

Code: R7420407

**R7****B.Tech IV Year II Semester (R07) Advanced Supplementary Examinations June 2012****ARTIFICIAL NEURAL NETWORKS**

(Electronics and Communication Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions

All questions carry equal marks

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- 1 (a) Compare biological and artificial neural networks.  
(b) Define activation function. State few and explain.  
(c) In what areas are the artificial neural networks used? Explain.
- 2 (a) Draw McCulloch –Pitt's neuron architecture. What are the main requirements of the McCulloch-Pitt's neuron, explain.  
(b) Realize the McCulloch-Pitt's neuron model for NAND and NOR gates.  
(c) Define linear separability.
- 3 (a) Give the architecture and explain the training algorithm used in back propagation network with relevant expressions for weight updation.  
(b) Differentiate between local and global minima.  
(c) Explain importance of learning rate and momentum term in back propagation algorithm.
- 4 (a) Give details on the development of ADALINE network.  
(b) State and explain the training and application algorithm of ADALINE network.
- 5 (a) Draw the architecture of a full counter propagation network and explain in detail its training algorithm with relevant expressions.  
(b) Explain how counter propagation network used for data compression.
- 6 (a) What is pattern association? What are the two types of pattern association and explain?  
(b) Explain discrete Hop field network with its architecture.  
(c) Define energy function.
- 7 (a) Define Bi-directional associative memory (BAM). Draw the architecture and discuss in detail the training algorithm.  
(b) Using Hebb rule of discrete BAM, find the weight matrix to store the following input-output pattern pairs.  
 $S(1) = (1,1,0)$   $t(1) = (1,0)$   
 $S(2) = (0,1,0)$   $t(2) = (0,1)$  and test the response.
- 8 (a) Explain how neural networks are used for applications in pattern recognition.  
(b) Write short note on travelling salesman problem.

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