(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0308    Roll No.

# B.Tech

## (SEM VII) ODD SEMESTER THEORY EXAMINATION 2009-10
## ARTIFICIAL NEURAL NETWORKS

*Time : 3 Hours]*                                    *[Total Marks : 100*

Note :    *(1)    Attempt any two parts from each question.*

          *(2)    All questions carry equal marks.*

1    (a)    Define Artificial Neural Network (ANN). In what ways does ANN resemble the brain.

     (b)    Classify the nets based on their architecture. Differentiate single layer and multi layer networks.

     (c)    What are the types of learning ? Explain the Hebbian learning and Boltzmann learning.

2    (a)    Explain the working of the perceptron .net. Also differentiate the feed forward and feedback architecture.

     (b)    Describe the following :

            (i)    Convex sets and Convex hulls

            (ii)   Binary neurons for pattern clssification

            (iii)  Capacity of TLN.

     (c)    State the pocket algorithm. Also explain the $\alpha$ – LMS learning and MSE error surface.

**3**  (a)  Draw and explain the multilayered architecture. Also explain feed for forward network and its applications.

(b)  Write short notes on the following :

(i)  $\mu$ – LMS and application

(ii)  Structure growing algorithms

(iii)  Reinforcement learning

(c)  What is the activation function used in a BPN ? How is the error back propagated in a BPN ?

**4**  (a)  Explain the Bayesian classification rule is used in probabilistic neural net. Also explain the posterior probabilities.

(b)  Discuss the RBF network and activation function used in RBF network. Also describe the multilayer perceptrons.

(c)  What are stochastic machines ? Describe the application algorithm used in Boltzmann machine.

**5**  (a)  Briefly explain the ART architecture. Also explain the generalized learning laws.

(b)  Explain the following :

(i)  Principal Component Analysis

(ii)  Vector Quantization

(iii)  Maxican hat networks.

(c)  Differentiate fuzzy sets with traditional sets. Also explain the fuzzy logic system technique using suitable diagram.