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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree (R, S) Examination November 2024 (2019 Scheme)

Course Code: MRT 307

Course Name: SOFT COMPUTING TECHNIQUES

Max. Marks: 100 Duration: 3 Hours

PART A

(Answer all questions; each question carries 3 marks) Marks

1	Explain about Lambda-Cut for Fuzzy Sets?	3
2	Define fuzzy set. List out the different fuzzy set operations?	3
3	Draw and define fuzzy inference system (FIS) and its components.	3
4	Discuss about different types of defuzzification methods.	3
5	Illustrate and explain about perceptron network?	3
6	Explain the terms: a) Encoding b) Acceptance function c) Generating function.	3
7	Define unsupervised learning. Enumerate the different types of unsupervised learning methods.	3
8	State the winner - take- all learning rule in competitive networks.	3
9	Point out the different learning methods used in RBFN	3
10	Discuss about `forward and backward pass in hybrid learning algorithm.	3

PART B

(Answer one full question from each module, each question carries 14 marks)

Module -1

11	a)	Elaborate about fuzzy extension principle with an example	7
	b)	a.) What is meant by fuzzy propositions? Which are the different fuzzy propositions?	7
12	a)	Describe about the different fuzzy reasoning techniques.	8
	b)	Explain the term : a)Open-left b)Open- right c)bandwidth	6

Module -2

13	a)	Explain the mamdani fuzzy model & its types with example.	10
	b)	Write a note on gradient descent method.	4
14		Compare the sugeno model and tsukamoto model with necessary examples.	14

Module -3

15		Discuss about Downhill Simplex method of optimization.	14
16		Elaborate about genetic algorithm with example.	14

Module -4

17		Illustrate the learning algorithm used in Learning vector quantisation.	14
18		Describe about radial basis function networks. State the conditions for equivalence of RBFN with FIS.	14

Module -5

19		Explain in detail about ANFIS and RBFN	14
20		Define printed character recognition. Illustrate the implementation of Printed character recognition using soft computing concepts.	14

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