

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - VI Computer Science & Engineering AI & ML : SUMMER : 2025
SUBJECT: SOFT COMPUTING

Day : Wednesday
Date : 28/05/2025

S-23975-2025

Time : 02:30 PM-05:30 PM
Max. Marks : 60

N.B :

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of non-programmable **CALCULATOR** is allowed.
- 4) Draw neat and labeled diagram **WHEREVER** necessary.
- 5) Assume suitable data if necessary.

Q.1 Differentiate between Hard Computing and Soft Computing. (10)

OR

Q.1 Explain why soft computing is able to solve problems in which conventional hard computing is inadequate. (10)

Q.2 Compare and contrast biological neuron and artificial neuron. Obtain the output of the neuron for a network with inputs are given as $[x_1, x_2] = [0.7, 0.8]$ and the weights are $[w_1, w_2] = [0.2, 0.3]$ with bias = 0.9. use sigmoidal activation function. (10)

OR

Q.2 List any four activation function with their equation and graphs. (10)

Q.3 Explain Artificial humming bird algorithm in detail. (10)

OR

Q.3 What is particle swarm optimization? How standard swarm optimization and binary particle swarm are different? (10)

Q.4 Design a Fuzzy controller for Air-conditioned system. (10)

OR

Q.4 Explain any two methods for the decomposition of fuzzy rules. (10)

Q.5 What are Genetic Algorithms (GA)? Explain the operators in GA? (10)

OR

Q.5 Explain the steps of Genetic Algorithm, what are the stopping conditions for Genetic Algorithm. (10)

Q.6 Define hybrid systems and explain their significance in soft computing. Discuss the key components and interactions with a hybrid system. (10)

OR

Q.6 With the help of a block diagram explain Genetic Neuro Hybrid Systems. Write any three advantages of Neuro-Genetic hybrid system. (10)

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