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Sardar Patel University
M.Sc. (Electronics & Communication) (Semester-IV) Examination
Day & Date: Tuesday, 12-04-2016
Time: 2:30 p.m. to 5:30 p.m.
Subject: Artificial Neural Network
Paper No. PS04EELC02

Marks: 70

Note:- Figures to the right indicate marks.

Q-1 Choose the correct answer.

[8]

1. A typical biological neuron is composed of a _____.
a) Cell body
b) dendrites
c) A tubular arm
d) All
2. The small gap between an end bulb and a dendrite is called _____.
a) synapse
b) Axon
c) dendrite
d) none
3. A correlation learning is also called _____ learning.
a) Hebbian
b) winner-takes
c) Hamming
d) None of all
4. In _____ method, the input sample is presumed to be corrupted noisy or partial version of the desired output pattern.
a) hetero association
b) function approximation
c) auto association
d) none
5. A common technique for training MLFF networks is to calculate the generalization error on a separate data set after each epoch of training. Training is stopped when the generalization error starts to increase. This technique is called _____.
a) early stopping
b) Back propagation.
c) Momentum.
d) extrapolation
6. A single-layer perceptron has 3 input units and 3 output units. How many weights does this network have?
a) 9
b) 12
c) 25
d) 28
7. A self-organizing feature map has 15 input units, and 100 output units arranged in a two-dimensional grid. How many weights does this network have?
a) 100
b) 800
c) 1000
d) 1500
8. Which application in intelligent mobile robotics made use of a self-organizing feature map?
a) Gesture recognition
b) Route following
c) Obstacle avoidance and wall following
d) Path planning

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(P.T.O)

Q-2 Answer in short. (Any SEVEN)

[14]

1. Why Neural Networks have been used Successfully?
2. Write down the features of Control application.
3. What is System (forward) Identification?
4. What is Vector Quantization? Give Definition
5. What is Inverse identification?
6. Explain Counter Propagation Network
7. Explain RBF.
8. Explain Axon.
9. Draw the figure of forward and inverse control problems.

Q-3 (a) Explain Biological neurons and memory. (6)

(b) Explain Artificial Neuron Model with step function and ramp function. (6)

OR

(b) Describe Maxnet in detail. (6)

Q-4 (a) Write down about Function approximation and forecasting. (6)

(b) Explain Vector quantization and Pattern association in detail. (6)

OR

(b) Describe in detail classification and clustering. (6)

Q-5 (a) What is meant by Supervised learning? Explain single layer network. (6)

(b) Write a short note on a radial basis function. (6)

OR

(b) Explain Linear Separability (6)

Q-6 (a) What is the Unsupervised learning? Explain Hamming Network in detail. (6)

(b) Explain Principal Component Analysis Network. (6)

OR

(b) Describe Kohonen's self organization maps with algorithm and one example. (6)

(2)