

Uchwała nr 3/2021

Rady Programowej Kierunku Studiów Geoinformation Science, Earth Observation and Spatial Management

z dnia 12 lipca 2021 roku

w sprawie zagadnień na egzamin dyplomowy magisterski na Kierunku Studiów Geoinformation Science, Earth Observation and Spatial Management

§1

Rada Programowa uchwala zagadnienia na egzamin dyplomowy magisterski 2020/2021 na Kierunku Studiów Geoinformation Science, Earth Observation and Spatial Management, stanowiący załącznik do niniejszej uchwały.

§2

Uchwała wchodzi w życie z dniem podjęcia.

Przewodniczący Rady Programowej
Kierunku Geoinformation Science, Earth
Observation and Spatial Management

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Final, master exam question list for

Geoinformation Science, Earth Observation and Spatial Management

1. Spatial and temporal changes in the anthropopressure factors.
2. Autonomous or subordinated landscape, which of them is more susceptible to anthropogenic pressure, justify your opinion.
3. The utility meaning of gradient phenomena and geochemical barriers.
4. The reasons of urban heat island.
5. The effect of urban heat island.
6. Methods of environmental impact assessments.
7. Typical good practices in public consultations of EIA.
8. Principles of sustainable development
9. Types of resolution concerning satellite data
10. Types of drones and Examples of application of UAV'S data for environmental monitoring
11. Please define the functional areas and give 5 examples of FUAs.
12. Please discuss the purpose and rules of FUAs delimitation
13. Significance and application of Remote Sensing in agriculture
14. Significance and application of Remote Sensing in forestry
15. Significance and application of Remote Sensing in flood detection and monitoring
16. Significance and application of Remote Sensing in geohazards monitoring
17. Significance and application of Remote Sensing in environmental engineering
18. Significance and application of Remote Sensing in geology (mapping of natural geological resources)
19. Significance and application of Remote Sensing in tourism
20. Significance and application of Remote Sensing in mining and land reclamation
21. Describe types of dikes
22. Describe the basic idea of flood control channels.
23. How buffering works and what kind of buffers do you know?
24. What is the difference between focal statistics and block statistics applied for raster data?
25. Shaping the microclimate conditions in livestock buildings
26. Which building material do you perceive as the most important in rural engineering in the 21st century? What are its advantages and what are the biggest drawbacks of this material from an environmental or climate change perspective?
27. What are the advantages and disadvantages of 3D laser scanning
28. An electromagnetic radiation with $\lambda=1000$ nm passes through the atmosphere. It interacts with Gas molecules with a diameter of 1 nm and Sand particles with a diameter of 1 mm. Explain the scattering mechanism that applies between the electromagnetic radiation and the atmosphere for each case.
29. From astronomy, we know that all stars undergo evolution. Suppose the Sun will reduce its temperature to the half of the current value. Describe how Sun radiation will change.

30. You would like to discriminate the "Grass" and "Dry, yellowed grass" in an RS image data set. Suggest one spectral range (with a maximum width of 0.1 micrometers) in the visible range that can best be chosen to discriminate between the two objects
31. The object of interest is orchards/tree nurseries of olive trees. The individual trees are planted 10 meters apart. Their crown diameter is 3 meters. Suggest the spatial characteristic ground sampling distance (GSD) of the sensor to be used.
32. Suppose we have a data set with three bands with the following wavelength range in micrometer: I: 0.7-0.9, II: 0.9-1.4, III: 0.61-0.7. Is possible to obtain a true colour composite? Explain briefly your answer.
33. There are two complementary colour systems; the additive and the subtractive colour system. For what purpose is the additive system used, and for what purpose is the subtractive system used?
34. There are two complementary colour systems; the additive and the subtractive colour system. Which are the primary colours of the additive system?
35. In the collinearity concept (image orientation – photogrammetry), which points should be on the same line? Use a diagram to clarify your answer.
36. For the exterior orientation of single aerial image. Describe the minimum requirements for ground control points.
37. For the exterior orientation of single aerial image. Enlist one source of error in case of exterior orientation.
38. Give the names of the (3) three different orientation steps, and then list the number of the unknown or known parameters for each of the three orientations.
39. What are the main elements of image-based modeling that are calculated in the relative orientation process of drone images?
40. What is the difference between DTM (Digital Terrain Model) and DSM (Digital Surface Model)? Clarify your answer by drawings.
41. For high-rise urban areas you have the choice o generate an orthophoto or true orthophoto. Which one do you choose and why? Clarify your answer.
42. Explain what problem will you encounter in the region of the high-rise buildings after orthorectify the image? How do you solve this problem? Explain the process.
43. How can you evaluate/ assess the positional accuracy of the produced orthophoto? Explain briefly.
44. What are the main spectral bands considered in multispectral UAV based cameras?
45. Mention separately examples of an application of thermal cameras and multispectral cameras.
46. Since oblique images are already used before one century, why the photogrammetry community didn't use them extensively till the last three decades?
47. What do you think advantages and disadvantages when having a hybrid oblique camera +LiDAR system?
48. Imagine you have a stereo-imagery and an orthophoto of a road in the mountains which you must map with a high positional accuracy. Would you choose to digitize the road from the orthophoto or stereo-plotting and why? Promote your answer by comparing the accuracy of both methods and name three sources of error which contribute to the error estimation.