PG/IIS/RS & GIS/1205 & 1206/10

M.Sc. 2nd Semester Examination, 2010

REMOTE SENSING & GIS

PAPER—VII/ RG - 1205 & 1206

Full Marks : 40

Time : 2 hours

The figures in the right-hand margin indicate marks

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

Illustrate the answers wherever necessary

RG—1205

(*Geodesy*)

[*Marks*: 20]

Answer any **two** questions 10×2

1. Define 'Geodesy' and mention its major application. Make a comparative analysis between three major co-ordinate systems used in geodesy. What is orthometric height (H) of a point? 3 + 6 + 1

2. Differentiate between ellipsoid and geoid. How universal datum is different from local datum? Write short notes on Everest spheroid and WGS-84, mentioning their geometric constants and parameters. 3 + 2 + 5

3. What is a spherical triangle? Prove that

   (*i*) The sum of three sides of a spherical triangle is less than 360°.

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

   How Geographic/Spherical co-ordinate system is used to locate a place on the earth? 1 + 6 + 3

4. Illustrate with sketches how radius of curvature of a meridian (M) changes from parallel to parallel, whereas radius of a parallel (x) remain same all over the meridians. Discuss co-ordinate transformation from ellipsoidal to Cartesian and vice-versa. 5 + 5

RG—1206

(*Fundamentals of GPS, GPS Surveying and Accuracy and Mobile Mapping*)

[*Marks* : 20]

Answer any **two** questions

1. (*i*) What is the basic concept of ranging a satellite ?

(*ii*) Define Doppler effect in satellite ranging.

(*iii*) What is the difference between selective availability and anti-spoofing ?

(*iv*) Define signal multipath. $2 + 2 + (2 + 2) + 2$

2. (*a*) (*i*) Define carrier waves.

(*ii*) How is ranging done with the help of C/A code ?

(*iii*) What is the importance of pseudo-random code ?

(*b*) (*i*) What is DOP ?

(*ii*) Explain GDOP and PDOP.

$(1 + 1\frac{1}{2} + 1\frac{1}{2}) + (2 + 2 + 2)$

3. You are given four control points on the ground. How will you map these four control points using static GPS surveying methodology with milimeter accuracy, if you are provided with the positional value of one control station and a pair of survey grade GPS receivers capable of doing static surveys ? 10

4. Write short notes on any *two* of the following : 5 x 2

   (*i*) Advantages of DGPS

   (*ii*) Mobile GIS

   (*iii*) Real time kinematic surveying

   (*iv*) NAVSTAR and GLONASS series of satellites.