Tik-61,181: Bioinformatics Kaski,Mannila,Nikkilä
Exercises 2 (part 1), Autumn 2000

In essay type answers try to answer briefly and concentrate on relevant issues. It is assumed that the assistant will need only reasonable amount of time when decoding the answers. If the opposite occurs, it may affect your grade.

The maximum length of an answer to one question is one page. If you make some proofs or simulations they can be included as appendixes. Every answer will be evaluated with the scale {0:failed, 3:accepted, 5:accepted with distinction}. In order to pass the course you need at least grade 3 for 60% of the exercises. In order to pass with distinction you need to return 95% of the exercises, and to get the grade 5 for most of them.

The deadline of the exercises is 31.1.2001.

a) Too easy; smooth start: SM, Ch.7, Ex. 13.

b) Easy again: SM, Ch.8, Ex. 2 (Give a _new_ example.)

c) DEKM: Ex. 9.10

d) DEKM: Ex. 10.4

e) SSK, Ch. 11: The authors propose a method for computing a substituting matrix for amino acids. Characterize the differences from the PAM matrices. Comment the proposal. Where would you use each?

f) Explain SSK, Ch. 12, eqn (2) (p.242). Use at most 1 page.

g) Paper by Chen et al (regulatory networks): Try to justify the Maximum gene regulation problem.

h) Paper by Tamayo et al: "Translate"the SOM algorithm to the more familiar notation (see, e.g., http://www.cis.hut.fi/research/som-research/som.html).