PAPER ID-410112

Subject Code: RCS071

Roll No: | | | | | | | | | | | | |

B.TECH

(SEM VII) THEORY EXAMINATION 2021-22

APPLICATION OF SOFT COMPUTING

Time: 3 Hours ***Total Marks: 70***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2X7 =14

a. What is the necessity of activation functions?
b. What is an artificial neuron?
c. Explain the difference between Fuzzy logic and Crisp Logic.
d. What is Fuzzy Cartesian Product?
e. Fuzzy Set A={(x1,0.2),(x2,0.9),(x3,0.4)} and Fuzzy Set B={(x1,0.4),(x2,0.5),(x3,0.2) find disjunctive sum of Fuzzy Set A and B.
f. Write down the various applications of fuzzy logic.
g. What are the advantages of Genetic Algorithm over conventional algorithms.

SECTION B

2. Attempt any *three* of the following: 7X3= 21

a. What is soft computing? Compare and contrast between soft computing and hard computing.
b. Define an artificial neural network. Discuss the various characteristics of an artificial neural network in detail.
c. Discuss in details operations and properties of fuzzy sets. Why law of contradiction and law of exclusive middle are violated in fuzzy set theory under the standard fuzzy set operations.
d. Draw and explain multiple perceptron with its learning algorithm.
e. What is Genetic Algorithm? Discuss the various genetic operators in detail.

SECTION C

3. Attempt any *one* part of the following: 7X1=7

a. What is Fuzzy system? Explain fuzzification. Design a Fuzzy Cruise controller or Air conditioner controller and demonstrate its working. Make the assumptions of values as per your requirement.
b. Explain Self Organizing Map and its training algorithms in detail.

4. Attempt any *one* part of the following: 7X1=7

a. What is fuzzy quantifier? Difference between absolute and relative quantifiers.
b. What is Defuzzification? Explain all the three methods which are used in Defuzzification with an example?

5. Attempt any *one* part of the following: 7X1=7

a. What are the various internet search techniques based on genetic algorithms?
b. Explain the roulette wheel selection in detail.

6. Attempt any *one* part of the following: 7X1=7

a. Discuss rule base structure identification and simulated annealing in detail.
b. How is fuzzy relation converted into a crisp relation using lambda-cut process?

7. Attempt any *one* part of the following: 7X1=7

a. Explain the difference between the randomness and fuzziness. Also discuss why we need fuzzy set theory.
b. Write short note on the following:
   (i) Supervised and Unsupervised learning
   (ii) Recurrent Networks

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