Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)
B.E. / B. Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, Nov / Dec 2024

Geo-informatics
GI5602 Soft Computing Techniques
(Regulation 2019)

Time: 3hrs | Max.Marks: 100

CO1	Understanding the necessity of soft computing techniques and fundamentals of Artificial Neural Networks
CO2	Imparts the concepts of uncertainty and its impacts on artificial intelligence
CO3	Helps to realize the merits of hybrid computing techniques
CO4	Introduces the concepts of heuristic search methods and optimization of solutions
CO5	Gain knowledge on utility of soft computing on multidisciplinary problems

BL – Bloom's Taxonomy Levels
(L1 - Remembering, L2 - Understanding, L3 - Applying, L4 - Analysing, L5 - Evaluating, L6 - Creating)

PART- A (10 x 2 = 20 Marks)
(Answer all Questions)

Q. No	Questions	Marks	CO	BL
1	Differentiate between soft computing and hard computing.	2	1	L1
2	List the differences between ANN and the human brain.	2	1	L1
3	How do fuzzy sets differ from crisp sets?	2	2	L2
4	What are the features of membership functions?	2	2	L2
5	What is ANFIS?	2	3	L2
6	Define the Neuro-Fuzzy spectrum.	2	3	L2
7	Define a fitness function in GA.	2	4	L2
8	Define inheritance operator.	2	4	L2
9	Write short note on role of soft computing in solid waste disposal.	2	5	L1
10	Define automated feature extraction.	2	5	L1

PART- B (5 x 13 = 65 Marks)
(Answer all Questions)

Q. No	Questions	Marks	CO	BL
11 (a) (i)	Discuss in detail about ADALINE and MADALINE architectures.	13	1	L3
	OR			
11 (b) (i)	Explain the structure and function of a biological neuron and compare it to an artificial neuron.	13	1	L3
12 (a) (i)	Discuss in detail about fuzzy rule-based systems and fuzzy inference systems.	13	2	L3
	OR			
12 (b) (i)	Explain fuzzy reasoning and its applications.	13	2	L3
13 (a) (i)	Discuss hybrid learning algorithms used in adaptive neuro-fuzzy systems.	13	3	L4
	OR			
13 (b) (i)	Write a detailed note on coactive Neuro-Fuzzy modeling.	13	3	L4

				PTO
14 (a) (i)	Explain the working principle of genetic algorithms with an example.	13	4	L3
	OR			
14 (b) (i)	Discuss the different genetic operators: crossover, mutation and bitwise operators.	13	4	L3
15 (a) (i)	Discuss the role of soft computing in flood forecasting and monitoring.	13	5	L4
	OR			
15 (b) (i)	Explain the process of soft computing in image registration and object recognition in geomatics.	13	5	L4

PART- C (1 x 15 = 15 Marks)

(Q.No.16 is compulsory)

Q. No	Questions	Marks	CO	BL
16. (i)	Compare genetic algorithms with traditional optimization techniques.	5	4	L5
(ii)	Explain the use of soft computing in highway alignment and smart city planning.	10	5	L6