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Civil Engineering Department, NIT Hamirpur (H.P.)

(E) (170)

End Term Examination

Remote sensing and GIS, CE-431

Time : 3 Hours

Max Marks: 50

Part A (20 Marks)

1. A garden has a thick green circular patch of vegetation in the middle of water. Choose a single band of remotely sensed image to measure the circumference of the vegetation patch.
2. Why is the sky blue?
3. Which are the fundamental differences between active and passive RS systems?
4. Fill in the blanks
 - i) _____ generally refers to the spatial arrangement among geographic objects and may be managed within a geographic information system through the application of rules such as "Adjacent to" or "May not have gaps".
 - ii) _____ is a measure of the accuracy of an entire geospatial dataset.
5. Define the terms: spectral resolution, temporal resolution in satellite remote sensing.
6. What is the role of atmospheric windows in the choice of bands in remote sensing?
7. The temperature of an object is 1100 K, find out the wavelength at which maximum radiations will be emitted from that object.
8. Distinguish between spatial and non-spatial data.
9. A data set of the experimental German system MOMS-02 was registered from 300 km above ground with a nominal spatial resolution of 13 m. each CCD sensor line consists of 6000 detector elements.
10. List The Main Components of GIS and functions of GIS.

Part B (20 Marks) Attempt any Five questions

11. What is a spectral reflectance curve and what are its utilities in remote sensing? Explain with suitable examples.
12. With the help of a neat sketch explain the remote sensing system.
13. What is a map projection? What basic properties of spherical earth are affected by the use of map projection? What are the broad classification of projections based on the surface of projection
14. How geographical features are described in GIS? How are these represented digitally in GIS and incorporated into a computer application system? Name the three types of simple features used in GIS and their geometric properties?
15. Explain the two models of EMR. Derive the relationship between wavelength, frequency, and the energy content of a photon.
16. Explain linear contrast enhancement with the help of a suitable numerical example. How piecewise linear contrast stretch is different from linear contrast enhancement?

Part C (10 Marks)

17. Explain any **Five** of the following
 - a) Training data set
 - b) Sun Synchronous orbits
 - c) Radiometric corrections
 - d) Geo-referencing
 - e) IFOV and Swath
 - f) Wein's Displacement law
 - g) Raster and vector data model