2008 ANNA UNIVERSITY

B.E/B.TECH DEGREE EXAMINATIONS
ELECTRONIC INSTRUMENTATION ENGINEERING
NEURAL NETWORK AND FUZZY LOGIC CONTROL

TIME: 3 HOUR
MARK: 100

Answer Any All Question

PART A –(10*2=20 MARKS)

1. Mention some of the multi layer neural network. Mention the advantage of the Back propagation algorithm.

2. Explain the operation of dendrite, soma, and axon in the biological neuron.

3. Mention the need for the plant identification for the design of the controller.

4. Discuss about the neural controller with its applications.

5. Explain the fuzziness in fuzzy set theory.

6. What is called De-fuzzification? Mention its types.

7. What are the parameters to be considered for the design of membership function?

8. Explain the role of knowledge based systems.

9. Mention some of the applications of the fuzzy logic controllers in real time world.

10. Mention the few properties of fuzzy sets.

PART B-(5*16=80 marks)

11. (a) (i) Compare the biological and artificial neural network with a neat sketch.

(ii) Explain briefly about the perceptron multilayer net with its algorithm.

(OR)

(b) (i) Write the algorithm for Back propagation training and explain about the updation of weights.

(ii) What is called supervised and unsupervised training?

12. (a) write a short note on:

(i) Discrete Hopfield network.

(ii) Transient response of continuous time networks.

(OR)

(b) Explain briefly about the process identification with reference to the feed forward and plant inverse identification.

13. (a) Let A={(x1,0.2),(x2,0.7),(x3,0.4)} and B={(y1,0.5),(y2,0.6)} be two fuzzy sets defined on the universe of discourse X={x1,x2,x3} and Y={y1,y2,y3} respectively. Find the Cartesian product of the A and B and fuzzy relation R.

(OR)

(b) (i) Mention the need for the De-Fuzzification, explain the three types of De-Fuzzification with its formulae.

(ii) Write the properties of fuzzy set theory and explain.

14. (a) With a neat block diagram, explain the operation of the knowledge based system.

(b) (i) Write the mathematical expression of the membership function and sketch of the membership function.

(ii) With a neat sketch of Ven diagrams, discuss about the operation of crisp sets.

15. (a) Discuss briefly about the fuzzy rule base for the home heating system with a fuzzy rule function condition.

(OR)

(b) Explain the operation of the fuzzy logic control with the process inference block.