

**Course Name : SOFT COMPUTING**

**Course Code : CSN403**

**Submission Date: 5 PM, 21-02-2018**

**[Email assignment at [sudeshrani@pec.ac.in](mailto:sudeshrani@pec.ac.in)]**

**Total Marks: 40 Marks**

### **Lab Assignment -II**

#### **Instructions:**

- Use Matlab/Octave/Python/R language for implementation.
- The submission deadline is to be strictly followed, failing which you will be awarded zero marks.
- In case the assignment is found to be copied from Internet/Fellow colleagues, you will be awarded zero marks in the current assignment.
- File name must be in following format:
  - SID\_Name\_Assignment-II (doc file or pdf file)
- File Contents should be on following note:
  - Problem Statement
  - Code
  - Output Screenshots

1. Design and simulate Single-layer Neural Network for Classification of 5 characters (Consider any 5 characters from A-Z). Following are the system requirements.

Consider 5 input characters from 3 different fonts. Therefore, total number of input patterns are 15. Consider 9 (rows) x 7 (columns) matrix for character representation. Denote "on" input by "1" and "off" input by "-1". Display input character before starting of training phase. Use "#" in place of 1 and "." in place of -1 for display purpose only. Use **perceptron learning rule** for training the network. After training, display the final weight matrix. Test for 5 random noisy inputs and display the network output.

2. Design and train a MADALINE to perform the XOR function using MR-I algorithm. Display weights after each iteration. Test the effect of different learning rates on the weights.