BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BCA **SEMESTER : VI(ADD)**
BRANCH: BCA **SESSION : MO/2024**

SUBJECT: CA271 SOFTCOMPUTING AND APPLICATIONS

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

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Q.1(a)	Let U= Flowers= {Jasmine, Rose, Lotus, Daffodil, Sunflower, Hibiscus, Chrysanthemum} be a universe on which two fuzzy sets, one of Beautiful flowers and the other one of Fragrant flowers are defined as shown below: P = Beautiful flowers = 0.5/Jasmine + 0.8/Rose = 1.0/Lotus + 0.6/ Daffodil + 0.5/Sunflower + 0.4/Hibiscus + 0.3/ Chrysanthemum Q = Fragrant flowers = 1.0/Jasmine + 1.0/Rose + 0.4/Lotus + 0.3/Daffodil + 0.2/ Sunflower + 0.1/Hibiscus + 0.5/ Chrysanthemum Compute the fuzzy sets $P \cup Q$, $P \cap Q^{'}$ *Also verify that* $P \cup P' \neq U, P \cap P' \neq \phi$	[5]	1	2
Q.1(b)	Explain different type of fuzzy membership functions graphically.	[5]	1	2
Q.2(a)	Explain different steps of fuzzy rule based system using Mamdani approach.	[5]	2	3
Q.2(b)	What is defuzzification? Illustrate various defuzzification methods.	[5]	2	3
Q.3(a)	Define the terms chromosome, fitness function, crossover and mutation as used in algorithms. Explain how genetic algorithms work.	[5]	2	3
Q.3(b)	Explain Rank selection and Tournament selection methods of selecting chromosomes for crossover with example.	[5]	2	3
Q.4(a)	Define activation function. Explain various activation functions in neural network with example.	[5]	2	5
Q.4(b)	Explain the different layer's architecture of neural network with diagram.	[5]	2	5
Q.5(a)	Write back propagation learning algorithm and its corresponding flowchart.	[5]	1	3
Q.5(b)	Write short notes on any two: a) Adaline b) Perceptron c) Convolution Neural Network	[5]	1	3

::::::22/11/2024::::::M