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M.Sc. 2nd Semester Examination

Computer Science

PAPER : COS-296(M2)

(Soft Computing Lab)

(Practical)

Full Marks : 25

Time : 2 hours

The figures in the right-hand margin indicate marks.

Answer any *one* question on lottery basis : 20

Write source code and input-output for each of the program.

- 1.** Write a program in MATLAB/Python to perform Union, Intersection and Complement operations on fuzzy sets.
- 2.** Write a program in MATLAB/Python to implement of De-Morgan's law on fuzzy set.

(2)

3. Write a program in MATLAB/Python to plot triangular, trapezoidal and bell shaped membership functions.

4. WAP to use fuzzy toolbox to model tips value that is given after a dinner based on quality (not good, satisfying, good and delightful) and service (poor, average or good) and the tip value ranges from Rs 10 to 100.

Inputs :

Quality : {not good, satisfying,
good, delightful}

Service : {poor, average, good}

Output :

Tips : Tip_value ranging from
Rs 10 to 100

5. WAP to write a MATLAB program to find algebraic sum, algebraic subtraction, algebraic product, bounded sum, bounded subtraction and bounded product of two fuzzy sets.

6. WAP to write a MATLAB program to store the vector (1 1 1 0) and to find the weight matrix with no self-connection using a discrete Hopfield net with mistake in first and second component of vector that is (0 0 1 0).

(3)

7. WAP to write a MATLAB program to generate ANDNOT function using McCulloch-Pitts neural net.

8. WAP to write a MATLAB program to find the weight matrix and bias of Hebbnet in bipolar to classify two dimensional input patterns with their targets given below :

“*” indicates a ‘+’ and ‘.’ indicates a ‘-’

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*****  *****
*....  *....
*****  *****
*....  *....
*****  *....
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9. WAP to write a MATLAB program to implement AND function with bipolar input and output using Perceptron net.

10. WAP to write a MATLAB program to train and test the back propagation neural network for the generation of XOR function.

11. WAP to write a MATLAB program to compute the given two fuzzy relations R1 and R2 using max-min and max-product compositions.

Viva voce—3

Laboratory Notebook—2

★ ★ ★