JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2024

M.Tech-I Semester (ECE)

COURSE CODE(CREDITS): 21M1WEC149 (3) MAX. MARKS: 15

COURSE NAME: Computational Intelligence and Applications

COURSE INSTRUCTORS: Dr. Shruti Jain MAX. TIME: 1 Hour

Note: (a)*All questions are compulsory.*

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

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1. **[2 + 2 + 1, CO1]**
   a) What is computational intelligence, and how does it differ from artificial intelligence?
   b) What are the main techniques used in computational intelligence.
   c) How is computational intelligence applied in various fields? Explain with any one example.

2. **[2 + 2 + 1, CO1]**
   a) How are fuzzy sets and membership functions used in fuzzy systems to represent and handle uncertainty?
   b) How are fuzzy rules formulated and used within a fuzzy inference system?
   c) What are the current challenges in the field, and what are the emerging trends or future directions?

3. **[2 + 2 + 1, CO2]**
   a) How does defuzzification work in a fuzzy system, and what methods are commonly used to convert fuzzy outputs into crisp values?
   b) What is the process of fuzzification, and how does it transform crisp inputs into fuzzy values?
   c) What are some common applications of fuzzy systems in real-world scenarios? Explain.