2009

M.Sc.

2nd Semester Examination

REMOTE SENSING & GIS

PAPER—VII (RG–1205 & 1206)

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.

Write the answers of questions for each module in separate books.

RG—1205 (Full Marks : 20)

Answer any *two* questions.

1. Briefly discuss how geodetic & vertical datums are used to provide positional control and support in surveying & mapping projector in India. Define geocentric, astronomical & geodetic latitude and their inter-relationship. 6+4

2. Define great circle. What are the properties of a spherical triangle and how it is different from a plane triangle. How we can derive the area of a spherical triangle from its spherical excess. 2+3+5

3. What do you mean by co-ordinate? What are two basic co-ordinate reference systems used to locate a point on two dimensional plane and what are their conversion parameters? Briefly discuss the process and use of affine transformation in GIS? 1+6+3

4. Write down the mathematical relation between the components of elliproidal (ϕ, λ, h) & cartesian (X, Y, Z) co-ordinate systems used for co-ordinate transformation. What are WGS-84 and UTM ? Why these are used globally as standard for georeferencing ? 5+3+2

Fundamentals of GPS, GPS Surveying and Accuracy and Mobile Mapping.

RG—1206 (Full Marks : 20)

Answer any *two* questions.

1. (a) What is the basic concept of ranging a satellite ? Why it is necessary to calculate the range between a GPS satellite and GPS receiver ?

   (b) What is ephemeris data ? What are the carrier waves ? What is mark angle ? Write the two modes of international limitation of system accuracy. (2+3)+(1+1+1+2)

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

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

3. (a) Write down the advantages and disadvantages of Real Time Kinematic.

   (b) What are the factors considered in designing a GPS network ? 5+5

4. (a) Diagrammatically explain the basic architecture of WAP-based Mobile GIS.

   (b) Write down advantages of DGPS. 7+3

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