

Total No. of Questions :12]

SEAT No. :

**P1796**

**[4859]-198**

[Total No. of Pages :3

**B.E (Information Technology)**

**b:NEURAL NETWORK AND EXPERT SYSTEMS**

**(2008 Pattern) (Elective - IV) (Semester - II)**

*Time : 3 Hours]*

*[Max. Marks :100*

*Instructions to the candidates:*

- 1) Answer three questions from section - I and three questions from section - II.*
- 2) Answers to the two sections should be written in separate answer - books.*
- 3) Figures to the right indicate full marks.*
- 4) Assume suitable data, if necessary.*

**SECTION - I**

- Q1)** a) Compare the performance of a computer and that of a biological neural network 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 properties of basic architectures of neural networks. [8]
- b) Draw and explain Roseblatt'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 he conjugate-gradient method? [9]
- b) What do you understand by the following terminologies? [8]
- i) Nearest neighbor recall and interpolative recall.

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- ii) Stability and Convergence.
- iii) Equilibrium state, Stable state and Steady state.
- iv) Fixed point stability, oscillatory stability and chaotic stability.

OR

- Q4)** a) Demonstrate with algorithmic steps and formulations EBP algorithm on MLFFNN. [8]
- b) Comment on the following issues of EBP: [9]
- i) Features,
  - ii) Performance
  - iii) 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”? In what way it is related with RBF networks. Analyze. [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 the following: [9]
- i) Stochastic Update,
  - ii) Thermal Equilibrium
  - iii) Simulated Annealing
- b) Explain with neat diagram “Recurrent Neural Networks”. [8]
- Q9) a)** What are the advantages in keeping knowledge base separate from control module in knowledge based system? [8]
- b) Identify and describe an application area to design an 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)** List and explain Expert system building tools. [9]
- b) Write a short note on E-MYCIN. [8]

OR

- Q12)a)** What do you mean by knowledge Engineering? Explain various stages of knowledge acquisition. [9]
- b) Write a short note on DENTRYL. [8]

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