Total No. of Questions : 12]

SEAT No. :

P2026

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B.E. (Information Technology)

NEURAL NETWORK AND EXPERT SYSTEMS

(2008 Pattern) (Elective - IV) (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) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Draw diagram of biological neuron and discuss its components **[9]**

b) With the help of suitable diagram discuss functioning of a simple artificial neuron. **[8]**

OR

Q2) a) List and explain topologies of neural networks. **[8]**

b) What is Perceptron model. Write an equation which describes the operation of the perception model of a neuron. **[9]**

Q3) a) What is difference between gradient descent method and 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

Q4) a) Write algorithmic steps of EBP learning algorithm in MLFFNN **[8]**

b) Comment on the the following performance issues of EBP. **[9]**

i) Advantages,

ii) Limitations

P.T.O.

Q5) a) Explain how Support Vector Machine is used for pattern analysis tasks **[8]**

b) What is basic concept of RVM? Explain how RVM is different from SVM? **[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]**