JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-1 EXAMINATION-AUGUST-2025

B.Tech- III[rd] Semester (ECE/ECS/EE, Minor Degree)

COURSE CODE (CREDITS): 25B11EC312 (4) MAX. MARKS: 15

COURSE NAME: Digital Circuit Design

COURSE INSTRUCTOR: Dr. Pardeep Garg 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.

Q. No	Question	CO	Marks
Q1	The following arithmetic operation is true in at least one number system. Find the base (b) of that number system: $(243)_b+(132)_b=(405)_b$	CO-1	1
Q2	Convert $(C9F)_{16}$ into octal equivalent, 2's complement format, and gray code.	CO-1	2
Q3	Represent (π {3.14159}) into IEEE single-precision format.	CO-1	2.5
Q4	The code-word **(0111001)** was obtained using Hamming code and transmitted through a noisy channel. Decode the message assuming that a single bit error has occurred in it. Find out the error location and write the corrected code-word thereafter.	CO-1	1.5
Q5	What will be the equivalent expression of the following operation: $A' \odot B'$	CO-1	1
Q6	Reduce the following Boolean expressions using the Boolean Algebra: i) F =B'C'D+(B+C+D)'+B'C'D'E ii) G = A'B'C'+A'BC'+AB'C'+ABC' iii) H= (ABC)'. (A+B+C)' iv) K=ABC[AB+C'(BC+AC)]	CO-2	3
Q7	Write down the minimized expression by solving the following expression using K-map and implement the minimized expression using AOI logic and universal gates: $f=\sum m(0, 1, 4, 5, 6, 7, 9, 11, 15) + d(10,14)$	CO-2	2.5+1.5=4