AS-0.3400 Wired and wireless automation

Exam 19.5.2014

Instructions:
- write your answers in <u>separate</u> sheets of paper; question 1 in paper 1 etc.
- write your name, student number etc. in all three papers and <u>number</u> the papers 1-3
- all three questions are equal in points so the expected length of essays is also equal
- the questions contain a-b-c... to help you in your answer, however, you don't have to strictly follow this structure in your answer
- you may illustrate your essay with figures, tables etc., if you like
- language of your essays: English or Finnish/Swedish

1. Architectures and technologies of networked automation systems. (10p)

a) Draw a sketch of the architecture of a factory automation system showing various levels.

b) Explain the sketch and the levels of the system.

c) What networking technology are used on the different level? Give examples.

2. Why Higher Layer Protocols (HLP) have been developed related to CAN bus? (10p)

a) Which services HLP provides compared to a solution by using pure CAN bus?

b) Which HLP's are discussed in the course?

c) Why there are several HLP's, why not only a single one?

3. Design of communication standards for wireless automation (10p)

a) Describe the design principles of WirelessHART. What are the main design criteria and what are the implemented solutions?

b) Compare the WirelessHART features to ISA100.11a.