BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATIONMO/2024)

CLASS: BCA **SEMESTER : VI**
BRANCH: BCA **SESSION : MO/2024**

SUBJECT: CA271 SOFTCOMPUTING AND APPLICATIONS

TIME: 02 Hours **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1(a)	Differentiate crisp set and fuzzy set with examples.	[2]	1	3
Q.1(b)	State and prove Distributive Law for fuzzy sets.	[3]	1	3
Q.2(a)	If A= {(a, 0.4), (b, 0.7),(c, 0.9), (d,0.3)} and B= {(a, 0.4), (b, 0.6),(d, 0.7)} are two fuzzy sets on U={a, b, c, d} then find i) A' U B ii)) $A' \cap B'$	[2]	1	2
Q.2(b)	Describe different type of fuzzy membership functions.	[3]	1	2
Q.3(a)	Explain inference rules in Propositional Logic.	[2]	2	4
Q.3(b)	Find the max-min composition for the following fuzzy relations:	[3]	2	4

$$R = \begin{array}{c} \\ X1 \\ X2 \end{array} \begin{array}{c} \begin{array}{cc} Y1 & Y2 \end{array} \\ \begin{bmatrix} 0.7 & 0.2 \\ 0.3 & 0.6 \end{bmatrix} \end{array} \qquad S = \begin{array}{c} \\ Y1 \\ Y2 \end{array} \begin{array}{c} \begin{array}{ccc} Z1 & Z2 & Z3 \end{array} \\ \begin{bmatrix} 0.6 & 0.7 & 0.3 \\ 0.4 & 0.7 & 0.5 \end{bmatrix} \end{array}$$

Q.4(a)	What are the different steps of fuzzy rule based system.	[2]	2	3
Q.4(b)	Define defuzzification and explain defuzzification methods with example.	[3]	2	3
Q.5(a)	Define the terms chromosome, fitness function as used in algorithms.	[2]	1	4
Q.5(b)	Explain the working principle of Genetic Algorithm.	[3]	1	4

::::::23/09/2024::::::M