1. Which Indian satellite is primarily used for resource monitoring and management?

a) Cartosat
b) IRS
c) SPOT
d) Ikonos

Answer: b) IRS

Explanation: Indian Remote Sensing (IRS) satellites are primarily used for resource monitoring and management, including agriculture, forestry, and environmental monitoring.

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2. What is the spatial resolution of Landsat satellites?

a) 1 meter
b) 10 meters
c) 30 meters
d) 100 meters

Answer: c) 30 meters

Explanation: Landsat satellites typically offer a spatial resolution of 30 meters, which means each pixel represents an area of 30 meters by 30 meters on the ground.

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3. Which sensor is known for its high-resolution imagery, particularly for urban planning and infrastructure monitoring?

a) SPOT
b) Cartosat
c) Ikonos
d) Envisat

Answer: c) Ikonos

Explanation: Ikonos satellite sensor is renowned for its high spatial resolution imagery, making it suitable for applications such as urban planning and infrastructure monitoring.

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4. What does spectral resolution refer to in remote sensing?

a) Ability to detect different wavelengths of electromagnetic radiation
b) Ability to distinguish between different features on the ground
c) Ability to capture images at various times
d) Ability to discern details within an image

Answer: a) Ability to detect different wavelengths of electromagnetic radiation

Explanation: Spectral resolution in remote sensing refers to the sensor’s ability to detect and distinguish between different wavelengths or bands of electromagnetic radiation.

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5. Which systematic error in digital image processing is caused by the Earth’s rotation during image acquisition?

a) Scan Skew
b) Mirror-Scan Velocity
c) Panoramic Distortion
d) Earth Rotation

Answer: d) Earth Rotation

Explanation: Earth rotation is a systematic error that affects the alignment of images acquired by satellites during the imaging process.

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6. Which image enhancement technique involves setting specific intensity thresholds to segment an image into different classes?

a) Level slicing
b) Contrast stretching
c) Gray level thresholding

d) Histogram equalization

Answer: c) Gray level thresholding

Explanation: Gray level thresholding involves setting specific intensity thresholds to segment an image into different classes based on pixel intensity values.

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7. Which of the following is a non-systematic (random) error in digital image processing?

a) Panoramic Distortion
b) Platform Velocity
c) Altitude
d) Scan Skew

Answer: c) Altitude

Explanation: Altitude is a non-systematic (random) error that can affect the accuracy of digital images, particularly those captured from airborne or satellite platforms.

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8. Which sensor resolution is related to the number of bits used to represent the brightness levels of each pixel in an image?

a) Spatial resolution
b) Spectral resolution
c) Radiometric resolution
d) Temporal resolution

Answer: c) Radiometric resolution

Explanation: Radiometric resolution refers to the sensor’s ability to distinguish between different levels of brightness in an image, typically measured in bits per pixel.

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9. Which remote sensing platform is known for its wide swath coverage and frequent revisit times?

a) Landsat
b) SPOT
c) Cartosat
d) Envisat

Answer: b) SPOT

Explanation: SPOT satellites are known for their wide swath coverage and frequent revisit times, making them suitable for various applications, including land cover mapping and environmental monitoring.

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10. Which image filtering technique is commonly used to remove noise and enhance edge features in images?

a) Median filtering
b) Low-pass filtering
c) High-pass filtering
d) Gaussian filtering

Answer: a) Median filtering

Explanation: Median filtering is commonly used in image processing to remove noise while preserving edge features by replacing each pixel’s value with the median value of its neighborhood.

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11. Which Indian satellite is primarily used for high-resolution cartographic applications?

a) IRS
b) Cartosat
c) SPOT
d) Ikonos

Answer: b) Cartosat

Explanation: Cartosat satellites, developed by the Indian Space Research Organisation (ISRO), are primarily used for high-resolution cartographic applications, including mapping and urban planning.

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12. Which sensor resolution is related to the frequency of image acquisition over a specific area?

a) Spatial resolution
b) Spectral resolution
c) Radiometric resolution
d) Temporal resolution

Answer: d) Temporal resolution

Explanation: Temporal resolution refers to the frequency of image acquisition over a specific area, indicating how often a sensor revisits and captures images of the same location.

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13. Which systematic error in digital image processing is caused by variations in the speed of the sensor’s scanning mirror?

a) Scan Skew
b) Mirror-Scan Velocity

c) Panoramic Distortion
d) Platform Velocity

Answer: b) Mirror-Scan Velocity

Explanation: Mirror-Scan Velocity is a systematic error in digital image processing caused by variations in the speed of the sensor’s scanning mirror, leading to distortions in the acquired images.

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14. Which image enhancement technique stretches the range of pixel intensity values to cover the full dynamic range of display devices?

a) Level slicing
b) Contrast stretching
c) Gray level thresholding
d) Histogram equalization

Answer: b) Contrast stretching

Explanation: Contrast stretching is an image enhancement technique that stretches the range of pixel intensity values to cover the full dynamic range of display devices, thereby improving image contrast and visual quality.

15. Which non-systematic (random) error in digital image processing is caused by variations in the sensor’s altitude above the Earth’s surface?

a) Panoramic Distortion
b) Platform Velocity
c) Altitude
d) Scan Skew

Answer: c) Altitude

Explanation: Altitude variations, a non-systematic (random) error, in digital image processing are caused by fluctuations in the sensor’s altitude above the Earth’s surface, which can affect the accuracy and quality of acquired images.