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) How neuro-fuzzy modeling approach can be applied to any optimization problem?
b) List out at least four application domain of Neuro-Fuzzy Hybrid system.
c) "Genetic Algorithm always performs Better" Justify.
d) Explain Reinforcement Learning control with respect to neuro-Fuzzy Control System.
e) "Inversion and deletion can't improve the performance". Justify.
f) How generational Cycle works with Genetic algorithm while learning?
g) How specialized learning can improve the learning process of Hybrid approach?

(7x4)

2.

a) How can genetic algorithm be controlled by Fuzzy Logic?
b) How can partition in Neuro-Fuzzy Modeling System be evolved?
c) "Neural Network always learns faster than other Classifier" Justify.
d) How can genetic algorithm solve the weight determination problem of neural Network?

(5+5+4+4)

3.

a) Write the hybridization steps for optimization problem using "Genetic-Fuzzy-Neural Network".
b) How genetic algorithms perform better result as compares to traditional approaches?
c) Briefly mention the advantages and disadvantages of Momentum Coefficient.
d) Briefly mention the constituents of Soft Computing.

(6+5+3+4)

4.

a) What is Optimization and Optimized solution? Briefly discuss derivative Based Optimization.
b) Differentiate between feed forward and feedback network.
c) How learning rate play important role in learning? How can the training of neural network be improved?
d) Define learning in Neural Network. Differentiate inverse learning and simple learning.

(6+4+5+3)

5.

a) Discuss the relationship between bias and variance dilemma.
b) Is back propagation required in Neural Network? How does Back Propagation give the performance through time?
c) What should be the crossover rate and mutation rate to solve optimization problem in GA?
d) Why Population is required in GA? Which is the operator applied first to the population?

(4+6+4+4)

6.

a) How can Fitness functions find out for any optimization problem? Explain Fitness Function in Genetic algorithm in details.

b) Can we solve Traveling Sales Man Problem using Genetic Algorithm? How? Write the steps in brief.

c) What are the termination criteria for any optimization techniques of soft computing?

d) List the various methods to generate offspring, while using genetic algorithm.

(6+4+4+4)

7.

a) List the types of hybrid system and its application domain, where hybrid system are used.

b) How universal approximations play an important role in hybrid approach of soft computing?

c) Differentiate between Competitive learning and supervised Learning.

d) What are the objectives of soft computing? Briefly mention the application area of soft Computing.

(4+6+4+4)