INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)
M.Tech II Semester End Examinations (Regular) - July, 2017
Regulation: IARE–R16
INTELLIGENT CONTROLLERS
(Power Electronics and Electrical Drives)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

UNIT – I

1. (a) What are the various activation functions? Explain them schematically? **[7M]**

   (b) What are the major aspects of parallel distributed model? **[7M]**

2. (a) Derive the convergence theorem for perceptron learning rule? **[7M]**

   (b) What are the deficiencies of back propagation algorithm? Explain various methods employed to overcome the deficiencies of back propagation algorithm. **[7M]**

UNIT – II

3. (a) Retrieve the associated pair for X3 using Kosko's BAM?. **[7M]**
   X_1=(1 -1 -1 -1 -1 1) Y_1=(1 1 -1 -1 -1)
   X_2=(-1 1 1 -1 -1 -1) Y_2=(1 -1 1 -1 -1)
   X_3=(-1 -1 1 -1 1 1) Y_3=(-1 1 1 1 -1)

   (b) Explain the generalized delta rule in recurrent networks. **[7M]**

4. (a) Describe the vector quantization scheme. **[7M]**

   (b) What is Kohonen network? Explain? **[7M]**

UNIT – III

5. (a) What are the operations on fuzzy set? Explain. **[7M]**

   (b) What are fuzzy relations? Explain them?. **[7M]**

6. (a) Explain Mamdani inference mechanism. **[7M]**

   (b) What are various defuzification methods? Explain any two? **[7M]**

UNIT – IV

7. (a) Compare and contrast Genetic algorithm with other optimization techniques. **[7M]**

   (b) Mention different types of mutation process. **[7M]**

8. (a) Differentiate between Roulette wheel selection and tournament selection. **[7M]**

   (b) Compare and contrast multilevel optimization and combinatorial optimization. **[7M]**

UNIT – V

9. (a) Explain the application of neural network for robot arm dynamics. **[7M]**

   (b) Explain how fault is diagnosed using fuzzy logic control. **[7M]**

10. (a) Give a short description on GA based transportation problems?. **[7M]**

   (b) Maximize the function f(x) = X^2 over the range of integers from 0 to 31 using genetic algorithm.

   [7M]

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