



Dept. of Computer Engineering
Second Exam, Second Semester: 2006/2007

Course Title: Neural Networks & Fuzzy Logic	Date: 17/5/2007
Course No: (630551)	Time Allowed: 1 Hour
Lecturer: Dr. Mohammed Mahdi	No. of Pages: 1

Question 1:

(8 Marks)

Objectives:

This question is about fuzzy-logic control system design.

Given a scaled and unified U.O.D for the input signals E, CE, and output signal U from -2.5 to $+2.5$ of 5-quantized levels. With three fuzzy sets of N, Z, P of triangular distribution (assume fuzzy member ships). For a certain input state of $E = -3.0$ and $CE = -2.5$, apply Mamdani fuzzy logic control style to find the related crisp control action when centre of gravity fuzzifier is used. Discuss your answer.

Question 2:

(12 Marks)

Objectives:

This question is about Hopfield neural network and the concepts of Fuzzy Logic.

Answer the following with **Yes or No giving the reason:** -

- * There is no need for lengthy training in Hopfield neural network.
- * The number of units in Hopfield neural network has an effect on the number of patterns that can be stored.
- * Stability of the network can be tested when cued with non-stored pattern.
- * Hopfield neural network activation function can be considered as a hard limiter.
- * Fuzzy logic does not need a mathematical model.
- * Fuzzifier is considered as a converter form fuzzy domain to crisp value domain.
- * Switching line in the FPR's table does not always exist.
- * Centre of Gravity formula finds the effective point that represents the effect of an n-element vector.