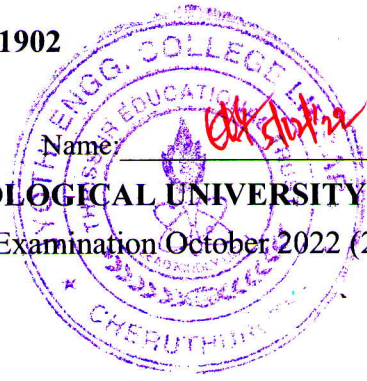


Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Eighth Semester B.Tech Degree Supplementary Examination October 2022 (2015 Scheme)

**Course Code: MR402****Course Name: Soft Computing Techniques**

Max. Marks: 100

Duration: 3 Hours

PART A*Answer all questions, each carries 5 marks.*

Marks

- | | | |
|---|---|-----|
| 1 | Write a note on Fuzzy set with example | (5) |
| 2 | Define Sugeno model and write a note on a) First order Sugeno model b) Zero model | (5) |
| 3 | Draw the architecture for Back propagation network? | (5) |
| 4 | Point out the advantage of using genetic algorithm? | (5) |
| 5 | Explain about the four-rule ANFIS equalizer? | (5) |
| 6 | Write a note on hybrid learning algorithm | (5) |
| 7 | Draw a schematic representation of forward and inverse kinematics problem? | (5) |
| 8 | With adequate figure, explain about the input and output relation in colour recipe prediction system? | (5) |

PART B*Answer any three full questions, each carries 10 marks.*

- | | | |
|----|---|-----|
| 9 | a) Illustrate with the help of diagram, trapezoidal and Gaussian membership function | (7) |
| | b) Write a note on sigmoidal Membership Function | (3) |
| 10 | a) Describe the types of Sugeno model with examples | (5) |
| | b) Explain the concept of largest of maximum and smallest of maximum with the help of a diagram | (5) |
| 11 | a) What are the basic steps involved in simulated annealing method? | (5) |
| | b) Describe simulated annealing with example? | (5) |

- 12 a) Construct and test an LVQ net with five vectors assigned to two classes. The (10)
given vectors along with the classes are shown below

Vector	Class
[0011]	1
[1000]	2
[0001]	2
[1100]	1
[0110]	1

- 13 a) Discuss about the Tsukamoto model in detail (4)
b) How gradient method can be used for optimization (6)
- 14 a) Explain Hebb rule with example? (5)
b) What is the role of Hebb rule in neural network? (5)

PART C

Answer any two full questions, each carries 15 marks.

- 15 a) By using the ANFIS model, model a two input sine function? (10)
b) Discuss about Root Mean squared method in detail? (5)
- 16 a) Elaborate CANFIS method with five colour rules for colour recipe prediction (15)
system?
- 17 a) Describe the design methodology for a fuzzy inference system to solve pattern (15)
recognition problems?
