The structure and some sample topics for the semester examination

1 structure

• There are three questions. Questions 1 and 2 carry 15 marks each and question 3 carries 20 marks.

• Each question is divided into several parts, each carrying 5 marks. Questions 1 and 2 have 3 parts each and question 3 has 4 parts.

• All questions must be answered.

• There is no need of a calculator.

• All questions are based on the lecture slides and projects.

2 Important topics

• The key ideas behind parallelism and data parallelism.

• The idea of a cache hierararchy. How a cache hierarchy impacts on the performance of sequential and parallel programs.

• I may give you a small OpenMP or MPI program and ask you to explain the control flow. You must be very explicit, should explain every event that occurs in the program, e.g., where threads are created, what each thread does, where they are synchronized etc.

• I may ask you the meaning of specific OpenMP directives. I will ask about only those directives that have been covered in details in the lectures.

• I may ask you to write a small OpenMP program in C for solving a simple problem. The emphasis would be on the OpenMP part and I will check whether you have used simple OpenMP directives correctly. Small mistakes in syntax will not be penalized.
• I may give you sample library function calls from both OpenMP and MPI and ask you to explain the meaning of the parameters. You should be again very precise in explaining the parameters.

• I may ask you about the purpose of certain MPI functions, only those functions that have been covered in details in the lectures.

• I may give you sample MPI code segments and ask you to explain the purpose of those.

• I may ask you general questions (not coding) related to the two projects, in particular, how you have decided upon the strategies that you have used in the projects.