

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

23070-1550-(P-4)(Q-8)(13)

P. T. O.

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

$$A_1 = 100001 \quad B_1 = 11000$$

$$A_2 = 011000 \quad B_2 = 10100$$

$$A_3 = 001011 \quad B_3 = 01110$$

Check it for $A = 001011$.

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

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