Total No. of Questions :8] *[Total No. of Printed Pages :2*

Roll No .....

MCIT - 204

M.E./M.Tech., II Semester

Examination, June 2014

Soft Computing

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.
ii) All question carry equal marks.

1. a) Discuss the factors determining the choice of direction for a particular problem. 7
   b) Explain the various knowledge level of representation involved in the reasoning process. 7

2. a) Explain local maxima and global maximum with respect to the hill climbing with a diagram. 7
   b) Explain supervised learning, reinforcement learning and unsupervised learning. 7

3. a) Consider the following axioms:
   P
   $(P \wedge Q) \rightarrow R$
   $(SVT) \rightarrow Q$
   T
   Prove R using resolution in prepositional logic. 7
   b) Explain briefly :
   i) Kohonen's self organizing networks
   ii) Hopfield networks 7

4. a) What is back propagation learning? Explain forward pass and backward pass in conjunction with back propagation learning shell it be called unsupervised learning? 7

b) Let R and S be two fuzzy relations given below:

$$R = \begin{bmatrix} 0.3 & 0.8 & 0.4 \\ 0.6 & 0.9 & 0.1 \\ 0.2 & 0.5 & 0.6 \end{bmatrix}$$

$$S = \begin{bmatrix} 0.2 & 0.8 & 0.4 \\ 0.7 & 0.9 & 0.1 \\ 0.8 & 0.3 & 0.5 \end{bmatrix}$$

i) If R = "X considerably larger than y" and S = "y very close to X" then give the matrices defining fuzzy relations "X considerably larger or very close to y" and "X considerably larger and very close to y".
ii) Find composition relation ROS. 7

5. a) Explain the three types of fuzzy inference systems in detail. 7
   b) Explain any four defuzzification methods with suitable examples. 7

6. a) Explain travelling salesman problem using simulated annealing. 7
   b) Explain the operations of genetic programming with help of flowchart. 7

7. a) Explain the major components of genetic algorithm. Give a simple genetic algorithm for maximization problem. 7
   b) Give a brief note on evolutionary computation. 7

8. a) Explain encodings and optimization problems in genetic method. 7
   b) Briefly discuss the various components of genetic algorithm. 7

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