QPC: RM22MCA031 | Reg. No | | | | | | | | | | | AY 22

GIET UNIVERSITY, GUNUPUR – 765022

M. C. A (Fourth Semester) Regular Examinations, May – 2024

MCA20404 – Soft Computing

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. What are the different activation functions used in ANN? Which non-linear activation function is most frequently used in NN?	CO1	K1
b. What is Perceptron?	CO1	K2
c. Sketch a 4-2-3-1 neural network with proper labelling.	CO1	K4
d. Distinguish between Fuzzy & Probability with example	CO2	K1
e. If A={(x1,0.2), (x2,0.5), (x3,0.6)} then, Find Ac.	CO2	K5
f. What are Fuzzy Quantifiers?	CO2	K3
g. What are the various basic operators used in GA?	CO3	K2
h. What do you mean by mutation rate?	CO3	K3
i. What is an auxiliary Hybrid system?	CO4	K1
j. What do you mean by Fuzzy-Logic Controlled Genetic Algorithm?	CO4	K2

PART – B **(10 x 5 = 50 Marks)**

Answer ***ANY FIVE*** questions	Marks	CO #	Blooms Level
2. a. What are the Characteristics of Neural Networks?	5	CO1	K1
b. What are the different types of Neural Networks? Explain briefly about them	5	CO1	K2
3. a. Differentiate between Linearly separable and non-linearly separable problems.	5	CO1	K1
b. Distinguish between ADALINE and MADALINE.	5	CO1	K3
4. a. If two given fuzzy sets: A={(x1,0.2), (x2,0.5), (x3,0.6)} and B={(x1,0.1), (x2,0.4), (x3,0.5)} then Find A ⊕ B.	5	CO2	K5
b. Two fuzzy relations are given as	5	CO2	K5

$$R = \begin{array}{c|cc} & y_1 & y_2 \\ x_1 & 0.5 & 0.1 \\ x_2 & 0.2 & 0.9 \\ x_3 & 0.8 & 0.6 \end{array} \qquad S = \begin{array}{c|ccc} & z_1 & z_2 & z_3 \\ y_1 & 0.6 & 0.4 & 0.7 \\ y_2 & 0.5 & 0.8 & 0.9 \end{array}$$

Find the Max-Min composition R ◦ S

5. a.	A={(x1,0.2), (x2,0.5), (x3,0.6), (x4,1.0), (x5,0.7), (x6,0.3), (x7,0.1)} Find the strong α-cut for the above given Fuzzy set A.Where α=0.2, 0.4, 0.5	5	CO2	K5

b.	What do you mean by fuzzy Inference system? Define GMP & GMT.	5	CO2	K2
6. a.	What are the limitations of Genetic Algorithms?	5	CO3	K2
b.	Mention the different Applications of Genetic algorithms.	5	CO3	K1
7. a.	Explain different cross-over operators used in Genetic Algorithms.	5	CO3	K2
b.	What are the Benefits of GA?	5	CO3	K4
8. a.	What is a hybrid system? Explain briefly the different classifications of the Hybrid system.	5	CO4	K2
b.	Explain about the Neuro-Fuzzy Hybrid System.	5	CO4	K1

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