Reg No.										

MANIPAL INSTITUTE OF TECHNOLOGY
(A Constituent Institute of Manipal University)
MANIPAL-576104

VII SEMESTER B.E. (CSE)
END SEMESTER EXAMINATION –December 2013
SUBJECT: NEURAL NETWORKS AND FUZZY SYSTEMS (CSE 431)
Date: 13-12-2013

TIME: 3 HOUR **MAX.MARKS: 50**

Instruction to Candidates
- **Answer any 5 full questions.**

Q 1 a) What are benefits of neural networks? Explain with an example. (2 M)
b) Describe a biological neuron and give it's relationship with neural networks. (4 M)
c) What do you mean by pattern recognition? Explain with an example. (4 M)

Q 2 a) What are Single layer perceptron and Multi layer perceptrons? Explain with an example. (2 M)
b) Why Eigen values are important in Neural Networks? Which method explains the same? Derive a relation for the same. (5 M)
c) What is Hebb's rule? Explain with an example. (1 M)
d) Implement And gate using Mc-Culloch Pitt's model. (2 M)

Q 3 a) What are different types of errors in Back Propagation algorithm? Derive the relationship for the back propagation algorithm for all hidden layers. (5 M)
b) Implement XOR gate using Back Propagation algorithm. (5 M)

Q 4 a)Use Associative learning for Reward Punishment technique to get a decision line for w_1= { $(0,0)^t$, $(0,1)^t$ } and w_2= { ($1,0)^t$,$(1,1)^t$}. Explain with all steps involved. (4 M)

b)How do you perform Risk Mitigation? Derive the relationship for the same. (3 M)

c) How do you optimize clusters? Give the relationship. (1 M)

d) How do you use polynomials to find boundaries in Neural Networks. Explain with an example. (2 M)

Q 5 a) How do you use fuzzy sets in Neural Networks? Explain with an example. (3 M)

b) What are Self Organizing maps? Explain with an example. (2 M)

c) What are Supervised and Unsupervised learning methods? Explain with an example. (5 M)

Q 6 a) What are training sets and testing sets? Explain with an example. (5 M)

b) What are features in Neural Networks? Explain with respect to any scientific example. (5 M)