Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Tech (CSE)/SEM-8/CS-802C/2010

2010

GIS AND REMOTE SENSING

Time Allotted : 3 Hours | Full Marks : 70

The figures in the margin indicate full marks.

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

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$

   i) Which of the following shapes will not tessellate a plane ?

   a) Rectangles b) Regular hexagons

   c) Equilateral triangles d) Equal radius circles.

   ii) Of the six ways of representing a field in GIS, which is usually used for remotely sensed images ?

   a) A raster of regularly spaced sample points

   b) A raster of rectangular cells

   c) Irregularly spaced sample points

   d) Irregularly shaped polygons.

   iii) An automated system for the capture, storage, retrieval, analysis and display of spatial data is known as

   a) A GPS b) Landsat

   c) A GIS d) None of these.

iv) Geographical Information Science (GISC) can be defined as

a) The science behind GIS

b) The application of GIS to a range of scientific disciplines

c) The use of GIS to solve physical problems

d) The epistemological study of GIS.

v) Spatial referencing is the process of which of the following ?

a) Combining attribute values with locational information.

b) Computing the reference between items in databases

c) Referencing geo-relational tables

d) Establishing the topology of spatial objects.

vi) Which of the following is *not* an example of spatial data ?

a) Points showing location of discrete objects

b) Polygons showing the area occupied by a particular land use or variable

c) Lines showing the rout of linear objects

d) Times of particular events.

vii) Which of the following is *not* a key concept that is part of our definition of GIS ?

a) GIS includes both computer systems (hardware) and computer programs (software).

b) People are an important part of GIS

c) GIS technologies include GPS and remote sensing

d) GIS can be used in all areas of modern science.

viii) Which of the following list is the key area of GIS functionality missed out by the above definition ?

a) Analysis b) Collation

c) Mapping d) Re-projection.

ix) What is prototyping ?

a) A method of designing a GIS project based on previously tried and tested models

b) A method of rapid start-up of a GIS project

c) An approach to GIS database design based on the soft systems approach

d) A method of taking user needs into account when designing GIS projects/systems.

x) What is cartographic modelling ?

a) The modelling of map inputs to a GIS, using natural language

b) The sequence of modelling of real world entities in a GIS database

c) A generic method of creating a GIS map data structure

d) A way of expressing and organizing methods by which spatial operations are selected and used to develop a GIS model.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Describe the difference between automated cartography and GIS.

3. Describe how the geographical coordinate system references the location of features found on the Earth's surface.

4. Discuss the relationship between map scale and map distance. What techniques are commonly used to measure distance on maps ? 2 + 3

5. What are the benefits of cost analysis in GIS ?

6. Describe the E.M. principle.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. What is GIS ? Why is GIS important ? What are the different types of components of GIS ? Describe the different features and functions of GIS. Explain GIS as an Information System.

2 + 2 + 2 + 6 + 3

8. What is a map ? In what two basic forms do they come ? How are projection systems used to portray the Earth's surface on a map ? What problems are associated with projecting the Earth's surface on a two-dimensional map ?

2 + 3 + 5 + 5

9. Analyze the raster data by retrieval, vector data by retrieval, reclassification, overlaying and buffering in GIS.

3 + 3 + 3 + 3 + 3

10. Define remote sensing. What are the components of remote sensing ? Define Active and Passive remote sensing. Explain in detail the platforms of remote sensing. What are the three common applications for remote sensing imagery ?

2 + 2 + 3 + 5 + 3

11. Write short notes on any *three* of the following : 3 × 5

    a) Cartography.

    b) GPS.

    c) Integrated spatial analysis.

    d) Embedded GIS.

    e) Thermal infrared remote sensing.