M.Sc. 2nd Semester Examination, 2010

REMOTE SENSING & GIS

(*GIS Fundamentals & Data Structure*)

PAPER—VI

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—1203

[*Marks* : 20]

Answer any *two* questions

1. (*a*) Evaluate the basic needs of data, important formats of data storage and data retrieval in GIS environment.

(*b*) Identify any one geographic problem and prepare a flowchart in GIS environment for decision making.

(*c*) State the importance of object oriented database system. 2 + 2 + 6

2. (*a*) (*i*) What is geographic matrix ?

(*ii*) How is it useful for the foundation of modern GIS ?

(*b*) (*i*) What are the basic forms of real world feature ?

(*ii*) How these forms leads to different model approaches ?

(*iii*) Briefly describe these models. 1 + 2 + 1 + 2 + 4

3. (*i*) Define tessellation model.

(*ii*) What is raster model in relation to tessellation ?

(*iii*) Discuss very briefly the nature and characteristics of raster data.

(*iv*) How do you model a surface. 2 + 2 + 4 + 2

4. (*a*) (*i*) Define vector data model.

(*ii*) Discuss very briefly the nature and characteristics of vector data model.

(*b*) (*i*) Why projections and transformations are required in GIS ?

(*ii*) Explain the importance of topology in GIS ? 2 + 3 + 2 + 3

RG–1204

[*Marks* : 20]

Answer any *two* questions

1. Define quadtree data model. How it differs from raster data structure ? Discuss reclassification method of raster based data analysis ? 2 + 3 + 5

2. What is network analysis ? What are it's main applications in GIS ? What is turn impedance and why it is important in transport planning ? $4 + 4 + 2$

3. What do you mean by 'Artificial Neural Network' ? What is it's role in spatial data analysis ? Explain with an example, how spatial-auto-correlation is used to assess social clustering or dispersion ? $2 + 4 + 4$

4. Write short notes (any *four*) : $2\frac{1}{2} \times 4$

   (*i*) Virtual GIS & SDSS

   (*ii*) Triangulated Irregular Network (TIN)

   (*iii*) Buffering

   (*iv*) Thiessen Polygon

   (*v*) 'G' statistic for measuring high/low clustering

   (*vi*) Pattern analysis.