Roll No. .....

23070

M.E./M. Tech. 2nd Semester (CSE) Examination – June, 2013

SOFT COMPUTING

Paper : MTCE-602A

Time : Three hours] *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all. Attempt at least *two* questions from each Section.

SECTION – A

1. (a) Describe the Neural Networks and other soft computing tools. 12

   (b) Define : Synaptic terminals, excitation, inhibition, dendrites and axons. 8

2. (a) Discuss Hebbian Learning Rule and Winner-take-all Learning rule. 10

(b) Discuss *two* important advantages of ANNs. 4

(c) Describe clustering using similarity measures in unsupervised learning. 6

3. (a) Design a Hetero correlator to encode following patterns. 10

$A_1 = 100001$ $B_1 = 11000$

$A_2 = 011000$ $B_2 = 10100$

$A_3 = 001011$ $B_3 = 01110$

Check it for A = 001011.

(b) Describe storage and retrieval mechanism in recurrent associative memory. 10

4. (a) Describe Hopefield Network. How energy gradient works in the settlement of Hopefield Network ? Differentiate between continuous and discrete time Hopefield Network. 15

(b) Describe the basic architecture of linear associator. 5

SECTION – B

5. (a) Design fuzzy sets to express water temperature (Chilled, cool, warm, hot, very hot). 10

(b) Explain the following terms with suitable examples : 10

(i) Support,

(ii) α-cut

(iii) membership function.

6. (a) Define union and intersection operations on fuzzy sets and illustrate them graphically. 5

(b) What is a fuzzy number ? How is it different from fuzzy set ? 5

(c) Write axioms associated with : 10

(i) Fuzzy complement,

(ii) Aggregation operator.

7. (a) Define a linguistic variable. How can linguistic variables be combined ? 7

(b) Explain multivalued logic and how it has been extended to fuzzy logic. 7

(c) Explain fuzzy quantifier with example. 6

8. (a) What is a fuzzy proposition ? Explain qualified and unqualified propositions. 7

(b) Describe the fuzziness of fuzzy sets. 7

(c) Distinguish between ignorance and uncertainty. 6