**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**
**- - -**

1. a) What is an artificial neural network? Describe the characteristics of artificial neural networks?
   b) Explain the architecture of Hodgkin-Huxley neuron model.                    [8+8]

2. a) Compare activation dynamics and synaptic dynamics models.
   b) Classify the learning methods. Give a brief explanation about each.         [8+8]

3. a) Describe a perceptron neuron and give its limitations.
   b) Explain step by step procedure of single continuous perceptron training algorithm (SCPTA).                                                              [8+8]

4. With suitable diagram explain the concept of back propagation? Derive update equations for weight elements of multi-layer feed forward neural network. Discuss its applicability for the problems of pattern recognition.                          [16]

5. a) Explain the general concept of associate memory. Define associate matrix and associate rules.
   b) What are the modes of operation of a Hopfield network? Explain the algorithm for storage of information in a Hopfield network.                          [8+8]

6. a) Explain the following terms in sets.
                    i) CON
                    ii) DIL
                    iii) Membership function
                    iv) CRISP.
   b) Explain union, intersection and complement with reference to fuzzy set and classical sets.
                                                                           [8+8]

7. a) Compare and contrast fuzzy logic control and classical control system.
   b) Explain min-max method of implication with a suitable example.            [8+8]

8. Design and develop pressure process control by fuzzy logic control model. Formulate necessary membership functions and required fuzzy rules for the application.    [16]