

Exam GIS and geodetic measurements 18.12.2010

1. General

Explain

- (a) Integrity, SBAS and aviation. ✓
- (b) The integration of GPS and inertial sensors. Strengths and weaknesses of both? ✓

2. Phase measurement

- (a) Explain how, in network RTK, the effect of the atmosphere (tropo- and ionosphere) is taken into account. How does the distance between base stations affect this?
- (b) The technological differences between the GPS and GLONASS systems and how they affect, e.g., the ambiguity resolution. ✓

3. Code measurement

- (a) How does the precision of code differential GPS (DGPS) depend on the distance from the base station? Which error sources depend on this distance, which don't? Give their rough magnitude. ✓
- (b) Explain *in words* how phase-aided pseudorange smoothing works.

4. New technologies

- (a) How does the increase in total number of usable GNSS satellites (e.g., in GPS-GNOMASS receivers) affect real-time positioning? Efficiency of measurement, various measurement environments, ...
- (b) Describe the Japanese QZSS system. ✓

Points:

Question	1	2	3	4	Total
	a b	a b	a b	a b	
Points	6	6	7	6	25
	3 3	3 3	3 3	4 3	

Points	10	13	16	19	23
Grade	1	2	3	4	5