M.Sc. Examination 2018
Semester-III
Computer Science
Course : MCSC-33
(Soft Computing)

Time : 3 Hours **Full Marks : 40**

Questions are of value as indicated in the margin

Answer **any four** questions

1. a) Explain the significance of membership function in defining a fuzzy set. In this context define mathematically. 2

   i)Triangular membership function

   ii) Trapezoidal membership function 2×3=6

   iii) Gaussian membership function.

   b) Discuss how "persistence may be achieved by combining two sigmoidal activation functions. 2

2. Can you suggest to define "Approximate 2"? Hence deduce –

   i) "Approximate 4" = "Approximate 2" + "Approximate 2"

   ii) "Approximate 4" = "Approximate 2" × "Approximate 2"

   May these two "Approximate 4" s differ? Justify. 2+3+3+2=10

3. a) Explain, with a suitable figure the functioning of McCulloch Pitts neuron. In this context, chearly discuss the significance of activation function. 4+2=6

   b) Explain – (i) Supervised learning, (ii) Unsupervised learning. (4+2)+(2+2)=10

4. a) Distinguish between Single Layer Perceptron (SLP) and Multilayer Perceptron (MLP).

   b) Discuss how SLP is used for realizing (i) AND gate, (ii) OR gate.

   c) Justify why SLP cannot solve XOR gate. Explain how to overcome this shortcoming. 2+(2+2)+(2+2)=10

5. Optimize in function using classical GA

   $f(x) = x^2 - 4x + 4, x \in [0,3], x$ is integer, clearly indicating the operations of associated operators. 10

6. Write short notes on (**any two**): 5+5=10

   a) Intensification

   b) Back propagation

   c) Multi objective optimization

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