

Government College of Engineering Aurangabad
(An Autonomous Institute of Government of Maharashtra)

Computer Science and Engineering
End Semester Examination Nov./Dec. 2016
MECSE FT Rev.

CS 547 : Elective-I (Soft Computing)

Time : Three Hours

7 DEC 2016

Max. Marks: 60

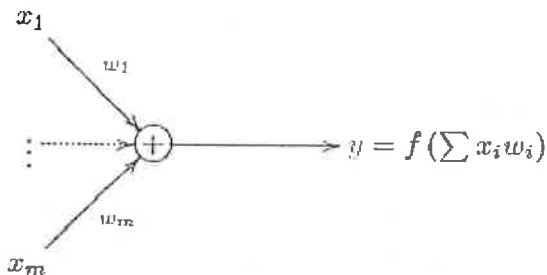
“Verify the Course Code & check whether you have got the correct question paper”

N.B:-

1. Figures to the right indicate full marks
2. Assume suitable data if necessary & state it clearly
3. Use of non-programmable calculator is allowed

1. Attempt any two: (12)

- a) Explain different types of architectures of ANN? Which types of problems can be solved by each?
- b) Design a neural network to solve character recognition problem.
- c) What is the output of following McCulloch Pitts model with linear and step activation functions? Input is $x = (0, 1, 1)$ and weight is $w = (1, -2, 4)$.



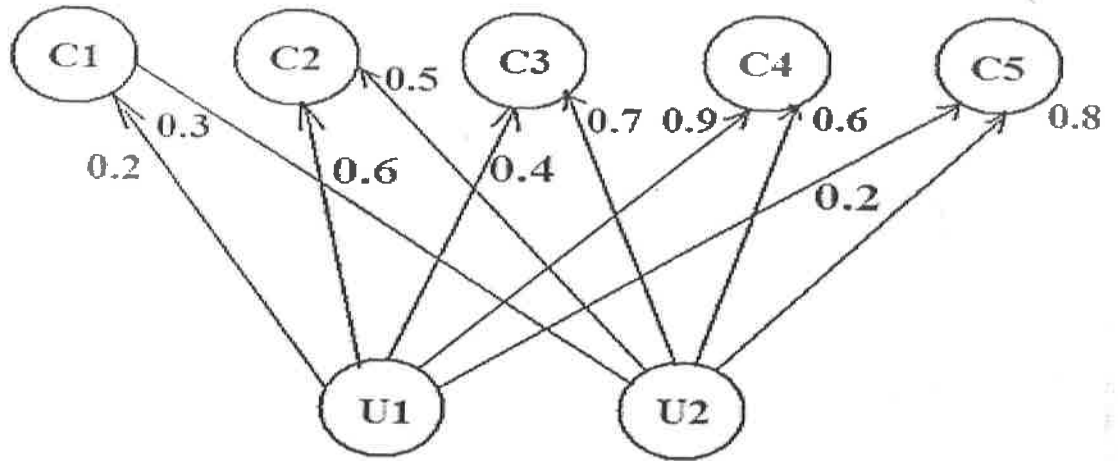
2. Attempt any two (12)

- a) What is limitation of single layer perceptron? Which problem can be solved with multilayer perceptron and how?
- b) Write an algorithm for self organizing map? Give an architecture of it. Which problem can be solved by it?
- c) What are different type of ANN based on architecture. Give application of each.

3. Attempt any two (12)

- a) What are different components of competitive neural network? Explain in detail.
- b) Explain working of Radial basis function network. What are advantages and disadvantages of RBF network?
- c) A Kohonen self organizing map is shown with weights in the following figure:
 - i) Using the square of the Euclidean distance find the cluster unit C_j that is closest to the input vector $(0.3, 0.4)$

ii) Using a learning rate of 0.03, find the new weights for unit C_j.



An Unsupervised Learning Network

4. a) Explain the various types of membership functions. (6)
b) Explain with example hardware realization of ANN. (6)
5. Explain the following in detail (12)
i) Analysis of pattern storage network
ii) SOM algorithm
iii) Simulated annealing
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