

Code: 9A01805

B.Tech IV Year II Semester (R09) Regular Examinations, March/April 2013

REMOTE SENSING & GIS

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions.
All questions carry equal marks.

- 1 What is parallax? Calculate the height measurement as following conditions.
 - (a) Based on ratios displacement
 - (b) Based on shadow length.
- 2 (a) What do you mean by active remote sensing and passive remote sensing?
(b) Explain characteristics of image.
- 3 Explain energy interaction with earth surface features. Sketch the spectral reflectance of vegetation, soil and water.
- 4 Explain the difference between digital cartography, geographical information and computer-aided design and each has different marketing.
- 5 (a) What are the various elements in GIS application software?
(b) List out some of the major international GIS vendors.
- 6 (a) What is a coordinate system and why it is required in GIS?
(b) What are the different types of coordinate systems used in GIS?
- 7 What are land use / land cover? Explain importance of land use / land cover in civilian applications.
- 8 Explain the methodology with flow chart how remote sensing and GIS techniques are used in identification of sites for artificial recharge structures.

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- 1 Discuss the basic geometric elements of a vertical aerial photograph with neat sketch.
- 2 Explain with a neat sketch basic concepts of remote sensing.
- 3 Define and explain the following:
(i) Electromagnetic radiation. (ii) Rayleigh scattering.
(iii) Mile scattering. (iv) Non-selective scattering.
(v) Absorption. (vi) Radiant flux density.
- 4 (a) What is spatial data? What is spatial-temporal data? Explain with examples.
(b) Explain various advantages of GIS.
- 5 Explain data collection, data input, data manipulation and data output modules in GIS.
- 6 With an example each, explain the following:
(i) Buffering.
(ii) Overlaying a polygon theme with a point theme.
(iii) Overlaying a line theme with a polygon theme.
(iv) Reclassification.
- 7 Explain in detail how GIS is used for flood and drought impact assessment and monitoring.
- 8 Explain the methodology with flow chart how remote sensing techniques are used in estimating loss of reservoir capacity due to sedimentation.

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- 1 (a) Explain different types of aerial photographs.
(b) Explain with a neat sketch the components of a remote sensing system.
- 2 (a) Define remote sensing. What are the basic concepts behind remote sensing?
(b) Explain in detail about electromagnetic spectrum.
- 3 (a) Explain the concepts of spatial, spectral, radiometric and temporal resolutions.
(b) Explain about digital data analysis.
- 4 (a) What are the fundamental operations of GIS?
(b) Explain in detail about the theoretical frame work for GIS.
- 5 Enumerate and differentiate vector and raster data structures with examples. Why database management systems are so important? Explain.
- 6 Explain the following advanced tools of GIS analysis along with suitable examples:
(i) Proximity analysis. (ii) Spatial operation.
(iii) Terrain analysis. (iv) Network analysis.
- 7 (a) Explain how remote sensing and GIS techniques are used in mapping of flood-prone areas.
(b) Enlist various characteristics of watershed.
- 8 How you are justifying remote sensing & GIS are playing an important role in interlinking of rivers in India?

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- 1 (a) Explain principles of analytical and digital photogrammetry.
(b) Explain the necessity of ground control points for aerial photography.
- 2 Define electromagnetic spectrum and the photon energy of visible light with examples.
- 3 Explain the following:
 - (a) Spatial resolution.
 - (b) Spectral resolution.
 - (c) Radiometric resolution.
 - (d) Temporal resolution.
- 4 (a) What is GIS? Define GIS in terms of an information system.
(b) Enlist the difference between raster and vector data models.
- 5 (a) Write the types of data representation and explain.
(b) Explain in detail about layer based GIS.
- 6 (a) How is DEM (digital elevation model) generated?
(b) Enlist some prominent applications of DEM.
- 7 (a) Enlist various application of land use/land cover analysis in water resources applications.
(b) Explain briefly various rainfall-runoff models.
- 8 (a) How would you estimate the water depth by using GIS?
(b) How would you estimate the reservoir sedimentation?
