Reg. No. : | | | | | | | | | | |

Question Paper Code: 52534

M.E. DEGREE EXAMINATION, NOV 2016

Elective

Power Electronics and Drives

15PPE604 – SOFT COMPUTING

(Regulation 2015)

(Common to VLSI Design branch)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Perceptron is

   (a) General class of approaches to a problem
   (b) Performing several computations simultaneously
   (c) Structures in a database those are statistically relevant
   (d) learning with computers as supervisor

2. Neural Networks are complex _____ with many parameters.

   (a) Linear Functions (b) Nonlinear Functions
   (c) Discrete Functions (d) Exponential Functions

3. ART exhibits

   (a) Hebbian learning (b) Supervised learning
   (c) Unsupervised learning (d) Reinforced learning

4. Back propagation NN is a

   (a) Linear Functions (b) Feedforward multilayer NN
   (c) Discrete Functions (d) Feedforward single layer NN

5. The Union operation in Fuzzy set theory is the equivalent of the _____operation in Boolean algebra.

(a) XOR (b) AND (c) NAND (d) OR

6. The Cartesian product between A and B will result in a fuzzy relation such that _____ where R is a membership function.

(a) A / B = R C X x Y (b) A x B = R C X x Y
(c) A . B = R X x Y (d) A x B = R C X / Y

7. Genetic algorithms are a particular class of

(a) evolutionary algorithms (b) indefinite mathematical expression
(c) discrete algorithms (d) linear algorithms

8. _____ is method to solve optimization problem.

(a) Ant colony (b) Tabu search
(c) Both (a) and (b) (d) None of these

9. A system is said to be stable if for a bounded input it produces a

(a) bounded output (b) indefinite outputs
(c) unbounded output (d) linear outputs

10. A linear system is one which obeys and

(a) super position principle (b) homogeneity
(c) Both (a) and (b) (d) None of these

PART B - (5 x 2 = 10 Marks)

11. What is supervised learning and unsupervised learning?

12. What is back propagation NN? What are its limitations?

13. Define Fuzzy logic controller and What is rule base in FLC.

14. List out any two searching techniques for optimization problems.

15. How will you analyze the stability of NN?

PART C - (5 x 16 = 80 Marks)

16. (a) (i) Explain in brief the various types of soft computing techniques. (8)

(ii) Compare hard computing and soft computing. (8)

Or

(b) Draw the architectural diagram for the back propagation network with detailed discussion. (16)

17. (a) Explain the architecture and training algorithm of adaptive resonance theory. (16)

Or

(b) Discuss in brief various classification of ART. (16)

18. (a) With a neat block diagram, Explain the working principle of fuzzy logic control systems and discuss its application to non linear time delay system. (16)

Or

(b) Explain with case study , how FLC system is used for non linear time delay systems. (16)

19. (a) Explain ant colony algorithm for solving optimization problem. (16)

Or

(b) Explain economic dispatch problem using GA. (16)

20. (a) Discuss in detail GA application to power system optimization problem. (16)

Or

(b) What are the disadvantages of fuzzy control and NN control? (16)

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