

Exam questions

Surveying II (BSc), 2024

1. Orientation of mean directions. Intersections.
2. Electrooptical distance measurement. Time pulse and phase observation methods.
3. EDM: phase observation with constant and variable frequencies.
4. Processing EDM observations (frequency error, meteorological correction, reflector constant)
5. Comparison of direct reflex and infrared distance measurements.
6. Offset surveys. The optical square.
7. Principle of tacheometry. Electronic tacheometers. Most important programmes of total stations.
8. Setting out with polar coordinates and offsets. Setting out with total stations. Setting out roadworks.
9. The computation of the closed line traverse.
10. Fundamentals of mapping (types, scale, accuracy). Digitizing analogue maps. Accuracy of digital maps.
11. The distortion of map sheets (effect, correction). Determining the size of shapes on maps.
12. Fundamentals of GNSS. GPS Satellite Concept. GPS System Segments. Principle of Positioning. GPS codes and the determination of travel time.
13. GNSS error sources. Application of GNSS in Surveying. GNSS infrastructure. Transformation into national reference system.
14. The random error as a continuous probabilistic variable. Probability distribution functions. The properties of normal distribution. The three-sigma rule.
15. The law of error propagation. The propagation of mean error. The mean error of some simple functions (sum, difference, product, mean value).
16. The relationship between the mean error and the weight. The adjustment of observations with different accuracies of a single quantity. The 'a priori' and the 'a posteriori' mean error.
17. The adjustment of observations with the same accuracy of a single quantity.
18. The 'a priori' mean error of levelling. The kilometric mean error.
19. The trigonometric heighting. The determination of the heights of buildings.
20. The definition of construction tolerances. Quality categories.
21. Planning the setting out procedure.
22. Fundamentals of geometric control of structures. Surface roughness. Verticality control.
23. Geodetic deformation analysis, subsidence monitoring.
24. Surveying building interior: control networks, connecting floors of a multi-storey building.
25. Point cloud survey: Photogrammetry, UAV, laser scanning.