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Assignment - II

PRN: 2018BTECS00027

Q1. Describe Spatial Resolution, Spectral Resolution, Radiometric Resolution and Temporal Resolution.

Answer :-

I) Spatial Resolution :-

It is a measure of the smallest angular or linear separation between 2 objects that can be resolved by the sensor. The greater the sensor's resolution, the greater the data volume and smaller the area covered. In fact, the area coverage and resolution are inter dependent and these factors determine the scale of imagery.

II) Spectral Resolution :-

It refers to the dimension and number of specific wavelength intervals in the electromagnetic spectrum to which a sensor is sensitive. Narrow bandwidths in certain regions of the electromagnetic spectrum allow the discrimination of various features more easily.

III) Radiometric Resolution :-

It is the capability to differentiate the spectral reflectance / remittance from various targets. This depends on the number of quantization levels within the spectral band.

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IV) Temporal Resolution :-

It refers to how often a given sensor obtains imagery of a particular area. Ideally, the sensor obtains data repetitively to capture unique descriminating characteristics of phenomena of interest.

Q.2. Discuss in short, the Photo Recognition Elements.

Answer :-

In remote sensing, the Photo Recognition Elements technology 1st emerged in 1840 & pictures were taken by balloon. Subsequently, cameras were mounted in airplane for military survey in 1st world war for reconnaissance survey. This technology includes both satellite & aerial remote sensing. The basis source is electromagnetic radiation & this energy reaches earth surface & again reflected or transmitted or absorbed by objects, which is collected by satellite sensors or recorded in photographic film.

Interpretation is process of detection, identification, description & assessment of significant of an object & pattern imaged.

There are following some basic elements of interpretation :-

i) Shape ii) Size iii) pattern
iv) Shadow v) Tone vi) Infrared image
vii) Radar imagery viii) Texture ix) Resolution

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Q3. Discuss GPS & Explain in detail GPS segment.

Answer :-

Global Positioning System (GPS) is a satellite-based radionavigation system owned by the united states government & operated by united states space force. It's Accurate information is as follows:

Type : military, civilian
Status : operational
Accuracy : 500 cm - 30 cm (16 - 0.98 ft)
Total satellite : 33
Satellite in orbit : 31
Orbital height : 20,180 km

GPS has become a widely deployed & useful tool for commerce, sceintific uses, tracking & surveliance. GPS's accurate time facilitates everyday activities such as banking, mobile phone operations & even the control of power grid.

GPS is compromised of 3 segments :

i) satellite constellation
ii) ground control / monitoring network
iii) user receiving equipment

i) Satellite Constellation :-

It consist of nominal 24 satellite constellation. The satellites are positioned in 6 earth centered orbital planets with 4 satellites in each plane. The nominoud orbital period of GPS satellite is 1/2 of sidereal day or 11 hr 58 min. Orbits are nearly circular & equally spaced about equator at 60°.

ii) Ground control/monitoring network :-

It has a responsibility of monitoring & maintaining satellites & their proper functioning. This includes maintaining positions of satellite in respective proper orbits (station keeping) & monitoring satellite sub-system health & status.

Depending on satellite version, navigation message data can be stored for a minimum 14 days to a maximum of 210 days duration.

iii) User receiving equipment :-

Typically refered as a GPS receives processes L-band signals transmitted from satellite to determine user PVT. There has been a significant evaluation, almost resolution, in the technology of GPS receiving sets, paralleling that of electronics industry in general. The move has been from analysis to digital solid state devices & surface-mount technology wherever feasible.

Q.4 Write short note on GIS database management system.

Answer :-

In GIS, data collected in database are valuable because much efforts is necessary to collect & enter data into system & keep data up to date. Data stored must be available after long period of time to justify expenses of data entry.

Making same data available for many

application & integrating data from different sources is difficult in file oriented system.

Functionality :-

i) Storage & retrieval of data, selection of data based on a multitude of access key. (e.g. name, person, street address).

ii) Standardized access to data & separation of data storage & retrieval functions from programs using data.

iii) Interface between database & application programs based on a logical description of data.

iv) Make access functions in applications independent of physical storage structure. So adaptions to expanding storage need to do not influence.

v) Allow for access to data by several users at the same time.

vi) Provide for defination of consistency constraints for data which will then be automatically enforced.

Access to data should be possible both from a high level language & from a user-friendly query language.