

Remote sensing exercises for INF-GEO 4310

Multiple Choice Questions

- Each exercise has five alternatives, and one alternative is correct. Here you will get 4 points for a correct answer, -1 for an incorrect answer, and 0 if you do not answer. Answering at random will give you 0 points here! If you mark the right answer, and guard with some extra crosses, you will lose 1 point for each incorrect cross.
- If you have placed a cross in one of the boxes, and afterwards find that you do not want a cross there, you may write "REMOVE" to the left of the box.

•

1. Why is water blue?

- Because the atmosphere absorbs light corresponding to green and red wavelengths.
- Because blue light has smaller wavelengths than red and green light.
- Because the energy emitted from the sun is more concentrated in the blue wavelength regions.
- Because water absorbs longer wavelengths more than shorter wavelengths.
- Because water absorbs shorter wavelengths more than longer wavelengths.

2. Which statement below is NOT correct?

- Geostationary orbits typically have a rotation time of 90 min.
- Communication satellites typically use geostationary orbits.
- Geostationary orbits rotate at the same speed as the earth.
- Polar orbits give varying coverage depending on latitude.
- Polar orbits typically have a speed of 8 km/s.

3. Which of the following effects do NOT result in geometrical errors/distortion in satellite images?

- Earth curvature
- Earth rotation
- Atmospheric absorption
- Sensor platform motion
- Local topography

4. Which wavelength can be most useful for imaging from a satellite in cloud-covered conditions?

- 0.4 μm
- 0.4 nm
- 1.4 μm
- 4 cm
- 4 nm

5. Why does vegetation look green?

- Because vegetation absorbs light in the green range of the spectrum.
- Because vegetation reflects light for wavelengths in the green range of the spectrum.
- Because chlorophylls has a flat reflectance curve regardless of wavelength.
- Because the eye is sensitive to light corresponding to wavelengths in the green range of the spectrum.
- Because green light has higher wavelength than red and blue light.

6. Which statement is not correct for a satellite in polar orbit?

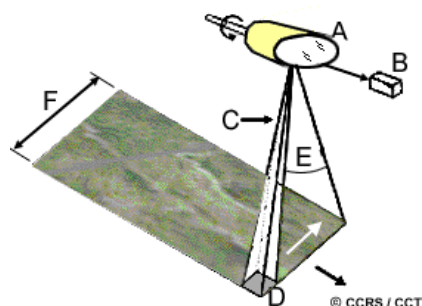
- We can image both on ascending and descending passes.
- The satellite will after a certain period cover the entire surface of the earth.
- The satellite has an inclination angle close to 90 degrees.
- The coverage is best close to equator.
- The coverage is best close to the poles.

**7. Visible light has wavelengths from 0.4 μm (purple) to 0.7 μm (res).
the highest frequency?**

Which color has

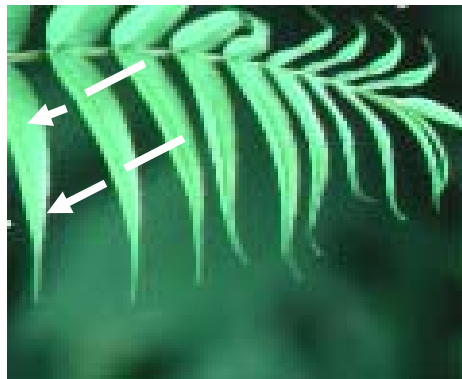
- Blue
- Green
- Purple
- Red
- Yellow

8. What type of instrument is illustrated below?



- "Along-track" scanner
- "Across-track" scanner
- "Pushbroom" scanner
- Laser scanner
- None of the above

9. What kind of interaction between radiation and target is illustrated below?



- Reflection
- Absorption
- Transmission
- Scattering
- Mirroring

10. Remote sensing.

- a) What is a geostationary orbit?
- b) What is the typical height of a geostationary satellite?
- c) What does it mean that a satellite has sun-synchronous orbit?

Multiple choice – radar (corresponding to SAR lecture (Svein-Erik))

11. What determines the range resolution in radar?

- The radiated power

- The bandwidth of the transmitted pulse
- The antenna size
- The center frequency of the radar
- The length of the synthetic aperture

12. What is the name of the radar technique that makes it possible to make surface elevation models?

- Interferometric SAR
- ISAR
- GPR
- Elevated SAR
- SAR

13. What is moving in Inverse Synthetic Aperture (ISAR) imaging?

- The radar
- The target
- The Earth
- The radar relative to the Earth
- The antenna height

14. What parameter is independent of range distance in Synthetic Aperture Imaging?

- Azimuth resolution
- Signal-to-Noise ratio
- The Doppler shift
- Incidence angle
- Two way travel time