Total No. of Questions : 5]

P567

[5840] - 204
M.Sc. (Computer Science)
CSDT 124C : SOFT COMPUTING
(2019 Pattern) (Semester - II)

Time : 2 Hours] ***[Max. Marks : 35***

Instructions to the candidates :

1) ***Question 1 is compulsory.***
2) ***Solve any THREE questions form Q.2. to Q.5.***
3) ***Q.2. to Q.5. carry equal marks.***

Q1) Solve any five of the following : **[5]**

a) What are the features of membership function.

b) What are the properties of TLN?

c) Compare Human Brain Versus computer.

d) What are the applications of Neural Network.

e) Define multilayer Network.

f) Explain the main operators in GA.

Q2) Attempt the following : **[10]**

a) i) What is cartesian product? Explain with example. **[2]**

ii) Explain Biological Neuron and Artificial Neuron with diagram. **[4]**

b) How genetic algorithms are different from traditional methods. **[4]**

Q3) Attempt the following : **[10]**

a) i) What are the applications of GA. **[2]**

ii) Differentiate feedforword and feedback network. **[4]**

b) Let $x = \{x_1, x_2\}$ $y = \{y_1, y_2\}$, and $z = \{z_1, z_2, z_3\}$ consider the following fuzzy relations : **[4]**

$$R = \begin{array}{c} \\ x_1 \\ x_2 \end{array} \begin{array}{cc} y_1 & y_2 \\ 0.7 & 0.5 \\ 0.8 & 0.4 \end{array} \quad \text{and} \quad S = \begin{array}{c} \\ y_1 \\ y_2 \end{array} \begin{array}{ccc} z_1 & z_2 & z_3 \\ 0.9 & 0.6 & 0.2 \\ 0.1 & 0.7 & 0.5 \end{array}$$

i) Find max-min composition.

ii) Find max product composition.

Q4) Attempt the following : **[10]**

a) i) Explain the crossover in GA. **[2]**

ii) What is supervised and unsupervised learning Explain. **[4]**

b) Consider the fuzzy relation matrix R. **[4]**

$$R = \begin{bmatrix} 1 & 0.8 & 0 & 0.1 & 0.2 \\ 0.8 & 1 & 0.4 & 0 & 0.9 \\ 0 & 0.4 & 1 & 0 & 0 \\ 0.1 & 0 & 0 & 1 & 0.5 \\ 0.2 & 0.9 & 0 & 0.5 & 1 \end{bmatrix}$$

Perform λ-cut operations for the values $\lambda = 1, 0.2, 0.4, 0.7$.

Q5) Attempt the following (Any 2) : **[10]**

a) What is fuzzy set? Explain operations on fuzzy set with diagram. **[5]**

b) Explain perceptron network with diagram. **[5]**

c) What is pattern space & weight space? Explain. **[5]**

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