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)
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1   Answer the following: (10 X 02 = 20 Marks)
  (a) What is the main difference between conventional computer programs and rule-based system?
  (b) What is the activation function of ANN and draw any two types of activation functions?
  (c) Give the architecture of madaline.
  (d) What is XOR problem in the context of linear separability?
  (e) Draw the McCulloch Pitts model.
  (f) List the steps involved in ANN approach to system identification.
  (g) Write any four fuzzy membership functions.
  (h) Give the fuzzy relation properties.
  (i) List the Neuro-Fuzzy signals used in washing machines.
  (j) 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.

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