

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

Make-up Examination-Nov-2025

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

COURSE CODE (CREDITS): 25B11CI314 (3)

MAX. MARKS: 25

COURSE NAME: Digital Systems and Computer Organization

COURSE INSTRUCTORS: Dr. Vivek Kumar Sehgal

MAX.TIME: 1 Hour 30 Minutes

Note: 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) What is the difference between analog and digital signals?	CO-1	1
	(b) Convert the decimal number (85.125) to binary number		2
	(c) Convert 10110011 to hexadecimal		2
Q2	(a) Perform subtraction using 2's complement for $(11001) - (1011)$	CO-1	2
	(b) Simplify $F(A,B,C,D) = \Sigma(0,1,2,5,8,9,10)$ using a 4-variable K-map.		3
Q3.	(a) What is a don't-care condition? Illustrate its use in simplification.	CO-1,2	2
	(b) What is the difference between SOP and POS forms in simplification?		3
Q4.	(a) Explain the working of a 4-to-1 multiplexer and its use in function implementation	CO-2	2
	(b) Implement AND, OR, and XOR gates using 2-to-1 multiplexer		3
Q5.	(a) Derive the characteristic equation of JK and D flip-flops.	CO-3	3
	(b) Convert a JK flip-flop to a T flip-flop.		2