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Roll No.

Total Pages : 3

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Dec 2021

**B.Tech. (EL) VII SEMESTER
Artificial Intelligenece (ELOE -121)**

Time : 90 Minutes]

[Max. Marks : 25

Instructions :

1. *It is compulsory to answer all the questions (1 mark each) of Part-A in short.*
2. *Answer any three questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART - A

1. (a) Differentiate between supervised and unsupervised learning. (1)
- (b) State the training algorithm used for the Hebb network. (1)
- (c) List the stages involved in training of back propagation network. (1)
- (d) What are the various types of composition techniques? (1)

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- (e) State the Cartesian product of a relation. (1)
- (f) What do you mean by fitness function? Explain the adjustment of free parameters. (1)
- (g) What is gradient descent algorithm? (1)
- (h) Explain the inference method adopted for assigning membership values. (1)
- (i) Compare and contrast traditional and genetic algorithm. (1)
- (j) What are the characteristics of linguistic variable? (1)

PART - B

- 2. (a) Explain membership function, inference engine and fuzzy sets in fuzzy logic terminology. (3)
- (b) Enlist the characteristics of basic mathematical model of artificial neural network system. (2)
- 3. (a) Implement OR function with bipolar inputs and targets using Adaline network. (3)
- (b) Explain fuzzy architecture in detail. (2)
- 4. Explain the concept of genetic algorithm? Write in detail the algorithmic steps. (5)

- 5. (a) Explain the architecture and training of Kohonen's self-organizing network. (3)
 - (b) Explain two point crossover, multi point crossover and uniform cross over. (2)
 - 6. (a) Explain defuzzification methods in detail. (3)
 - (b) Design a Fuzzy PI controller for speed control of DC motor. (2)
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