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Question Paper Code: BCSB12

M.Tech II Semester End Examinations (Regular) - May, 2019

Regulation: .–R18

# SOFT COMPUTING

Time: 3 Hours (CSE) Max Marks: 70

**Answer ONE Question from each Unit**
**All Questions Carry Equal Marks**
**All parts of the question must be answered in one place only**

## UNIT – I

1. (a) Distinguish between supervised learning and unsupervised learning? [7M]
   (b) Using McCulloh-Pitts neuron model, design a neural network for 2-input OR functions. [7M]
2. (a) Explain the working of back propagation neural network with neat architecture and flowchart. [7M]
   (b) Write a R script to connect with Excel, read the contents of sheet and load into R object. [7M]

## UNIT – II

3. (a) Write R program to extract sample XML data from web and steps to convert as data frame. Specify the needed packages and functions. [7M]
   (b) Draw and explain the architecture of hetero associative memory network. [7M]
4. (a) Draw a diagram illustrating the architecture of Elman's simple recurrent network that performs a temporal version of the XOR task. [7M]
   (b) Draw the architecture of Hopfield net. Design Hopfield net for 4 bit bipolar pattern. The training pattern are I sample S1[1,1,-1,-1], II sample S2[-1,1,-1,1], III sample S3[- 1,-1,-1,-1,1]. [7M]

## UNIT – III

5. (a) How is fuzzy relation converted into a crisp relation using lamda-cut process? [7M]
   (b) Define fuzzy set theory. Explain with example non-iterative fuzzy sets. [7M]
6. (a) Discuss fuzzy number with respect to membership function. Explain the methods of membership value assignments. [7M]
   (b) Write down the energy function of a BSB network with weight matrix W, feedback constant $\beta$, and activation vector x. [7M]

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UNIT – IV

7. (a) What is fuzzy compliment? What are the axioms to be satisfied so that a function can be used as fuzzy compliment? Check whether the function x+y-x.y can be used as a fuzzy union or not. [7M]

   (b) What is the reason that logic function has rapidly become one of the most successful technology for developing sophisticated control systems? [7M]

8. (a) What is decomposition and aggregation of fuzzy rules? Illustrate with an example. [7M]

   (b) Can a fuzzy membership be true and false at the same time? Justify. [7M]

UNIT – V

9. (a) Explain the basic concepts of genetic algorithm and steps involved in its algorithm. [7M]

   (b) How to partition the window to get more number of plots. Discuss on single and multi object plots in R. [7M]

10. (a) Assume any typical control problem and explain the various steps involved in finding a solution using Genetic Algorithm. [7M]

    (b) Give an example of combinatorial problem. What is the most difficult step in solving these problems? [7M]

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