Code No: 117HN **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations May/June - 2019
SOFT COMPUTING
(Common to CSE, IT)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a) List the drawbacks of generate and test technique for search. [2]
b) What are the characteristics of AI problem? [3]
c) What is the use of learning rate parameter? [2]
d) Mention the applications of perceptron network. [3]
e) Give the general structure of full counter propagation network. [2]
f) Discuss the concept of simulated annealing network? [3]
g) List the properties of fuzzy sets [2]
h) What are the operations on fuzzy relations? Give examples. [3]
i) Define plausibility measure. [2]
j) Draw the block diagram of an expert system. [3]

PART-B

(50 Marks)

2.a) Suggest two situations for which means end analysis technique is suitable.
b) Represent the following sentences in predicate logic
i) Arnav likes easy courses
ii) Every student likes easy courses
iii) AI is an easy course [5+5]

OR

3. Explain crypt arithmetic problem as a constraint satisfaction problem with suitable example. [10]

4. Construct and test a BAM network to associate letters E and F with simple bipolar input-output vectors. The target output for E is (-1,1) and for F is (1,1). The display matrix size is 5 × 3, The input patterns are

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* * *   * * *
* ^ ^   * * *
* * *   * ^ ^
* ^ ^   * ^ ^
* * *   * ^ ^
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[10]

OR

5. With the help of a detail flowchart explain back-propagation network training. [10]

6.a) Discuss the purpose of Learning Vector Quantization net.
b) Write the training algorithm of Kohonen self-organizing feature maps. [5+5]

OR

7. With neat architecture, explain the training algorithm used in adaptive resonance theory network. [10]

8.a) Describe the importance of fuzzy sets and its applications in engineering.
b) Demonstrate fuzzy composition techniques. [5+5]

OR

9.a) What are the various methods employed for the membership value assignment?
b) How is a fuzzy relation converted into a crisp relation using lambda-cut process? Illustrate with an example. [5+5]

10.a) The two fuzzy vectors of length 6 are defined as

a = (0.5, 0.7, 0.2, 0.3, 1, 0.8)

b = (0, 0.2, 0.1, 0.4, 0.6, 1.0)

Find the inner product and outer product of two vectors.
b) Mention the measures of fuzziness with illustrations. [5+5]

OR

11.a) What are the advantages of Mamdani method over Sugeno method?
b) Discuss various stopping conditions for genetic algorithm flow. [5+5]

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