JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

MAKE UP EXAMINATION (November 2025)

B.Tech. - VIII Semester

COURSE CODE (CREDITS): 21B1WMA831 (3) MAX. MARKS: 25

COURSE NAME: SOFT COMUPTING & OPTIMIZATION TECHNIQUES

COURSE INSTRUCTORS: RKB* MAX. TIME: 1 Hr 30 Mins

Note: All questions are compulsory. Use of scientific calculator is allowed. The candidate is allowed to make suitable numeric assumptions wherever required for solving problems

Q.No	Question	CO	Marks
Q1	Let P = "Approximately 4 = {0.7/3 + 1 /4 + 0.6/5} and Q = "Approximately 7 = {0.8/6 + 1/7 + 0.9/8}. Determine the fuzzy sum and multiplication of P and Q.	CO-2	4
Q2	Describe the working of a Neuro-Fuzzy System and discuss its advantages and limitations. Illustrate the structure of a five-rule Neuro-Fuzzy model using a suitable diagram.	CO-2	4
Q3	Let the universe Z={1,2,3,…,12} and fuzzy set D of Z be D={(1,0),(2,0.2),(3,0.6),(4,1.0),(5,0.8),(6,0.4),(7,0.1),(8,0)}. Find the support and crossover points of D.	CO-2	3
Q4	Discuss how a Fuzzy Logic Controller (FLC) operates and illustrate its functioning using a real-life control system example.	CO-3	5
Q5	Using the principles of material implication and extended propositional calculus, construct a set of fuzzy if-then rules applicable to a fuzzy inference system.	CO-3	4
Q6	Illustrate the structure of a Fuzzy Inference System using a block diagram, and describe the various types of fuzzy inference mechanisms.	CO-3	5

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