

2008

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. How Geographic / Spherical co-ordinate system is used to locate a place on the earth? What is a spherical triangle? Prove that the area of a spherical triangle is the product of square of the radius of that sphere and spherical excess of that triangle. 3+2+5
2. Define Geodesy and mention its major applications. Describe the shape of the earth with the help of ellipsoid-geoid model. Differentiate between Geodetic & vertical datum with proper examples. 2+4+4
3. Briefly discuss the three major co-ordinate systems used in geodesy. Which reference system is used by survey of India to locate horizontal & vertical positions? What is geoid undulation? 7+2+1
4. Write short notes on Everest spheroid & WGS-84, mentioning their geometric constants & parameters.

(Turn Over)

Write down the mathematical relations between the components of Ellipsoid (Ø, λ, h) & cartesian (X Y Z) co-ordinate systems—used for co-ordinate transformation.

$$2\frac{1}{2} + 2\frac{1}{2} + 5$$

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

RG—1206 (Full Marks : 20)

Answer any *two* questions.

5. (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) If a signal is transmitted from a satellite at 10:36:02.0000453297 AM and received by receiver at 10:36:02.0000821946 AM, what will be the distance between satellite and receiver ?
- (c) What is the 'time offset' ? If the time offset is 1 microsecond ; what will be the user equivalent range error ? (2+3)+2+(1+2)
6. (a) What are the tasks of control segment ?
- (b) Write the frequency of L_1 , L_2 , P-Code & C/A code ?
- (c) What band is used for uplinking the navigation message ?
- (d) What is Pseudo-random Code ? What is the importance of P-sendo-random Code ? 4+2+1+(1+2)
7. (a) Compare SPS and PPS.
- (b) What is GDOP ? Explain—"Good GDOP but bad visibility".
- (c) Mobile mapping technology. 3+3+4
8. (a) How do you calculate the receiver's position using GPS ?
- (b) Write different methods of DGPS (Carrier-phase tracking) surveying.
- (c) Write the characteristics of a good site for GPS surveying.
- (d) What is a "Cycle-slip" ? 5+2+2+1