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**B.E. /B.TECH (FULL TIME) DEGREE END SEMESTER EXAMINATIONS NOV-DEC 2012
REGULATION 2008**

**GEOINFORMATICS ENGINEERING BRANCH
SEVENTH SEMESTER**

GI 9403 GEOGRAPHICAL INFORMATION SYSTEM APPLICATIONS

Time : 3 Hr.

Max. Marks:100

Instructions: Answer **ALL** Questions
Illustrate with sketches wherever necessary

PART A (10 x 2 = 20 Marks)

1. What is the range of crown density percentages used by Forest Survey of India to classify forest as Very Dense Forest, Moderately Dense Forest and Open Forest
2. List any four primary spatial data and four non-spatial data required to build Watershed Information System
3. What is meant by Asset Management of a utility
4. What are the data required for watershed analysis and how is it useful for line of sight mapping
5. Differentiate the requirement of components for Online and Offline Vehicle Tracking
6. List any four advantages of KIWI format used for Vehicle Navigation
7. What is the scale of Cadastral Map used in Tamil Nadu and list any four salient features shown on it for Land Information System
8. With a neat sketch define the cost distance raster used in Least Cost Path Analysis
9. Differentiate Web Server and Map Server used in Web based GIS
10. What is the use of cluster analysis in GIS based Health Applications

PART B (5 x 16 = 80 Marks)

11. i. With reference to a case study explain how GIS based network analysis could be used for improving the number of patients treated for acute respiratory illness in High Volume Hospitals (8)
ii. Discuss in detail how the number of requests per second for a Web GIS service can be used for Load Balancing of Web Traffic and discuss the various factors that are to be used in deciding the number of machines to be used for hosting Web GIS Applications (8)
12. a. i. Describe in detail how multi resolution and temporal satellite imageries could be used for Forest Resource Inventory assessment studies with respect to parameters like Forest extent, Forest Species and Density of Forest (8)
ii. Discuss in detail with respect to a case study, the data and spatial analysis required for Forest Fire Risk Assessment using GIS (8)

(OR)

12. b. i. Discuss in detail the role of satellite data and NDVI in quantifying the soil erosion of a Watershed (12)
ii. List the Space based inputs that can be derived from Satellite data for Forest Fire growth Modelling and the output parameters of FIRE Model (4)

13. a. i. Describe in detail the water supply utility BISON (Bangalore Information System on Networks) Model developed for Bangalore Water Supply and Sewerage Board (BWSSB) for managing Water and Waste Water Utility (8)
ii. Discuss in detail the role of GIS in signal strength mapping using Communication System Planning Tool(CSPT) for planning of Mobile Communication Towers (8)

(OR)

- 13.b. i. Discuss in detail the how Water Distribution System OPTimizer (WADSOP) Model can be used for optimal design of water distribution system and in routing and allocation of Water Distribution System (10)
ii. Discuss the Spatial and Non-Spatial data requirement of Water Supply Utility Management using GIS (6)

14. a. i. Discuss in detail the role of various components of Online Vehicle Tracking System and give an example for Satellite based Communication Channel and GSM based Communication Channel (10)
ii. Explain in detail the components of Off-line Vehicle Tracking System and cite an example (6)

(OR)

14. b. i. With neat sketches explain the Positioning, Map Display, Route Planning, Route Guidance, Address Location and Service/POI(Point Of Interest) functionalities to be provided in Vehicle Navigation applications. (10)
ii. Discuss the various challenges faced in preparing digital maps used for Vehicle Navigation applications (6)

15. a. With respect to a case study explain in detail data requirement, analytical functionalities used in routing a Highway between given origin and destination (16)

(OR)

15. b. With neat sketches explain the various spatial analytical tools used for least cost path analysis in Pipeline routing studies using GIS (16)