

IV B.Tech I Semester Supplementary Examinations, November 2005
NEURAL NETWORKS & FUZZY LOGIC CONTROL
 (Common to Electronics & Instrumentation Engineering, Bio-Medical
 Engineering and Electronics & Control Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) What is the significance of momentum term in back propagation learning.
 (b) Why convergence is not guaranteed for the back propagation-learning algorithm. [8+8]
2. (a) With help of suitable diagram, discuss the dynamics of the Hopfield network.
 (b) Taking a three-node net, why cannot the following states $V_1 V_2 V_3 = 000, 011, 110$ and 101 be made stable. [6+10]
3. (a) Explain Kohonen self organizing maps with an example.
 (b) Explain with neat block diagram the ART network architecture. [8+8]
4. What are the basic nondynamic learning control architectures? Explain each of them. [16]
5. (a) Let the universe of discourse be given by $U = \{5, 15, 20, 30, 40, 60, 80, 90\}$.
 i. Suggest a fuzzy set to describe the term “young”.
 ii. Suggest a fuzzy set to describe the term “old”.
 iii. Derive a fuzzy set to describe “not old”.
 iv. Derive a fuzzy set to describe “very young”.
 (b) Prove $M(A) + M(B) = M(A \cup B) + M(A \cap B)$ [8+8]
6. What are the main components of fuzzy logic controller? Explain each of them in detail. [16]
7. Explain the step-by-step procedure in designing of a fuzzy logic controller. [16]
8. Design and develop a pressure process control by FLC model. Formulate necessary membership functions and required fuzzy rules for the application. [16]
