Criteria Question (This question must be solved correctly in order to pass the test)

Compute the horizontal and vertical readings, the effect of collimation and index error from the FL and FR readings!

Stat.	Targ.		Readings										
			Horizontal					Vertical					
			°	'	"	'	"	°	'	"	'	"
A	P	FL	316 315	00 59	05 57			85	22	08 14		
		FR	135	59	42 46			274	37	34 33		

List of questions

Leveling

1. List various approaches to determine the height of a point. (2)
2. The principle of leveling (figure, formula) (5)
3. The structure of the tilting level (figure, labels) (5)
4. List the systematic instrumental error sources of leveling, and the ways of their elimination (4)
5. List the systematic error sources induced by the leveling staff and their ways of elimination (2)
6. List the systematic error sources caused by external conditions in leveling, and their ways of elimination. (2)
7. List all the systematic error sources of leveling, which could be eliminated by the same instrument-staff distance for backsight and foresight readings. (4)
8. Explain the two-peg-test of the tilting level (4)

Trigonometric heighting

9. Explain the formula of the trigonometric heighting (3)
10. What is the advantage and disadvantage of trigonometric heighting compared to leveling? (4)
11. How far reaches the combined effect of curvature and refraction the level of 15 cm? (3)

Angular observations

12. The structure of the theodolite (figure, labels) (5)
13. Draw the view of the graduated microscope! The unit of the main scale is 1°, the sub-scale have 60 units, and the reading is 256° 23,5'! (4)
14. Explain the procedure of the set up of the theodolite! (5)
15. What is the normal point of the bubble tube? (3)
16. How can the normal point of the bubble tube be found? (3)
17. List the intstrumental systematic error sources of the theodolite and the ways of their reduction/elimination! (3)
18. List the systematic error sources caused by external condition, and set up. Give the ways of their elimination (3)
19. Explain the procedure of the adjustment of the theodolite. (6)
20. How high is the effect of the collimation error of 28" on the horizontal reading, if the zenith angle of the line of sight is 60°? (3)
21. How high is the effect of the misalignment of the transit axis of 28" for the line of sight of 60°. (3)
22. Give the formula of the reduction of excentric observations (+figure) (4)

Distance observations

23. Compute the horizontal distance from the slope distance of 123,45m. The elevation of the endpoints are 148,5 and 151,5m above MSL respectively. Compute the horizontal distance projected to the MSL as well (radius of the Earth is 6380km) (5)