Exam Neural Networks (Theory Part)
May 26, 2003

1. **Perceptron/Adaline**

   - (15 points) Describe the Perceptron architecture, neuron model and learning algorithm.
   - (5 points) Why the perceptron cannot be applied to non-linearly separable classes?

2. **Feed-Forward Neural Networks**

   - (10 points) What are supervised and unsupervised learning?
   - (10 points) Describe a FFNN that solves the XOR problem.

3. **Radial Basis Function Networks**

   - (5 points) What is a radial basis function?
   - (10 points) Describe the hidden neuron model of a RBF network.
   - (10 points) Describe a RBF network that solves the XOR problem.

4. **Self Organizing Maps/Competitive learning**

   - (10 points) Describe the K-means algorithm.

5. **Hopfield Networks/Brain-State-in-a-Box Networks**

   - (10 points) Describe how the weights of Hopfield networks are computed.
   - (15 points) Compare Hopfield and BSB networks.