2013

M.Sc.

2nd Semester Examination

REMOTE SENSING AND GIS

PAPER—RSG–203

Full Marks : 40

Time : 2 Hours

The figures in the right-hand 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 answer book for each Group.

Group–A

(Fundamentals of Statistics)

[Marks : 20]

Answer any *two* questions. 2×10

1. Briefly discuss how geodetic & vertical datums are used to provide positional control and support in surveying and mapping projects in India. Define geocentric, astronomical and geodetic latitude and their interrelationship. 5+5

2. Differentiate between ellipsoid & gexid. How universal datum is different from local datum? Write short notes on Everest spheroid & WGS-84, mentioning their geometric constants & parameters. 3+1+6

3. (i) What is spherical triangle? Prove that the sum of three sides of a spherical triangle is less than 360°.

(b) Sum of three angles of a spherical triangle is greater than 180° and less than 540°.

How we can determine the area of a spherical triangle from it's spherical excess. 1+2+2+5

4. Write short notes on any *two* : 5×2

(i) Co-ordinate transformation from ellipsoid to cartesian and vice-versa.

(ii) Plane co-ordinate systems.

(iii) Radius curvature of a meridian on an ellipsoid.

(iv) Geodetic datum.

(v) International Terrestrial Reference System.

Group–B

(Fundamentals of GPS)

[Marks : 20]

Answer any *two* questions. 2×10

1. (a) What is signal multipath? How can we overcome signal multipath while calculating a positional value? List out the errors that are associated with absolute GPS positioning.

(b) Briefly discuss the control segment of GPS. 1+2+3+4

2. (a) What is IRNSS?

(b) Explain its satellite configurations.

(c) Explain GPS baseline orbital constellation.

(d) Explain Space Segment of GPS. 1+4+2+3

3. (a) What are perturbing forces that act on near-earth satellites?

(b) What are factors that affect GPS signal errors?

(c) Explain DGPS functionality to minimize these errors. 2+3+5

8. Write short note on any *four* of the followings : 2.5×4

(a) PRN Code ;

(b) Global navigation satellite system ;

(c) Dilution of Precision (DOP) ;

(d) GAGAN ;

(e) Cutoff Angle (Mask angle).

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