Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.Tech (CSE)/SEM-2/PGCS-205A/2010

2010
SOFT COMPUTING

Time Allotted : 3 Hours | Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer any *five* questions. 5 × 14 = 70

1. a) What do you mean by soft computing ? 2

   b) What are the applications of soft computing in different areas of engineering ? 4

   c) What do you mean by genetic algorithm and how does it differ form standard algorithm ? 4

   d) Why are we doing cross-over and mutation in GA ? Explain in brief. 4

2. a) What do you mean by fuzzy logic ? 2

   b) How does it differs from standard set theory ? 2

   c) What are the applications of fuzzy logic in engineering area ? 2

   d) What are the different types of membership function in fuzzy logic ? Explain any three. 8

3. a) Why do we need fitness function in GA ? 2

   b) Write down the steps of Genetic Algorithm. 6

   c) Explain single and two way cross-over in GA with an example. 4

   d) What do you mean by population in GA ? 2

4. a) What do you mean by Back propagation feed forward neural network ? Explain with a diagram. 4

   b) Write down the Back propagation feed forward neural network algorithm. 6

   c) Why do we need momentum and learning parameter in Back propagation feed forward neural network ? 4

5. a) Write down the concept of perceptron neural network with a diagram. 4

   b) Write down the algorithm of perceptronneural network. 4

   c) Compare fuzzy logic, genetic algorithm and neural network. 6

6. a) Explain the tiping problem.

   Implement the problem by fuzzy logic. Mention every step. 2 + 8

   b) Explain different types of logical operation like AND, OR etc. in fuzzy logic with an example. 4

7. a) Write short note on different models of neural network. 8

b) What do you mean by defuzzyfication ?

Why do we need it in fuzzy logic ? 6

8. a) Explain the XOR problem. 2

b) Explain every step to implement the XOR problem by neural network. 8

c) What do you mean by artificial neural network ? Why do we need it ? 4