The final exam will be based on the topics of dynamic programming, greedy algorithms, graph algorithms, and NP-completeness. It is a closed-book, no-cheat-sheet exam, and will last two hours. As announced earlier, it will be held in 40 SH on Monday, 16th December, at 4.30 pm.

1. Dynamic Programming: You will be asked to describe an efficient algorithm for some (new) problem using the technique of dynamic programming. This is likely to be the most difficult problem in the exam (because of the time factor) but you will be helped either by some hints or by the fact that the problem is close to one of the problems you have seen in the lectures or homeworks. To prepare for this problem, we must understand the technique and how it helps in the instances we have seen.

2. Greedy Algorithms: You may be given a greedy algorithm and asked to do a piece in its proof of correctness. Or you may be asked to construct a counter-example that shows that a greedy algorithm does not work.

3. Graph Algorithms: The questions will test the understanding of the BFS, Dijkstra, and MST algorithms and proofs of their correctness. But this may not be as direct as exactly reproducing the algorithms and proofs.

4. NP-completeness: The question will be based on the material we cover in the last three lectures, especially the notion of poly-time reducibility, its application, and significance. I suggest focussing on the lectures and augmenting this with the text-book if necessary; depending solely on the text-book may not be the best approach because the treatment there is more technical and detailed.