Exam.Code:0971
Sub. Code: 7067

2123

M.E. (Electronics and Communication Engineering)
Third Semester
ECE-1301: Neural Network and Fuzzy Logic
(For UIET Only)

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: Attempt five questions in all, including Question No. I (Section-A) which is compulsory and selecting two questions each from Section B -C

x-x-x

Section -A

Q 1(a) List the different types of activation function.

(b) What is the role of learning rate parameter in gradient descent algorithm? (10)

(c) What are Self organizing Maps?

(d) What are associative memories?

(e) What is the difference between Fuzzy and Crisp relations?

Section -B

Q2 (a) Explain how Neural networks can be designed to learn XOR function. Which activation function will be suitable for this, (6)

(b) Describe the Sigmoid function and its derivative. (4)

Q3 (a) What are the different cost functions used in neural network? Describe the applications in which they are useful. (5)

(b) What is back propagation algorithm. Explain in detail. (5)

Q 4 (a) Why do we need regularization? Explain the various ways used to regularize the Neural networks. (5)

(b) How do we do the error analysis? How overfitting, Bias and Variance is handled? (5)

Section -C

Q5 What is quantization error? Explain the working of Winner-takes-all network in detail using an example. (10)

Q6 Describe in detail the energy analysis of Hopfield networks. With help of suitable diagram, discuss the dynamics of the Hopfield network (10)

Q7 (a) What are the assumptions to be made in a fuzzy control system design? Explain the steps in designing a fuzzy control system. (6)

(b) What are the main applications of Fuzzy rule based system? How conclusion is drawn in fuzzy rule based system (4)

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