R07

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

Time: 3 hours

Code No: 07A70401

Max Marks: 80

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

- 1. Discuss in detail about the basic components of an ideal remote sensing system. Also show the linkage between the components by means of a neat sketch. [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. 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 from the measurements of relief displacements. [16]
- 4. Explain along with a flow chart how remote sensing is useful for the preparation of drought assessment and monitoring steps for a given state. 16
- 5. Write detailed notes on:
 - (a) Geographical entities
 - (b) Topology. Also give four examples for each. [16]
- 6. List and explain any two vector data models. [16]
- 7. Illustrate the processes of translation, rotation and scale change? Why are these important to the input subsystem of a GIS? [16]
- 8. (a) What are instruments used for visual image interpretation and transfer of data.
 - (b) Differentiate between visual image interpretation and digital image interpretation. [8+8]

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[16]

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- 1. Write notes on:
 - (a) Vertical, low oblique and high oblique photographs.
 - (b) Absolute parallax and stereoscopic accuracy.
 - (c) Advantages and disadvantages of mosaics.
 - (d) End lap, side lap and overlap in aerial photographs.
- 2. Write short notes on:
 - (a) Attributes.
 - (b) Components of GIS.
 - (c) Functional elements of GI
 - (d) GIS categories.

3. Explain how groundwater targeting can be done using remote sensing techniques. [16]

- 4. Differentiate between floods and droughts. Explain how remote sensing and GIS is useful for the damage assessment because of these natural disasters. 16
- 5. Write short notes on:
 - (a) Elements involved in remote sensing.
 - (b) Electromagnetic spectrum.
- 6. What is the difference between simple list file structures and ordered sequential file structures? Which is more efficient at adding recors? Which is more useful for sorting and retrieving records? Give an example of how an ordered sequential file structure works. [16]
- 7. Explain various advantages and disadvantages of digital image processing. [16]
- 8. Why is a missing polygon label point a problem? Why do we sometimes end up with missing or multiple label points? How can this result be avoided? [16]

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- 1. what are the various parameters that can be taken to target the ground water prospects in a region? [16]
- 2. Explain GIS based method for providing online information to tourists [16]
- 3. Describe the impact of both floods and droughtiln a particular region. [16]
- 4. The length of line AB and the elevation of its endpoints, A and B, are to be determined from a stereo pair containing images a and b. The camera used to take the photography has a 152.4mm lens. The flying height was 1400m (average for the two photos) and the air base was 700m. The measured photographic coordinates of points A and B in the "flight line" coordinate system are $x_a = 54.68$ mm, $x_b =$ 98.66mm, $y_a = 51.23$ mm, $y_b = -25.38$ mm, $x'_a = -59.48$ mm and $x'_b = -27.46$ mm. Find the length of line AB and the elevations of A and B. [16]
- 5. What are indexed files? How do they differ from ordered sequential files? What are the advantages of indexed files? What is the difference between direct and inverted indexed file structure? Which is more efficient at handling data retrieval? [16]
- 6. Explain the physics of remote sensing with the help a neat sketch. [16]
- 7. (a) Distinguish between spatial resolution and spectral resolution.
 - (b) Explain energy resources and energy interactions with earth surface features. [6+10]
- 8. Describe in detail any four different applications to which GIS can be used. [16]

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- 1. Write down the wave length and applications of the following regions of electromagnetic spectrum.
 - (a) Visible.

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- (b) Infrared.
- (c) Reflected IR band.
- (d) Thermal IR.
- 2. Write short notes on
 - (a) Classification of aerial photographs.
 - (b) Photogrammetric activities
 - (c) Ground control.
 - (d) Any four advantages of aerial photographs.
- 3. (a) Explain the methods adopted in estimating water depth.
 - (b) How do you compare these methods with remote sensing techniques ?
 - (c) What are the limitations? [6+6+4]
- 4. Explain the following vector models:
 - (a) GBF/DIME model.
 - (b) POLYVRT model.
- 5. What are some possible advantages and disadvantages of using a raster GIS as opposed to vector? [16]
- 6. Explain along with a flow chart how remote sensing is useful for the preparation of drought impact assessment for a given state. [16]
- 7. With the help of flow diagrams and suitable examples, discuss the components of GIS for the following applications:
 - (a) Municipal
 - (b) Agriculture.
- 8. Write in brief about the sensor characteristics of

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[8+8]

[16]

[16]

[16]

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(a) IRS satellites.

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(b) LANDSAT.

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