P.CODE:37221	R05	SET- 3

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
IV.B.TECH - I SEMESTER REGULAR EXAMINATIONS NOV/DEC, 2009
NEURAL NETWORKS AND FUZZY LOGIC
(Common to EEE, E.CON.E, MEP, AE, ICE, AME)

Time: 3hours **Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks

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1. a) Explain the architecture of integrate and fire neuron model.
   b) Briefly explain the historical developments of ANN, with a mention of their potential applications. [8+8]

2. a) What is an activation function. Mention various activation functions with their merits and demerits.
   b) Describe the Rosenblatt's perceptron model of an artificial neuron. [8+8]

3. a) Distinguish between linearly separable and linearly non-separable problem. Give examples for each.
   b) Write perceptron training algorithm for several output classes. [8+8]

4. What is back propagation? With a schematic two-layer feed forward neural network, derive its learning algorithm. Also discuss its learning difficulties and improvements. [16]

5. What are the self organizing maps? Explain the architecture and the training algorithm used for Kohonen's SOMs. [16]

6. a) Explain the properties of commutativity, associativity, distrubutivity, idempotence and identity with respect to crisp sets and fuzzy sets.
   b) Define membership function and universe of discourse in fuzzy logic. [8+8]

7. a) With a neat sketch discuss the major components of fuzzy controller.
   b) What is the role of membership function in fuzzy logic? Mention various membership functions. [8+8]

8. Design a fuzzy controller for a temperature control system of a room. Assume your own control actions due to which the temperature of the room may vary. Design in fuzzy rule-based system to keep the room at a comfortable temperature. [16]