

**APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER**

7221(A)_D16_1

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Name: _____

Reg. No: _____

THIRD SEMESTER M.TECH. DEGREE EXAMINATION DECEMBER 2016

Branch: Electrical & Electronics 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

Mark

s

1.a Explain the different operations on fuzzy sets.

3

Answer b or c

b The results of three implication processes are as shown in fig.1. Find the aggregated output and the defuzzified output using (1) Centre of gravity (2) Centre of sums and (3) Weighted average methods.

6

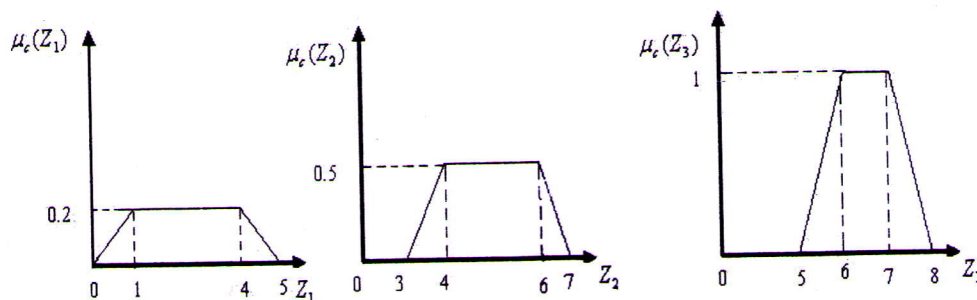


Fig.1

c Explain with neat block diagram the various components of a fuzzy logic system.

6

Q.no.

Module 2

Marks

2.a Draw and describe the different activation functions used in neural networks?

3

Answer b or c

- | | | |
|---|--|---|
| b | Explain with a neat diagram the neural network architecture of multilayer feed forward network. | 6 |
| c | Distinguish between artificial neuron & biological neuron. Sketch the model of an artificial neuron. | 6 |

Q.no.	Module 3	Marks
3.a	Briefly discuss on the learning rule of a perceptron network.	3

Answer b or c

- | | | |
|---|--|---|
| b | Describe the structure of back propagation neural network. Discuss in detail the training algorithm used in BPN. | 6 |
| c | With architecture, explain the training algorithm used in Kohonen self-organising feature map. | 6 |

Q.no.	Module 4	Marks
4.a	Mention the role of fitness function in GA.	3

Answer b or c

- | | | |
|---|--|---|
| b | Summarize the sequential procedures involved in the cross over and reproduction phase of GA with typical examples. | 6 |
| c | Describe the basic steps of Genetic Algorithm used for solving optimization techniques. | 6 |

Q.no.	Module 5	Marks
5.a	What are hybrid systems? How are they classified?	4

Answer b or c

- | | | |
|---|--|---|
| b | Explain two possible models of fuzzy neural systems. | 8 |
| c | Explain how genetic algorithm can be used for determination of weights in BPN. | 8 |

Q.no.

Module 6

Marks

6.a What is fuzzy neuron? Explain.

4

Answer b or c

b With an example, explain how fuzzy logic controlled genetic algorithm can be used to solve optimisation problems.

8

c Explain how electric load forecasting can be done using genetic algorithm based back propagation network.

8