

Code No: 07A70110

R07**Set No. 2**

IV B.Tech I Semester Examinations, December 2011
REMOTE SENSING AND GIS APPLICATIONS
Civil Engineering

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Describe various types of rainfall - runoff relations and parameters involved in each of them.
 (b) Mention atleast four rainfall - runoff models and discuss their amenability to satellite data. [8+8]
2. Explain the operations of whiskbroom and push broom scanner systems with the help of neat sketches. [16]
3. What are the most important aspects of a map for communicating information? What makes a good map? How should you choose colours and grey scales for displaying data? Explain the key board entry process of data. [16]
4. Explain in detail about:
 - (a) GIS workflow process with the help of a flow diagram and
 - (b) Cognitive models. [16]
5. (a) Write any five disadvantages of using remotely sensed data.
 (b) Explain:
 - i. Planck's law and
 - ii. Wein's displacement law. Also write the relevant mathematical expressions. [10+6]
6. Define photogrammetry. Write about the evolution of photogrammetry and importance of photogrammetry in real world phenomenon. [16]
7. Write short notes on the following:
 - (a) Inland water quality.
 - (b) Drainage morphometry.
 - (c) Artificial recharge structures.
 - (d) Fluvial geomorphology. [4x4]
8. Describe the three raster GIS models. Explain the advantages and disadvantages of each. [16]

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**Answer any FIVE Questions
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1. (a) What are the data types used in GIS? What are the sources in India for getting these data sets?
(b) What are the methods for inputting data to GIS? Describe automatic scanner for inputting data. [4+12]
2. Explain various contributing disciplines in GIS. [16]
3. What are the various parameters that can be taken to target the ground water prospects in a region? [16]
4. (a) Define remote sensing with the help of a neat sketch.
(b) List the different remote sensing applications related to Civil Engineering. [8+8]
5. Explain the following:
(a) Land use and land cover
(b) Floods and drought. [16]
6. Explain the following raster models:
(a) MAP GIS data model.
(b) MAGI model. [16]
7. Explain the method of determination of ground coordinated from measured photo coordinates with the help of a neat sketch. [16]
8. Differentiate between digital image analysis and visual image analysis. [16]

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Set No. 1

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1. Discuss the following photogrammetric activities:
 - (a) Determining horizontal ground distances and angles from measurements made on a vertical photograph.
 - (b) Use of ground control points.
 - (c) Preparation of a flight plan to acquire aerial photography.
 - (d) Determination of object heights from the measurements of relief displacements. [16]
2. Define watershed and its characteristics for management and development. Support your answer with examples. [16]
3. Describe by means of a neat sketch, the components of an ideal remote sensing system. [16]
4. Write short notes on:
 - (a) Topology
 - (b) Attributes
 - (c) Geographical entities.Give three examples for each. [16]
5. List and explain any two vector data models. [16]
6. Write short notes on:
 - (a) Spatial and radiometric resolutions
 - (b) Along track scanners
 - (c) Satellite visual interpretation techniques. [16]
7. Explain, in general terms, what an object-oriented GIS is and indicate its potential advantages over other systems. [16]
8. (a) Discuss different drainage patterns found in watersheds and their characteristics.
(b) Which satellite data you prefer in identifying drainage characteristics and why? [8+8]

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Set No. 3

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Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. Explain in detail the significance of:
 - (a) Four M's of GIS with the help of a schematic representation
 - (b) GIS categories. [16]
2. (a) Describe the geographical techniques for ground water exploration.
(b) What are the parameters to test the quality of ground water? [8+8]
3. Describe types of GIS attribute databases. Support your answer with examples. [16]
4. Explain along with a flow chart how remote sensing is useful for the preparation of watershed management for a given watershed. [16]
5. Describe the process of quantizing space into equal-sized rasters called grid cells. What impact does grid cell size have on the locational accuracy? How would you store points, lines, and polygons using a raster system? [16]
6. Explain the:
 - (a) Various basic concepts involved in remote sensing and
 - (b) List the different divisions of electromagnetic spectrum with reference to wave-lengths. [16]
7. Compare air photographs versus topographic maps for the following points.
 - (a) Projection.
 - (b) Scale.
 - (c) Visibility details.
 - (d) Ground visits. [16]
8. Write detailed notes on: [16]
 - (a) Geostationary Satellites.
 - (b) Sun synchronous Satellites.
