

Total No. of Questions : 12]

SEAT No. :

P1814

[4859]-217

[Total No. of Pages :3

B.E. (Computer)

c-NEURAL NETWORKS

(2008 Course) (Elective-III) (410450) (Semester-II)

Time : 3 Hours]

[Max. Marks :100

Instructions to the candidates:

- 1) *Answers to the two sections should be written in separate answer books.*
- 2) *Attempt Q1 or Q2, Q3 or Q4, Q5 or Q6 from Section I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from Section II.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right side indicate full marks.*
- 5) *Use of calculator is allowed.*
- 6) *Assume suitable data, if necessary.*

SECTION-I

- Q1) a)** Draw a McCulloch Pitts Neuron model. Define the firing rule and explain how it performs the basic logic operations for NOR Gate. **[8]**
- b) What do you mean by Neural Net learning? Discuss Winner-Take-All learning rule in detail. **[8]**

OR

- Q2) a)** What is weight vector in ANN training? How it is described in following learning laws: i) Hebb's Law and ii) Delta Learning Law. **[8]**
- b) Compare the features and performance of computer to that of a biological neural network w.r.t different parameters. **[8]**

- Q3) a)** What is linearly Non-separable classification problem? Can single perceptron solve such problem? Discuss ADALINE computing model of a neuron. **[10]**
- b) Draw and explain the architecture of RBFN (Radial Basis Function Network). How it act as classifier? **[8]**

OR

P.T.O.

Q4) a) Draw a 3-layer FeedForward Neural Network. Explain the back propagation training algorithm in detail. [10]

b) What is an Activation function? How it helps in Neural Network training? Explain any two activation functions. [8]

Q5) a) Explain the architecture of Boltzmann machine. [8]

b) What do you mean by associative learning? Discuss the architecture and operation of Hopfield Network. [8]

OR

Q6) a) What is meant by capacity of a feedback network? What is the significance of hidden units? [8]

b) With example illustrate the concept of stochastic update and thermal equilibrium. [8]

SECTION-II

Q7) a) How pattern Clustering is different than Classification? Explain with algorithm the self-organizing network used for feature mapping. [10]

b) Explain how Support Vector Machine (SVM) can be used for pattern classification. [8]

OR

Q8) a) What is plasticity- stability dilemma problem? Explain the ART Training algorithm used for pattern clustering. [10]

b) Discuss Hybrid Learning procedure applied to RBFN. [8]

Q9) a) What is vector quantization? With example discuss how it can be used for pattern clustering? [8]

b) Explain with architecture and algorithms the use of ANN in hand written digit recognition. [8]

OR

Q10)a) How can we solve the optimization problem by ANN? Discuss the practical difficulty in solving the travelling salesman problem by means of ANN. **[8]**

b) Discuss in brief auto-association and hetero-association process used for neural processing. **[8]**

Q11)a) What is Soft Computing ? What are the application areas of Soft Computing? Compare the Neural Networks and Fuzzy Logic as important tools of Soft computing. **[8]**

b) How Fuzzy sets are different than traditional set? How Fuzzy logic can be used with Neural Networks for supervised or unsupervised learning? **[8]**

OR

Q12)a) What do you mean by Fuzzy Logic? What is the use of membership function? Give any two examples. **[8]**

b) Explain the architecture of any suitable Neuro Fuzzy system designed for pattern recognition task. **[8]**

