JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2023

B. Tech-VI Semester (CSE/IT)

COURSE CODE(CREDITS):18B11CI514(3) MAX. MARKS: 15

COURSE NAME: Computer Organization and Architecture

COURSE INSTRUCTORS: Dr. Naveen Jaglan, Dr. Harsh Sohal, Dr. Alok Kumar and Mr. Munish Sood MAX. TIME: 1 Hour

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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. Show the step-by-step multiplication process using Booth algorithm when the following binary numbers are multiplied:

(+15) × (-13)

Assume 5-bit registers that hold the signed numbers. [CO-1,2; 4 marks]

2. Analyze the working of 4-bit parallel Adder considering the two 4-bit numbers as 0101 ($A_3A_2A_1A_0$) and 1010 ($B_3B_2B_1B_0$).

[CO-2; 2 marks]

3. Reduce the following expression using K-Map and implement the reduced expression using only NAND gates:

$F=\sum m\ (0,1,2,3,5,7,8,9,10,12,13)$ [CO-1,2; 3 marks]

4. Reduce the following Boolean expression using Boolean algebra:

$$F\ (A, B, C) = AB+BC+\bar{A}C$$ [CO-1; 2 marks]

5. Show the step-by-step non restoring division process for unsigned numbers when the following binary numbers are divided:

(+19) ÷ (+4) [CO-1,2; 4 marks]