

Roll No.

Total Pages : 03

007607

May 2024

B.Tech. (EL) (Sixth Semester)
Artificial Intelligence (ELOE-121)

Time : 3 Hours]

[Maximum Marks : 75

Note : It is compulsory to answer all the questions (1.5 marks each) of Part A in short. Answer any *four* questions from Part B in detail. Different sub-parts of a question are to be attempted adjacent to each other. Assume any missing data.

Part A

1. (a) What are fuzzy predicates ? 1.5
- (b) What are different crossovers used in genetic algorithms ? 1.5
- (c) What is the activation function used in Radial basis function ? 1.5
- (d) Does perceptron network require supervised learning ? If not, what does it require ? 1.5
- (e) Define membership function. What are the features of M.F ? 1.5

- (f) What is epoch in the training process ? 1.5
- (g) What do you mean by threshold and learning rate in ANN ? 1.5
- (h) Indicate the difference between excitatory and inhibitory weighted interconnections. 1.5
- (i) What do you mean by binary and octal encoding ? 1.5
- (j) Why is the gradient descent method adopted to minimize error ? 1.5

Part B

- 2. (a) Implement OR gate using single layer perceptron network. 8
- (b) Design a HEBB network to implement AND function. 7
- 3. (a) Explain defuzzification methods with details. 8
- (b) What is a fuzzy inference system (FIS). Differentiate between Mamdani and Sugeno FIS. 7
- 4. Explain in detail about the various operations of a simple genetic algorithm. 15

- 5. (a) Differentiate Supervised, Unsupervised and reinforced learning with suitable examples. 10
- (b) What do you mean by linear separability ? How to deal with nonlinear complex problems ? 5
- 6. (a) What is the importance of FLN (Functional link network) in ANN ? 8
- (b) What do you understand by fuzzy relations ? Discuss the operations on fuzzy relations. 7
- 7. (a) Explain the use of ANN for load forecasting. 7
- (b) What is the need of reactive power control on a power system ? How is it achieved using AI techniques ? 8