6E 6082

B.Tech. VI Semester (Main) Examination, May 2015

Electrical & Electronics Engg.

6EX2A Neural Networks

Time : 3 Hours | **Maximum Marks : 80**
Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting **one** question from **each unit**. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Unit - I

1. a) What is artificial intelligence and compare with neural network (8)
   b) Explain directed graphs (8)

OR

1. a) Explain biological basis for neural network (8)
   b) Explain different network architectures with example (8)

Unit - II

2. a) Explain hebbian learning rule with example (8)
   b) Explain competitive learning rule with its applications (8)

OR

2. a) Explain stochastic learning of visible states in Boltzmann machines (8)
   b) Explain supervised and unsupervised learning and compare each other. (8)

Unit - III

3. a) Explain perceptron convergence theorem with mathematical calculation (12)
   b) Explain learning curve (4)

OR

3. a) Develop a perceptron for the AND function with bipolar input and targets. (8)

b) Explain application of least mean square (LMS) to noise cancellation **(8)**

Unit - IV

4. a) How many hidden layers are enough in BPNN **(4)**

b) Find the new weight when the network illustrated in fig. is presented the input pattern(0.6,0.8,0) and target output is 0.9. Use learning rate α =0.3 and use binary figmoid activation function **(12)**

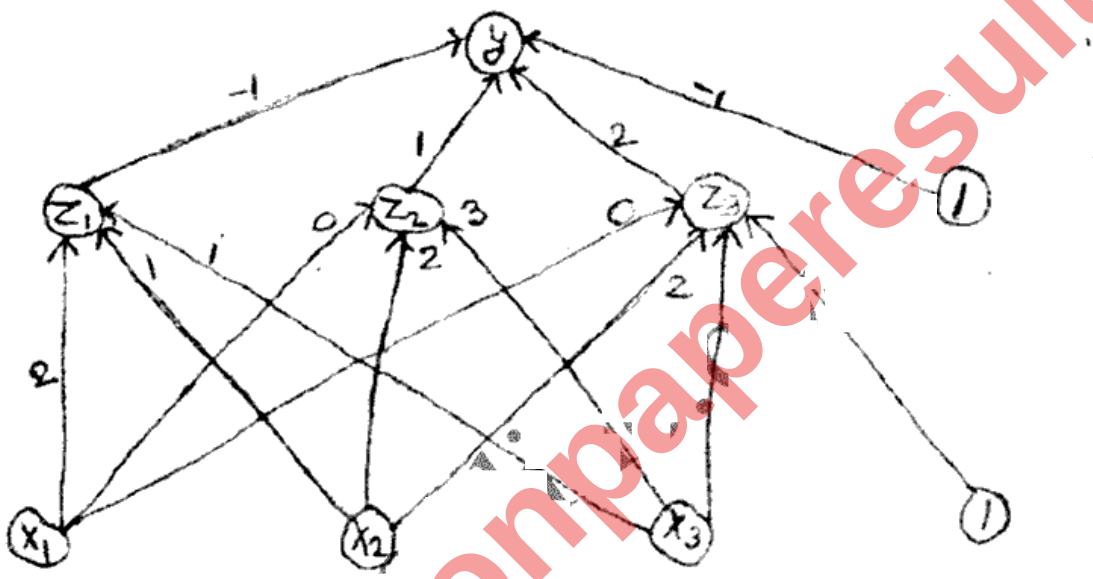

Fig. A back propagation net

OR

4. a) Comment on the following

i) How long should a network be trained **(4)**

ii) How many hidden layers are necessary to approximate a continuous function? **(4)**

b) Explain training algrorithm for BPNN and also merits, demerits & application of BPNN **(8)**

Unit - V

5. a) Explain reduce the number of basis function use non-data centers in radial basis function network **(10)**

   b) Explain properties of the features map **(6)**

OR

5. What do you understand by the following statement

   a) Feature maps are capable of representing hierarchical structures **(4)**

   b) Self organized feature maps represent topologically ordered responses **(4)**

   c) Topological relationships are are preserved during dimensionality reduction **(4)**

   d) What role does the learning rate play in map convergence? **(4)**