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JK Lakshmipat University Jaipur

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination , March 2026

B.Tech. Backlog/Semester Exchange Students

Roll No.....

CS1134: Computer Organization and
Architecture

Time: 2 Hour 30 Minutes

Max. Marks: 30

Instructions to students:

1. non-programmable Scientific calculator is allowed.
2. Assume suitable data wherever required and mention it clearly.

Q.1	(a) Use Booth's Algorithm to multiply the signed binary numbers $(+13)_{10}$ and $(-6)_{10}$ using 5-bit 2's complement representation. Show all steps of the algorithm, including the contents of AC, QR, Q_{n+1} , and BR after each cycle. Also verify the final answer in decimal form. (b) Draw the flowchart of Booth's Algorithm.	06 Marks CO3
Q.2	Represent the decimal number $(-45.8125)_{10}$ in a 32-bit IEEE 754 floating-point format. Show all steps in detail, including: a) Conversion of the integer and fractional parts into binary. b) Normalization of the binary number. c) Determination of the sign bit, biased exponent, and mantissa. d) Final 32-bit IEEE 754 representation in binary. e) Convert the binary result into hexadecimal form. f) Verify the represented value by converting it back to decimal.	05 Marks CO2
Q.3	Explain the following addressing modes with suitable examples and effective address expressions: a) Immediate Addressing b) Direct Addressing c) Indirect Addressing	05 Marks CO4
Q.4	State Amdahl's Law and explain its significance in improving computer system performance. A program spends 70% of its execution time in a part that can be enhanced. If that part is made 4 times faster, calculate the overall speedup of the system.	04 Marks CO2
Q.5	(a) Using the Restoring Division Algorithm, divide the signed binary number $(+29)_{10}$ by $(+5)_{10}$ using 6-bit binary representation. Show all steps	06 Marks

	of the algorithm, including the contents of A (Accumulator), Q (Dividend/Quotient), and M (Divisor) after each cycle. Also determine the final quotient and remainder in both binary and decimal form. (b) Draw the flowchart of the algorithm.	CO3
Q.6	Using the Non-Restoring Division Algorithm, divide the binary number $(+13)_{10}$ by $(+3)_{10}$ using 5-bit binary representation. Show the contents of A, Q, and M after each step, and determine the final quotient and remainder in both binary and decimal form.	04 Marks CO3

*****All The Best*****