

Total No. of Questions :12]

SEAT No. :

P2827

[Total No. of Pages :3

[5154] - 208

B.E. (I.T.)

NEURAL NETWORK AND EXPERT SYSTEMS

(2008 Pattern) (Semester - II) (Elective - IV) (414451 B)

Time : 3 Hours]

[Max. Marks :100

Instructions to the candidates:

- 1) *Answers to the two sections should be written in separate answer - books.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Assume suitable data if necessary.*

SECTION-I

- Q1) a)** Compare the biological neural network with computer in terms of speed of processing, size and complexity, storage, fault tolerance and control mechanism. **[9]**
- b) With the help of suitable diagram discuss functioning of a simple artificial neuron. Explain how the functionality is affected if two such neuron are connected in series. **[8]**

OR

- Q2) a)** With neat diagram explain topologies neural networks. **[8]**
- b) Draw and explain Rosenblatt's perception model of a neuron. Write the equation which describes the operation of the perception model of a neuron. **[9]**
- Q3) a)** What is conjugate gradient method? Comment on the performance of the conjugate- gradient method? **[9]**
- b) What do you understand by the following terminologies? **[8]**
- i) Nearest neighbor recall and interpolative recall.
 - ii) Stability and Convergence.
 - iii) Equilibrium state, Stable state and steady state.
 - iv) Fixed point stability, oscillatory stability and chaotic stability.

OR

P.T.O.

- Q4)** a) Demonstrate with algorithmic steps and formulations EBP algorithm on MLFFNN. [8]
- b) Comment on the following issues of EBP. [9]
- i) Advantages
- ii) Limitations

- Q5)** a) Explain how Support Vector machine is used for pattern classification and regression? [8]
- b) What is basic concept of Relevance Vector Machines? Explain how it is used in classification problems? [8]

OR

- Q6)** a) What is significance of “Regularization Theory”? Comment. [8]
- b) What do you understand by “Kernel” methods for Pattern Analysis? [8]

SECTION-II

- Q7)** a) What are the salient features of Kohonen’s self-organizing learning algorithm. [9]
- b) Explain with diagram [8]
- i) Pattern Clustering and
- ii) Feature Mapping

OR

- Q8)** a) What do you understand by “Simulated Annealing”. [8]
- b) Explain with neat diagram “Recurrent Neural Networks”. [9]

- Q9) a)** What are the advantages in keeping knowledge base separate from control module in knowledge based system? [8]
- b) Describe the components of Expert System. [8]

OR

- Q10)a)** Explain with neat diagram blackboard system architecture and its components. [8]
- b) What is uncertainty? Explain two approaches that deal with uncertainty problem. [8]
- Q11)a)** Explain Expert system building tools. [9]
- b) Write a short note on E-MYCIN. [8]

OR

- Q12)a)** Explain various stages of knowledge acquisition in Knowledge based systems. [9]
- b) Write a short note on DENTRYL. [8]

EEE