B. Tech.
(SEM. VIII) EXAMINATION, 2011
GEOGRAPHIC INFORMATION SYSTEM
(ELECTIVE - III)

Time: 3 Hours]
[Total Marks: 100

Note: (1) All questions carry equal marks.
(2) Attempt all questions.

1. Attempt any two of the following: 10×2=20
   (a) What is an information system? State reasons to support that a map is an information system.
   (b) List the fundamental components of a GIS. Describe any one of them.
   (c) What are essential differences between an Image processing and GIS Software? List the popular GIS packages.

2. Attempt any TWO of the following: 10×2=20
   (a) What is rubber sheet transformation? Explain with the help of necessary equations.
   (b) What is a vector data model? Explain its salient features. How the vector data can be converted into raster data?
(c) Explain the following:

(i) Run length encoding

(ii) Quad tree/Pyramidal data model.

3 Attempt any TWO of the following. 10x2=20

(a) Explain the following with a suitable example

(i) Network database

(ii) Relational database

(b) What are essential differences between a conventional data base management system and an spatial database management system.

(c) Compile a list of linear features for which topological relationship of adjacency would be important. Explain any one of them.

4 Attempt any two of the following: 10x2=20

(a) Explain an algorithm to find out shortest distance between two points in the case of a network in vector data format? Discuss if it can also be performed in a raster data set.

(b) How are the inter-visibility analysis carried out in a GIS environment? Explain the process in case of raster data format.
(c) Explain the process of overlay analysis in the case of raster data with a suitable example. Discuss the necessity of reclassification in case of overlay analysis.

5 Attempt any two of the following: 10 × 2 = 20

(a) Compile a list of data layers and attributes that would likely to be included in a GIS for choosing the best location for an airport in a large city.

(b) Explain how a GIS is useful in monitoring natural resources in a state.

(c) Briefly describe the application of GIS for locating the route for a proposed highway.