Exam given in the neural-computation course at TAU, July 2005.

1. Explain the following terms, quoting proofs and examples:
    a. Perceptron learning rule
    b. Cover's capacity limit
    c. PCA

2. Explain the learning rule of back propagation. Explain advantages and disadvantages of this method, referring to your own experience in solving the 4x4 chessboard problem.

Are there better methods for deciding on optimal weights?
Explain what should be expected of a network structure that will solve this problem. What is to be expected of the hidden neurons? Use examples from your homework.

3. Try two or more clustering methods to obtain a good classification of the crab data in Ripley's book. You may use COMPACT to solve this task. Note that the data include 50 instances in each class described in a 5-dimensional feature space.