APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER

7221(A)-17Dec-2 (pages: 2) Name:

Reg No:

THIRD
~~FIRST~~ SEMESTER M.TECH. DEGREE EXAMINATION DECEMBER 2017

Branch: Electrical Engineering **Specialization: Power Electronics**

08EE7221(A) SOFT COMPUTING TECHNIQUES

Time:3 hours **Max.marks: 60**

Answer all six questions.

Modules 1 to 6: Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

Q.no.	Module 1	Marks
1.a	Discuss in detail the operations of Fuzzy relations?	3
	Answer b or c	
b	Using inference approach find the membership value for the triangular shapes $\underset{\sim}{I}$, $\underset{\sim}{R}$, $\underset{\sim}{E}$, $\underset{\sim}{IR}$ and $\underset{\sim}{T}$ for a triangle with angles 40^0,60^0 and 80^0 ?	6
c	What are the various methods employed for the membership value assignments	6

Q.no.	Module 2	Marks
2.a	Define bias and threshold?	3
	Answer b or c	
b	Implement ANDNOT function using Mc Culloch –Pitts neuron (use binary data) ?	6
c	Using Hebb rule, find the weight required to perform following classifications. The vectors (1 -1 1 -1) and (1 1 1 -1) belong to class (target value +1) ; vectors (-1 -1 1 1) and (1 1 -1 -1) do not belong to class (target value -1) ?	6

Q.no.	Module 3	Marks
3.a	Learning methods of ANN ?	3
	Answer b or c	
b	Find the weight required to perform the following classification using perceptron network. The vectors (1,1,1,1) and (-1,-1,-1,-1) are belonging to the class (so have target value1) vector (1,1,1,-1) and (1,-1,-1,1) are not belonging to the class(so have target value -1) . Assume learning rate as 1 and initial weight as 0	6

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c	Explain KSO network?	6

Q.no.	Module 4	Marks
4.a	With a neat flowchart explain the operation of a simple genetic algorithm?	3
	Answer b or c	
b	Explain the operations in genetic algorithm?	6
c	Using GA approach maximize the function $f(x) = (X^2 + 6) / (4X+5)$, using five bit(binary integer). Number of population is 6 for 1 generation. Use Roulette Wheel selection and Single point cross over. For mutation use flipping Method	6

Q.no.	Module 5	Marks
5.a	Explain the applications of Hybrid system ?	4
	Answer b or c	
b	What are the classification of neuro-fuzzy hybrid system? Explain in detail any one of the neuro-fuzzy hybrid system	8
c	Explain in detail the concepts of fuzzy genetic hybrid system?	8

Q.no.	Module 6	Marks
6.a	Explain the Properties of Genetic Neuro-Hybrid System?	4
	Answer b or c	
b	Explain the applications of neuro-fuzzy hybrid system?	8
c	Explain the Genetic Algorithm based Back Propagation Network (BPN)	8