C9-R4: SOFT COMPUTING

NOTE:

1.	Answer question 1 and any FOUR from questions 2 to 7.
2.	Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours   **Total Marks: 100**

1.
a) What are the objectives of soft computing? Briefly mention the application area of soft computing?
b) Differentiate between Competitive Learning and Supervised Learning.
c) Discuss the relationship between bias and variance dilemma.
d) Why Population is required? Which operator is applied first to the population?
e) Differentiate between feed forward and feedback network.
f) What should be the crossover rate and mutation rate for the optimization problem?
g) List the types of hybrid system and its application domain where hybrid system are used.

(7x4)

2.
a) How does learning rate play an important role in learning? How can the training of neural network be improved?
b) How genetic algorithms perform better result as compared to traditional approaches?
c) List the various methods to generate offsprings while using genetic algorithm.
d) How can neuro-fuzzy modeling approach be applied to any optimization problem?

(5+5+4+4)

3.
a) How does universal approximation play an important role in hybrid approach of soft computing?
b) How can genetic algorithm be controlled by Fuzzy Logic?
c) Define learning. Differentiate between inverse learning and simple learning.
d) Write down the evolution techniques used in a Neuro Fuzzy System for the evolution of antecedents and consequents.

(6+5+3+4)

4.
a) What is Optimization and Optimized solution? Briefly discuss derivative based optimization.
b) Explain Reinforcement Learning control with respect to neuro-Fuzzy Control System
c) Draw the architecture of fuzzy back Propagation network for neural network.
d) Briefly mention the advantages and disadvantage of following parameters
    i)   Momentum Coefficient
    ii)   SigMoidal Gain
    iii)   Local Minima

(6+4+5+3)

5.
a) Differentiate between fuzzy sets and crisp sets.
b) How can Fitness functions be found for any optimization problem? Explain, in detail, Fitness Function in Genetic algorithm.
c) What are the termination criteria for any optimization techniques of soft computing?
d) Is it possible to solve Travelling Sales Man Problem using Genetic Algorithm? How? Write the steps in brief.

(4+6+4+4)

6.

a) Is back propagation required? How does Back Propagation give the performance through Time?

b) "Inversion and deletion can't improve the performance". Justify.

c) How does specialized learning improve the learning process of Hybrid approach?

d) Define Fuzzy Petri Nets. Can Fuzzy Petri Nets deal with compound production rules? Explain.

(4+4+6+4)

7.

a) While learning, explain how generational Cycle works with Genetic algorithm? Discuss briefly.

b) For optimization problem write hybridization steps of "Genetic-Fuzzy-Neural Network".

c) "Neural Network always learns faster than other Classifier." Justify.

d) How can genetic algorithm solve the weight determination problem of neural network?

(4+6+4+4)