

**IV B.Tech I Semester Regular Examinations, November/December 2005**  
**ARTIFICIAL NEURAL NETWORKS**  
**(Electronics & Communication Engineering)**

**Time: 3 hours**

**Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. (a) Give the architecture & explain different Neural Models.  
(b) Explain the difference between AI & Neural Nets. [8+8]
2. (a) Explain the following Learning rules in detail.
  - i. Bollzmann learning
  - ii. Hebbian learning [4+4](b) With neat block diagram explain different types of learning an ANN. [8]
3. (a) State & prove perceptron convergence theorem.  
(b) Explain the convergence considerations of LMS algorithm. [12+4]
4. (a) With neat signal flow graph explain Adaptive filtering problem in detail.  
(b) Derive & explain the relation between perceptron & Bayes classifier for a Gaussian environment. [8+8]
5. (a) Explain how back propagation network is used as differentiator.  
(b) Explain what is a Hessian matrix, its properties & its importance. [8+8]
6. (a) Explain different methods of estimating regularization parameter.  
(b) Explain different Network pruning techniques. [8+8]
7. (a) Give the architecture of som & explain its algorithm.  
(b) Explain how ANN is used in control applications with one example. [8+8]
8. Write short notes on:
  - (a) Cross validation technique
  - (b) Contextual Maps. [8+8]

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