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Question Paper Code:U2904

M.E. DEGREE EXAMINATION, APRIL 2024

Elective

Power Electronics and Drives

21PPE504 – SOFT COMPUTING TECHNIQUES

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1. (a) Write the algorithm for back propagation for back propagation training and explain about the updating of weight CO1-U (20)
Or
(b) Can a two input Adaline compute the XOR function? How will you solve the same by using Madaline? CO1-U (20)
2. (a) Design a Hopfield network for 4 bit bipolar patterns. The training patterns are with samples $S_1=[1 \ 1 \ -1 \ -1]$; $S_2=[-1 \ 1 \ -1 \ 1]$; $S_3=[-1 \ -1 \ -1 \ 1]$. Find the weight matrix and the energy for the three input samples. Determine the pattern to which the sample $S=[-1 \ 1 \ -1 \ -1]$ associates. CO2-App (20)
Or
(b) Consider hetro associative network using hybrid data. Find the weight matrix and test the training for input vectors given below:
 $S(1)=(1 \ 1 \ 0 \ 0)$ $t(1)=(1 \ 0)$
 $S(2)=(0 \ 1 \ 0 \ 0)$ $t(2)=(1 \ 0)$
 $S(3)=(0 \ 0 \ 1 \ 1)$ $t(3)=(0 \ 1)$
 $S(4)=(0 \ 0 \ 1 \ 0)$ $t(4)=(0 \ 1)$ CO2-App (20)
3. (a) Explain in detail the methods employed for converting fuzzy form into crisp form. CO3-U (20)
Or
(b) Create fuzzy control system for any one application. CO3-U (20)

4. (a) With a neat flow chart explain the operation of ANT colony optimization. CO4-U (20)
- Or
- (b) Discuss algorithmic steps involved in solving an optimization problem using Tabu search with suitable examples CO4-U (20)
5. (a) Create a neuro and fuzzy controller for its application in inverted pendulum system. CO5-C (20)
- Or
- (b) Show how fuzzy logic control and genetic algorithm based structural optimization can be used for plant control applications CO5-C (20)