



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.*

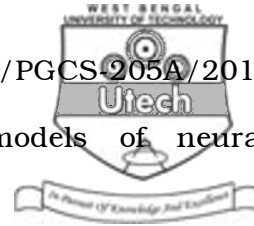
*Candidates are required to give their answers in their own words as far as practicable.*

Answer any five questions.  $5 \times 14 = 70$

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 from 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 differ 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 perceptron neural network. 4
- c) Compare fuzzy logic, genetic algorithm and neural network. 6
6. a) Explain the tipping 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 defuzzification ?

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

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