



# Vidyavardhini's College of Engineering & Technology

Department of Computer Engineering

Academic Year : 2025-26

## Assignment No.2

**Code/Sub: 2113114/Computer Organization & Architecture**

**Year/Sem: SE-III**

**Date of Announcement:**

**Date of Submission:**

**Course Outcome 2113114.2:** Apply knowledge of manual and algorithmic approaches for arithmetic and logical operations on binary, octal, and hexadecimal numbers.

Q. No	Question	Bloom Level
1	<p>A digital design engineer is working on implementing a hardware multiplier for signed binary numbers in a low-power microcontroller. To improve efficiency, engineer decides to use Booth's algorithm. Engineer needs to multiply -5 and 3 using 4-bit 2's complement numbers.</p> <p>Make use of Booth's algorithm, to compute the multiplication of <math>-5 \times 3</math> using 4-bit 2's complement representation. Show the step-by-step process and final result.</p>	Apply
2	<p>You're developing an educational tool to demonstrate binary division using Restoring Division Algorithm. You are asked to divide 7 by 2 using 4-bit binary numbers.</p> <p>Compute the division of <math>7 \div 2</math> using the Restoring Division Algorithm with 4-bit unsigned binary values. Show each step clearly.</p>	Apply
3	<p>You're optimizing a fast division unit for a digital signal processor. You want to implement Non-Restoring Division, which avoids restoring steps.</p> <p>Make use of the Non-Restoring Division Algorithm, to compute division of 7 by 2 using 4-bit binary numbers. Show each step and result.</p>	Apply