R09

Code No: C5408
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I Semester Examinations March/April-2011
NEURAL AND FUZZY SYSTEMS
(POWER ELECTRONICS AND ELECTRIC DRIVES)

Time: 3hours   Max.Marks:60
Answer any five questions
All questions carry equal marks
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1.a)   Explain the characteristics of neural networks.
  b)   Describe McCulloch-Pitts model of a neuron. Design a network using McCulloch-Pitts neuron to realize the NAND gate.   [12]

2.a)   Differentiate between Supervised and unsupervised learning methods.
  b)   Discuss the Perceptron learning law.
       In a single layer perceptron, unit 1 receives inputs from units 2 and 3. Given that the weights are $w_{1,2} = -3$, $w_{1,3} = 2$, $x_2 = 1$, $x_3 = 1$, $\theta_1 = 1$. Calculate the output O_1. If the desired output $T_1 = 1$, how do you adjust the weights? Assume that the learning rate $\eta = 0.3$.   [12]

3.a)   Distinguish between sequential mode of back propagation and batch mode of back propagation.
  b)   Explain the stopping criteria for back propagation algorithm.   [12]

4.a)   What do you mean by hetro-associative memory? Give an example of hetro associative memory and construct an energy function for the same.
  b)   State and prove the BAM energy function theorem.   [12]

5.   Describe the ART network architectures and their learning algorithms.   [12]

6.a)   Define the term fuzzy relation. What is the cardinality of a fuzzy relation? Discuss.
  b)   List and discuss operations on fuzzy relation.   [12]

7.a)   What is membership function?
  b)   Explain the features of membership function.   [12]

8.   List and explain in detail about fuzzy logic control system models.   [12]

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