JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

B.Tech-3rd Semester (IT/MC)

COURSE CODE (CREDITS): 25B11CI314 (3) MAX. MARKS: 15

COURSE NAME: Digital Systems and Computer Organization

COURSE INSTRUCTORS: Dr. Vivek Kumar Sehgal MAX. TIME: 1 Hour

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

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

(c) Calculator is not allowed

Q.No	Question	CO	Marks
Q1	(a) Concert the hexadecimal number F3A7C2 to binary and octal (b) Convert the following numbers in to decimal: i. 101110 ii. 1110101.11 (c) Perform the subtraction with the following unsigned numbers by taking 2's complement of the subtrahend: i. 11010 – 10000 ii. 100 - 110000	CO-1	1 2 2
Q2	(a) Simplify the following Boolean Expressions to a minimum number of literals i. $x'y' + xy + x'y$ ii. $(x + y)(x + y')$ (b) Simplify the following Boolean functions using four-variable maps: i. F(A, B, C, D) = Σ(4, 6, 7, 15) ii. F(w, x, y, z) = Σ(2, 3, 12, 13, 14, 15)	CO-1	2.5 2.5
Q3.	(a) Design a combinational circuit with three inputs, x, y, and z, and three outputs, A, B, and C. When the binary input is 0, 1, 2, or 3, the binary output is one greater than the input. When the binary input is 4, 5, 6, or 7, the binary output is one less than the input. (b) A majority function is generated in a combinational circuit when the output is equal to 1 if the input variables have more 1's than 0's. The output is 0 otherwise. Design a 3-input majority function.	CO-2	3 2

JUIT EXAMINATION AUG-2025