Registration No. :

Total number of printed pages – 2

B. Tech

PCIT 4401

Seventh Semester (Special) Examination – 2013
PRINCIPLES OF SOFT COMPUTING

BRANCH : CSE

QUESTION CODE : D 432

Full Marks – 70

Time : 3 Hours

Answer Question No. 1 which is compulsory and any five from the rest.
The figures in the right-hand margin indicate marks.

1.   Answer the following questions :   2 ×10

   (a)   What are the benefits of Soft Computing over traditional computing ?

   (b)   Draw and explain the basic structure of a Artificial Neuron.

   (c)   What is Hebb network ?

   (d)   What is Adaline network ?

   (e)   What is fuzzy set ?

   (f)   What is the support of a fuzzy set ?

   (g)   What is T-norm operator ?

   (h)   What is Cross Over operator in GA ?

   (i)   What is Mutation operator in GA ?

   (j)   What do you mean by hybrid neural network ?

2.   (a)   Discuss different type of learning for Artificial Neural Network.   5

   (b)   Discuss different type of architecture of Artificial Neural Network.   5

3.   (a)   Discuss in detail Genetic Algorithm.   5

   (b)   Discuss in detail all genetic operators.   5

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4. What is Back Propagation Network ? Draw the Back Propagation Network architecture. Write the Back Propagation Network learning algorithm. 10

5. The membership functions for the linguistic terms hot and cold are given as

$$\mu_{hot}(x) = bell(x;30,3,100) = \frac{1}{1+\left(\dfrac{x-100}{30}\right)^6}$$

$$\mu_{cold}(x) = bell(x;20,2,0) = \frac{1}{1+\left(\dfrac{x}{20}\right)^4}$$

(a) Construct MFs for the following composite linguistic terms

    (i) More or less hot, very cold

    (ii) Not cold and not too hot   5

(b) Construct MFs for the following composite linguistic terms

    (i) Cold but not too cold

    (ii) Extremely hot   5

6. (a) Explain the Rank selection in chromosome selection of reproduction. 5

   (b) Describe multi point cross-over in Genetic Algorithm. 5

7. (a) What do you mean by hybrid soft computing ? Explain with example. 5

   (b) What is GA based weight determination ? Explain. 5

8. Write short notes on any **two** of the following : 5×2

   (a) Artificial Neural Network

   (b) Fuzzy relation

   (c) Fuzzy model

   (d) Activation Function.