PAPER ID-310077

Roll No: | | | | | | | | | | | | |

BTECH
(SEM VII) THEORY EXAMINATION 2023-24
APPLICATION OF SOFT COMPUTING

TIME: 3 HRS   **M.MARKS: 70**

Note: **1.** Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. **Attempt** *all* **questions in brief.**   **2 x 7 = 14**

a.	Explain with proper justification that How AI can be used in NN.
b.	What are the properties of fuzzy sets?
c.	Draw biological neural network and explain each part.
d.	Use the Hebb rule to store the vector [1 -1 1 -1] in an auto-associative neural network.
e.	Explain conditional and unconditional fuzzy proposition.
f.	Draw a flowchart of implementation steps of genetic algorithm (GA).
g.	Define fuzzification?

SECTION B

2. **Attempt any** *three* **of the following:**   **7 x 3 = 21**

a.	Explain in detail the architecture of Mc Culloch – Pitts neuron model and realize 3-input NAND gate, NOR gate using the above neuron model.
b.	Explain about the cardinalities in fuzzy sets.
c.	Define the terms chromosome, fitness function, crossover and mutation as used in genetic algorithms.
d.	Implement MADALINE network to solve XOR problem.
e.	Explain generational cycle of GA with diagram.

SECTION C

3. **Attempt any** *one* **part of the following:**   **7 x 1 = 7**

(a)	Write the expression of bipolar continuous and bipolar binary activation function.
(b)	Discuss the applications of GA in detail.

4. **Attempt any** *one* **part of the following:**   **7 x 1 = 7**

(a)	Explain about the classification taxonomy of artificial neural networks.
(b)	Explain about the Perceptron training algorithms

5. **Attempt any** *one* **part of the following:**   **7 x 1 = 7**

(a)	Discuss membership function? Explain in detail various membership functions of fuzzy logic systems.
(b)	Explain applications of fuzzy logic in control system with one example.

6. **Attempt any** *one* **part of the following:**   **7 x 1 = 7**

(a)	Explain back propagation algorithm and factors that may affect the Back propagation neural network.
(b)	Write short note on genetic representation.

7. **Attempt any** *one* **part of the following:**   **7 x 1 = 7**

(a)	Explain mutation and mutation rate with example.
(b)	Explain in detail about various operators of genetic algorithm and also mention genetic algorithm evaluation procedure.