

B.Tech IV Year II Semester (R13) Advanced Supplementary Examinations July 2017

NEURAL NETWORKS & FUZZY LOGIC

(Electronics & Instrumentation Engineering)

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- What is the main difference between conventional computer programs and rule-based system?
 - What is the activation function of ANN and draw any two types of activation functions?
 - Give the architecture of madaline.
 - What is XOR problem in the context of linear separability?
 - Draw the McCulloch Pitts model.
 - List the steps involved in ANN approach to system identification.
 - Write any four fuzzy membership functions.
 - Give the fuzzy relation properties.
 - List the Neuro-Fuzzy signals used in washing machines.
 - Why Fuzzy application of data mining is excellent for diagnostic and prescriptive problems?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 What types of knowledge are used by neural networks and by rule-based system? What kinds of systems are they with respect to the type of knowledge they use? Explain the main components of a rule-based system.

OR

- 3 Define an expert system and explain the components of an expert system.

UNIT – II

- 4 Derive the training algorithm of back propagation network and the weight update procedure.

OR

- 5 Design a BAM based temporal associative memory with a threshold activation function to recall the following sequence {[111 – 111] [1111 – 1 – 1 – 1] [-11111 – 1 – 1]}. Compute the weight matrix and check the recall of patterns in forward and backward directions.

UNIT – III

- 6 What are the main stages in the pattern recognition process? Describe with examples, the concepts of feature vectors and discriminant functions in this context.

OR

- 7 Explain an electric load forecasting methodology using an artificial neural network.

UNIT – IV

- 8 Explain the canonical form for a fuzzy rule based system.

OR

- 9 Explain the steps involved in designing a fuzzy logic controller with a neat block diagram.

UNIT – V

- 10 Explain image quality control using fuzzy logic control by identifying the fuzzy logic control parameters and formation of rule base.

OR

- 11 Explain the use of fuzzy logic and its tools in data mining.