Registration No : | | | | | | | | | | |

Total Number of Pages : 02 **B.Tech**

PCP7H010

7th Semester Regular Examination 2018-19

SOFT COMPUTING

BRANCH : AEIE, AERO, AUTO, BIOMED, BIOTECH, CHEM, CIVIL, CSE, ECE, EEE, EIE, ELECTRICAL, ENV, ETC, FAT, IEE, IT, MANUFAC, MANUTECH, MECH, METTA, MINERAL, MINING, MME, PE, PLASTIC, TEXTILE

Time : 3 Hours

Max Marks : 100

Q.CODE : E348

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part- I

Q1 **Short Answer Type Questions (Answer All-10)** **(2 x 10)**

a) What is Hebb's learning rule?

b) What is the convergence criterion of genetic algorithm?

c) What is the importance of threshold in perception network?

d) Differentiate between supervised and unsupervised learning.

e) Distinguish between biological neuron and artificial neuron.

f) Draw the architecture of a perceptron network.

g) Name the different crossover operators used in GA.

h) List different activation functions used in ANN.

i) Single pint crossover is more desired than bit wise mutation – why?

j) What is angular fuzzy set? Give an example.

Part- II

Q2 **Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)** **(6 x 8)**

a) How XOR gate problem be implemented using ANN?

b) Explain the architecture of adaptive resonance theory with the help of a schematic diagram.

c) How does universal approximation play an important role in hybrid approach of soft computing?

d) Give the solution Traveling Salesman problem using genetic algorithm.

e) Using the inference approach, calculate the membership values for the fuzzy triangular shapes (L, R and T) for a triangle with angles 45^0, 65^0 and 70^0.

f) A neuron with 3 inputs has the weight vector w = [0.1 0.3 -0.2]. The activation function is binary sigmoidal activation function. If input vector is [0.8 0.6 0.4], then find the output neuron.

g) Explain the architecture of adaptive resonance theory with the help of schematic diagram.

h) Elaborate on Neuro-fuzzy Inference systems?

i) Explain Non-linear least square problems.

j) What is learning from reinforcement? Explain with example.

k) Give the Hypothesis of Building Blocks? Define Simulated Annealing and Stochastic Models. Explain?

l) Explain rule induction and fuzzy models?

Part-III

Long Answer Type Questions (Answer Any Two out of Four)

Q3	Differentiate between fuzzy relation and crisp relation and explain fuzzy decision making with an example.	**(16)**
Q4	Draw the ART2 network and explain each components of its network. How does it satisfy the condition of plasticity and stability?	**(16)**
Q5	Explain the back propagation learning mechanism used in multi layer feed forward neural network with an example and diagram.	**(16)**
Q6	What are the various Tools and Techniques useful for Soft computing? Write the Applications of Soft computing.	**(16)**