AQ–2875

Faculty of Engineering & Technology

M.E. (Electrical & Elect.) Semester—II (New-C.G.S.) Examination

NEURO FUZZY CONTROL

Paper—2 EEEME 3

Time : Three Hours] [Maximum Marks : 80

INSTRUCTIONS TO CANDIDATES

(1) All questions carry marks as indicated.

(2) Assume suitable data wherever necessary.

(3) Illustrate your answers wherever necessary with the help of neat sketches.

(4) Use pen of Blue/Black ink/refill only for writing the answer book.

1. (a) What is the difference between membership function of an ordinary set and of a fuzzy set ? 7

(b) What do you understand by universal approximation ? 7

OR

2. (a) What are the various ways to assign membership values or function to fuzzy variables ? Explain any four ways. 7

(b) What are the different methods of defuzzification ? Explain centroid method of defuzzification with suitable examples. 7

3. (a) Explain Takagi-Sugeno-Kang (TSK) architecture for fuzzy controller. 6

(b) Discuss the notation of stability of fuzzy control system. How is it determined ? 7

OR

4. (a) What are the primary design issues of a fuzzy controller ? Explain. 7

(b) What are the main assumptions in a fuzzy control system design ? 6

5. (a) Explain back propagation learning algorithm in a step by step manner. 6

(b) Why can't you apply delta rule for training a multilayer neural network ? Explain with proper justification. 7

OR

6. (a) What has been the original motivation behind artificial neural network ? Draw a block diagram and give the formulas for an artificial neuron. Explain all terms and symbols. 6

(b) Design a perceptron to implement the logical boolean function OR. 7

7. (a) Develop an optimal neural network model for controlling temperature. 7

(b) How are neural network's designed in direct neural control applications ? Explain. 7

OR

8. (a) Explain any one application of neural networks in the area of system identification. 7

(b) Explain a procedure for instantaneous linearization with the help of an appropriate example. 7

9. (a) Explain neuro fuzzy control with the help of a block diagram. 6

(b) How are fuzzy concepts used in neural networks ? Explain. 7

OR

10. (a) Explain ANFIS learning algorithm. 7

(b) What are the basic principles of fuzzy neural systems ? 6

11. Design a neuro fuzzy control system for integrated pest management. 13

OR

12. Design a neuro fuzzy control system in order to identify trash in cotton. 13