Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (S,FE) Examination December 2025 (2019 Scheme)

Course Code: EET372

Course Name: SOFT COMPUTING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks. Marks

1		Compare biological neural network and artificial neural network.	(3)
2		With the help of a neat diagram, explain simple perceptron?	(3)
3		Distinguish between supervised and unsupervised learning.	(3)
4		List the 3 types of network architectures used in the design of neural network.	(3)
5		Define the terms in the context of fuzzy sets: a) Core b) Support c) Height	(3)
6		List and explain any three fuzzy membership functions.	(3)
7		What is the difference between two point crossover and multi point crossover?	(3)
8		Explain the importance of Genetic algorithm based back propagation networks.	(3)
9		What are the different types of clustering methods used?	(3)
10		Explain binary classification and multiclass classification	(3)

PART B

Answer one full question from each module, each carries 14 marks.

Module I

11	a)	Explain the architecture of Mc Culloch Pitts model with the help of a neat diagram.	(7)
	b)	Implement AND function using Mc Culloch Pitts model.	(7)

OR

12		Write short notes on (i) Components of Soft computing (ii) Characteristics of ANN (iii) Activation function (iv) MADALINE	(14)

Module II

13		With help of flow chart/ algorithm explain in detailed about 3 phases of backpropagation training process.	(14)

OR

14		Write short notes on (i) Hebbian learning (ii) Kohonen Self organizing maps (iii) error correction learning (iv) Boltzmann learning	(14)

Module III

15 a) Given 2 fuzzy sets (7)

$$B_1 = \left\{\frac{1}{1.0} + \frac{0.75}{1.5} + \frac{0.3}{2.0} + \frac{0.15}{2.5} + \frac{0}{3.0}\right\}$$

$$B_2 = \left\{\frac{1}{1.0} + \frac{0.60}{1.5} + \frac{0.2}{2.0} + \frac{0.1}{2.5} + \frac{0}{3.0}\right\}$$

Find the following

a) $B_1 \cup B_2$

b) $B_1 \cap B_2$

c) $\overline{B_1}$

d) $\overline{B_2}$

e) $B_1|B_2$

f) $\overline{B_1 \cup B_2}$

g) $\overline{B_1 \cap B_2}$

b) Explain the different types of defuzzification methods (7)

OR

16 a) With the help of a neat block diagram explain the architecture of a fuzzy logic control system. (10)

b) List any 4 applications of FLC systems (4)

Module IV

17 a) With the help of a flow chart/block diagram, explain the steps of a general genetic algorithm (10)

b) List any 4 applications of Genetic Algorithm. (4)

OR

18 Explain the working of Adaptive Neuro fuzzy Inference System, taking in to account all the 5 stages . (14)

Module V

19 a) Explain any 5 types of common distance measures used while clustering (10)

b) List any 4 applications of clustering (4)

OR

20 a) Explain how support vector classification can be used for linear or nonlinear classification (14)

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