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

Roll No ....

CS-801

B.E. VIII Semester

Examination, June 2017

Soft Computing

Time : Three Hours

Maximum Marks : 70

Note: i) Answer any five questions.
     ii) All questions carry equal marks.
     iii) Assume suitable data if missing.

1. a) What are the limitations of Hill Climbing? Give the possible solutions of these limitations.   7
   b) Write A* Search Algorithm.   7

2. a) What are the properties of good knowledge representation technique? Explain each of them in brief.   7
   b) For derivative based learning procedure why a sigmoidal function is used instead of a step function? Explain your answer.   7

3. Consider the following sentences :   14
   a) Marcus was a man.
   b) Marcus was a Roman.
   c) All men are people.
   d) Caesar was a ruler.
   e) All Romans were either loyal to Caesar or hated him (or both)
   f) Everyone is loyal to someone.
   g) People only try to assassinate rulers they are not loyal to.
   h) Marcus tried to assassinate Caesar.

Answer the following questions :
I. Translate above sentences into predicate logic.
II. Convert them into clausal form.
III. Prove using resolution that Marcus hated Caesar.

4. a) Write short notes on the structure of an associative memory.   7
   b) Explain the working of back propagation neural network with neat architecture and flowchart.   7

5. a) Distinguish between supervised learning and unsupervised learning?   7
   b) Consider the two pairs of patterns with bipolar symbols
   A1 = (+1, +1, −1) and B1 = (−1, +1, −1, +1)
   A2 = (+1, −1, +1) and B1 = (+1, −1, +1, −1)
   Calculate the weights for 2 × 2 Bidirectional Associative Memory (BAM)   7

6. a) Explain the different types of membership function used in fuzzification process?   7
   b) Give the properties of fuzzy sets and also explain the operations involved in it.   7

7. a) Mention the role of fitness function in GA and what are the requirements of GA?   7
   b) How does Genetic Algorithm differ from conventional algorithm? Give the advantages of GA over conventional algorithms.   7

8. a) Let a function $f(x) = x - \dfrac{x^2}{16}$ be defined on the interval [0, 31]. Apply Genetic Algorithm for determining the maximum of the given function (Assume suitable missing data).   7
   b) Explain different types of mutation function in Genetic Algorithm?   7

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