Circuit Simulation Project

Name of the participant : Jovin P John

Title of the circuit : Full Subtractor Circuit Design and Simulation

Theory/Description : The full subtractor is a fundamental combinational circuit used in digital electronics to perform binary subtraction of three bits: a minuend (A), a subtrahend (B), and a borrow-in bit (Bin). It produces two outputs: the difference (D) and the borrow-out bit (Bout). This circuit is essential for multi-bit subtraction in arithmetic logic units (ALUs). The circuit's topology is constructed using basic logic gates (XOR, AND, and OR), configured to produce the difference and borrow-out bits. This project presents the design and simulation of this full subtractor using the eSim platform.

Circuit Diagram(s) :
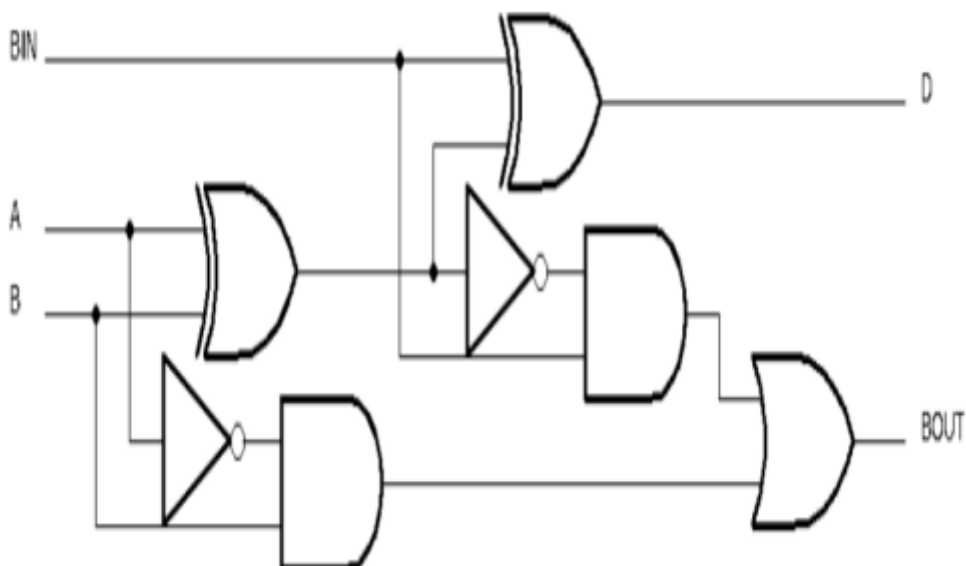
Results (Input, Output waveforms and/or Multimeter readings) :

A	B	B_{in}	D	B_{out}
0	0	0	0	0
0	0	1	1	1
0	1	0	1	1
0	1	1	0	1
1	0	0	1	0
1	0	1	0	0
1	1	0	0	0
1	1	1	1	1

Source/Reference(s) : Design and Analysis of a Full Subtractor using Various Design Techniques