CSE 423 A (R-15)

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IV/IV B.Tech. DEGREE EXAMINATIONS, NOV/DEC- 2019

Second Semester

COMPUTER SCIENCE ENGINEERING

SOFT COMPUTING THROUGH MATLAB

Time: Three Hours **Maximum marks:60**

Answer Question No.1 Compulsory **6X2=12 M**

Answer ONE Question from each Unit **4X12=48 M**

1. a) List the main components of biological neuron
   b) Define learning
   c) Mention the principle of adaptive resonance theory
   d) Brief on Continuous BAM
   e) Define height of a fuzzy set and what is an empty fuzzy set
   f) What is two point crossover?

UNIT-I

2. a) Explain Tolerance and Equivalence Relations of Classical and Fuzzy sets.
   b) What are the basic types of neuron connection architectures? Explain each with suitable example diagram.

(OR)

3. a) Give a brief on Fuzzy sets. Explain the properties and different operations over Fuzzy sets.
   b) Define soft computing? Distinguish between soft computing and hard computing

UNIT-II

4. a) Give the Flow chart of Hebb training algorithm and explain the same.
   b) Explain Mc Culloch Pitts neuron model with the help of an example.
   c) Determine (alfa) α-level sets and strong α-level sets for the following fuzzy set A={(1,0.2), (2,0.5), (3,0.8) ,(4,1), (5,0.7), (6,0.3)}

(OR)

5. a) With a neat sketch explain the training and testing operations of recurrent neural network.

   b) Explain Kohonen Self-Organizing Networks.

UNIT-III

6. Explain the concept of Defuzzification. Explain the following Defuzzification methods.

   a) Max-Membership

   b) Centroid Method

   c) Weighted Average Method

   d) Mean-Max Membership

(OR)

7. Explain Fuzzy prepositions. Solve the following prepositions, under the mentioned connectives.

   a) P:Mary is efficient, T(P)=0-8

   b) Q:Ram is efficient, T(Q)=0-55

   Connective statements:

   i) P:Mary is not efficient ii)P A Q : Mary is efficient and so is Ram

   iii) P V Q : Either Mary or Ram is efficient

   iv) P=>Q : If Mary is efficient then so is Ram.

UNIT-IV

8. a) Discuss the application areas of GA. Also Describe the Genetic Algorithm with its flowchart. State and discuss the different operations of GA.

   b) Illustrate the different steps in genetic-neuro hybrid systems with the helop of a block diagram.

(OR)

9. What do you understand by evolutionary algorithms? What is the significance of genetic algorithms in present scenario? Mention the basic operations of genetic algorithm. Discuss in detail the low level operators.

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IV/IV B.Tech. (Regular) DEGREE EXAMINATIONS, APRIL- 2019

Second Semester

COMPUTER SCIENCE ENGINEERING

SOFT COMPUTING THROUGH MATLAB

Time: Three Hours **Maximum marks:60**

Answer Question No.1 Compulsory **6X2=12 M**

Answer ONE Question from each Unit **4X12=48 M**

1. a) Define bias and threshold
   b) What is the significance of recurrent networks?
   c) Define Gradient descent Learning.
   d) State the differences between supervised and unsupervised learning
   e) Why Generic Algorithms?
   f) Brief on Cooperative Neural Fuzzy Systems

UNIT-I

2. a) What is Soft Computing? Explain its components and approach.
   b) Give a brief on classical sets. Explain properties of classical sets and operations over it.

(OR)

3. a) Write notes on fuzzy reasoning.
   b) Explain the types of learning in an ANN in brief.

UNIT-II

4. a) Draw the architecture of Hopfield network. Design Hopfield net for 4 bit bipolar pattern. The training patterns are:

   Sample 1 - S1(1,1,-1,-1)

   Sample 2 - S2 (-1,1,-1,1)

   Sample 3-S3 (-1,-1,-1,1) **P.T.O**

Find the weight matrix and energy for 3 input samples.

b) Explain Kohenen self organizing feature maps with its architecture and flowchart.

(OR)

5. Explain Bidirectional Associative Memory (BAM) and its Architecure. Elaborate on Discrete Bidirectional Associative Memory.

UNIT-III

6. a) Give a framework for fuzzy inference system and explain the same.

b) Write a brief on fuzzy expert system.

(OR)

7. a) What do you mean by Fuzzification? Compare & contrast between Fuzzification & Defuzzification.

b) Explain the following Fuzzy measures:

i) Belief and Plausibility Measures ii) Probability Measures

iii) Possibility and Necessity Measures

UNIT-IV

8. a) Mention the various applications of genetic algorithm. Discuss at least one in detail.

b) Under the reproduction phase of genetic algorithm, what are the various selection techniques, and according to you which one is the most efficient of the rest?

(OR)

9. a) Give a Comparison of Fuzzy Systems with Neural Networks and explain characteristics of Neuro~Fuzzy Hybrids.

b) Give a brief on Simplified Fuzzy ARTMAP and explain Supervised ARTMAP System and give a comparison of ARTMAP with BPN.