Course Name : SOFT COMPUTING
Course Code : CSN403
Submission Date: 5 PM, 12-02-2018 [Email assignment at sudeshrani@pec.ac.in]
Total Marks: 40 Marks

Lab Assignment -I

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-I (doc file or pdf file)
- File Contents should be on following note:
  - Problem Statement
  - Code
  - Output Screenshots

1. Write a program to implement following logic gates using MP Model.
   a. AND
   b. OR
   c. AND NOT
   d. XOR
2. Plot following activation functions.
   a. Step function
   b. Signum
   c. Logistic Sigmoid (plot for alpha = -2, 0, 2 on same figure)
   d. Bipolar Sigmoid (plot for alpha = -2, 0, 2 on same figure)
   e. Linear function
   f. Hyperbolic Tangent
   g. ReLu

   All activation functions should be plotted in one figure window. Label x and y-axis properly. Mention figure captions.

3. Write a program to solve linearly separable problem – AND function, using Hebb NET, Perceptron rule and delta rule of learning. Use Bipolar input and bipolar output activations. Display the number of iterations needed to converge the problem. Also,

display the updated weights after each training pattern. Test the implementation for source input patterns.

4. Design and simulate a neural network for pattern classification using Perceptron Model. Use 3x3 patterns for alphabets “T” and “H” for training the network. Use the network for testing similar/noisy patterns. Use Bipolar input and bipolar output activations. Display Weights and output after each iteration.