Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree (S, FE) Examination June 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	What is meant by fuzzy set? Which are the operations on a fuzzy set?	3
2	Differentiate between soft computing and hard computing.	3
3	What is Newton's method in derivative based optimization?	3
4	What are the stopping criteria used in gradient method?	3
5	Differentiate between supervised and unsupervised learning.	3
6	Explain learning algorithm used in ADALINE with flow chart.	3
7	Explain Hebbian learning.	3
8	What are the conditions for equivalence of RBFN with FIS?	3
9	List the applications for adaptive system.	3
10	What is the difference between forward and inverse kinematics problem.	3

PART B

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

Module -1

11 a) Define soft computing? List out its constituents.   5

     b) Write a note on characteristics of soft computing.   9

12 a) State Extension Principle. Illustrate its necessity in Fuzzy Set.   5

     b) Define: 9

          a) Gaussian Membership Function

          b) Generalized Bell Membership Function

          c) Sigmoid Membership Function

Module -2

13   Explain different types of defuzzification schemes for obtaining a crisp output.   14

14 a) What if fuzzy inference system(FIS)?   5

     b) Illustrate Mamdani FIS and Sugeno FIS with example.   9

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Module -3

15	Design travelling salesman problem using simulated annealing.	14
16	Discuss in detail about	14

      (a) Downhill simplex search

      (b) Random search

Module -4

17		Explain Radial basis function networks in detail.	14
18	a)	What is unsupervised learning and list the unsupervised neural network types?	5
	b)	Explain	9

      (a) Learning vector quantization

      (b) Competitive Learning

Module -5

19	a)	Explain architecture of CANFIS for color recipe prediction.	10
	b)	List down the main concerns in color recipe prediction.	4
20		Explain in detail about ANFIS and RBFN.	14

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