



GIET UNIVERSITY, GUNUPUR - 765022
M. Tech (Second Semester) Examinations, May - 2024
MPCCS2020 - Soft Computing
(CSE)

Time: 3 Hrs

Maximum: 70 Marks

(The figures in the right hand margin indicate marks.)

PART – A**(2 x 10 = 20 Marks)**

Q.1. Answer all questions

	CO#	Blooms Level
a. Differentiate between crisp and fuzzy sets.	CO2	K4
b. List out few applications of fuzzy logic.	CO2	K1
c. Explain about Soft Computing. How it is different from hard computing?	CO1	K2
d. Brief out about Hebbian Learning.	CO1	K3
e. List few applications of Genetic Algorithm.	CO3	K2
f. How Encoding used in genetic algorithms?	CO3	K2
g. What is meant by fitness score in Genetic Algorithm?	CO4	K3
h. What is an evolutionary computing?	CO4	K1
i. What is swarm Optimization?	CO2	K2
j. Give the formula for Zadeh's Max-Min Rule with example.	CO3	K1

PART – B**(10 x 5=50 Marks)**Answer ANY FIVE questions

	Marks	CO#	Blooms Level
2. a. Describe Back Propagation Networks? Draw the architecture of Back Propagation Networks.	5	CO1	K3
b. $A = \{(X_1, 0.4), (X_2, 0.5), (X_3, 0.6), (X_4, 2.0), (X_5, 0.7), (X_6, 0.4), (X_7, 0.1)\}$ Find the strong α -cut for the above given Fuzzy set A. where $\alpha = 0.2, 0.4, 0.5$	5	CO1	K2
3.a. Differentiate between Competitive Learning Networks & Kohonen Self-Organizing Networks.	5	CO2	K3
b. Explain cross-validation and bootstrapping.	5	CO2	K4
4. a. What are the various types of cross over and mutation techniques?	5	CO3	K5
b. What is meant by Genetic-Fuzzy rule based system? Explain in detail	5	CO3	K3
5. Discuss random search for hyper parameter optimization.	10	CO4	K3
6. Discuss over swarm optimization techniques in details	10	CO4	K4

7. Define the following:

10

CO1

K5

- (i) Support
- (ii) Core
- (iii) Normality
- (iv) Crossover Point
- (v) Alpha and Strong Alpha Cut

8. a. Consider:

10

CO3

K3

P: Ram is efficient; $T(P)$: 0.7

Q: Rani is efficient; $T(Q)$: 0.4

Compute:

- (i) Ram is not efficient
- (ii) Ram is efficient and so is Rasmi
- (iii) Either Ram or Rasmi is efficient
- (iv) If Ram is efficient then so is Rasmi

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