap is necessary in case of endlap ?

How length of the airbase can be measured from a stereopair ?

4+3+3

4. Write short notes on : $4 \times 2\frac{1}{2}$

(a) Photographic overlap ;

(b) Ortho Image ;

(c) Geometry of vertical photograph ;

(d) Digital Elevation Model (DEM).

Group—B

Surveying & Global positioning system

[Marks : 20]

Answer any *two* questions : 2×10

1. Distinguish between traversing & triangulation. The following angles are observed in running a closed traverse ABC in a clockwise direction.

Where $\angle A = 40°$, $\angle B = 78°$ & $\angle C = 62°$.

Calculate the bearing of the remaining sides of the traverse when the bearing of AB = 50°45′. 3+7

2. (a) What are different methods of contouring and respective survey procedure ?

(b) Discuss advantages and disadvantages of GPS and Conventional Terrestrial Surveying.

(c) Find the height of a place over MSL (Geoid), where GPS ellipsoidal height is 100m and Geoid undulation is 30m. 5+3+2

3. (a) Write a brief note on space segment of IRNSS indicating orbital configurations and number of satellites.

   (b) Explain principle of Differential GPS functionality with neat sketch. 5+5

4. (a) Explain Dilution of Precision (DOP).

   (b) GPS Time.

   (c) Name factors affecting GPS signal errors.

   (d) What are perturbing forces that act on near-earth satellites ?

   (e) What are relative and absolute errors in GPS surveys ? 5×2
