

## EXPERIMENT NO. - 10

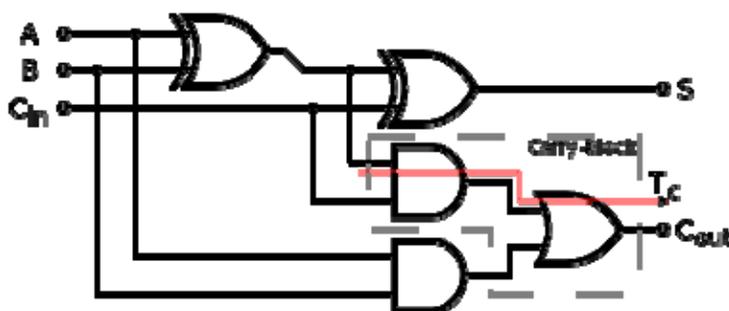
### Aim of the Experiment:

Design, assemble and testing of Full adder

### Theory:

A full adder adds binary numbers and accounts for values carried in as well as out. A one-bit full adder adds three one-bit numbers, often written as A, B, and  $C_{in}$ ; A and B are the operands, and  $C_{in}$  is a bit carried in from the previous less significant stage. The full adder is usually a component in a cascade of adders, which add 8, 16, 32, etc. bit binary numbers. The circuit produces a two-bit output, output carry and sum typically represented by the signals  $C_{out}$  and S, where, the one-bit full adder's truth table is:

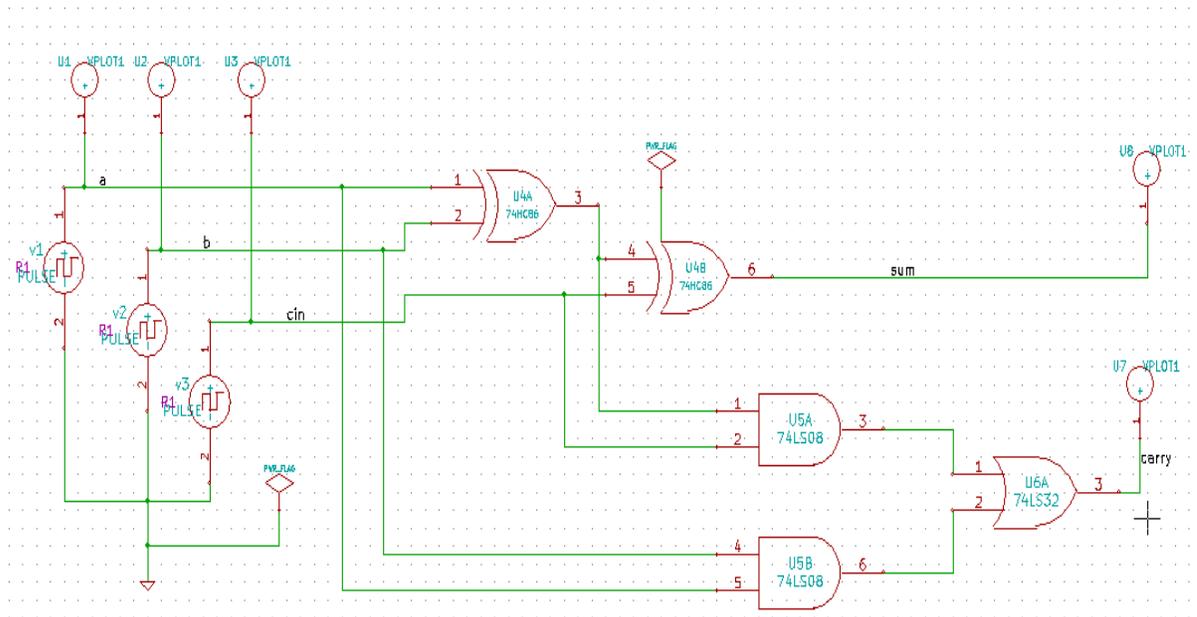
Inputs			Outputs	
A	B	$C_{in}$	$C_{out}$	S
0	0	0	0	0
1	0	0	0	1
0	1	0	0	1
1	1	0	1	0
0	0	1	0	1
1	0	1	1	0
0	1	1	1	0
1	1	1	1	1



$$S = A \oplus B \oplus C_{in}$$

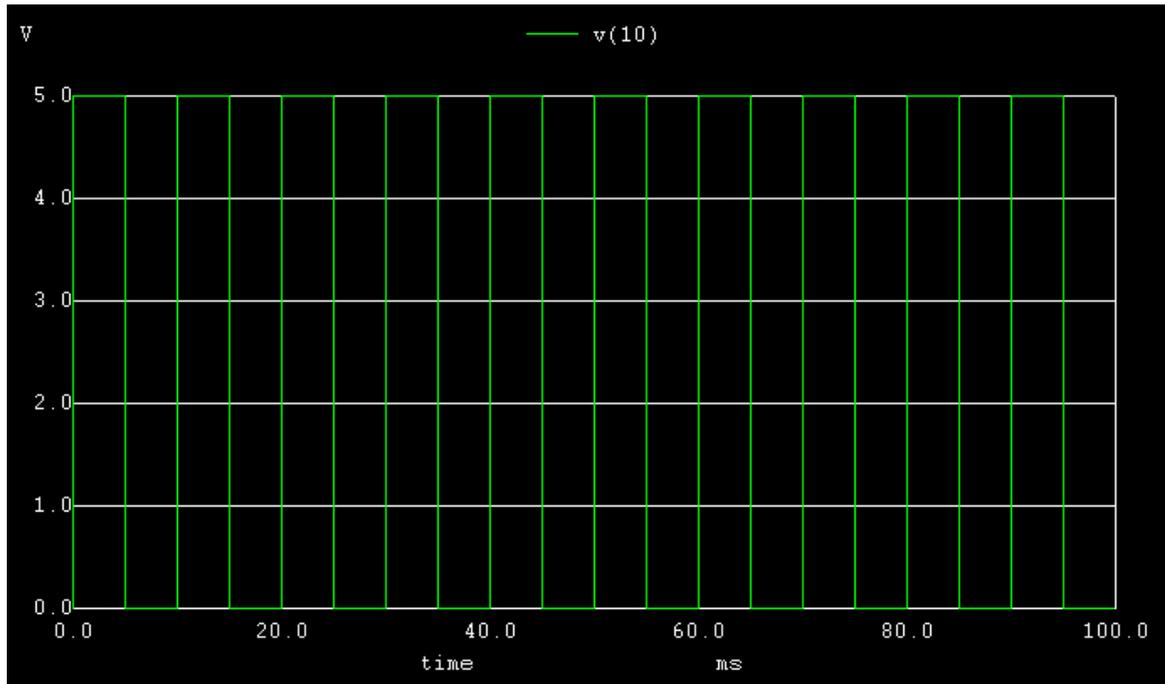
$$C_{out} = (A \cdot B) + (C_{in} \cdot (A \oplus B))$$

**Schematic Circuit:**

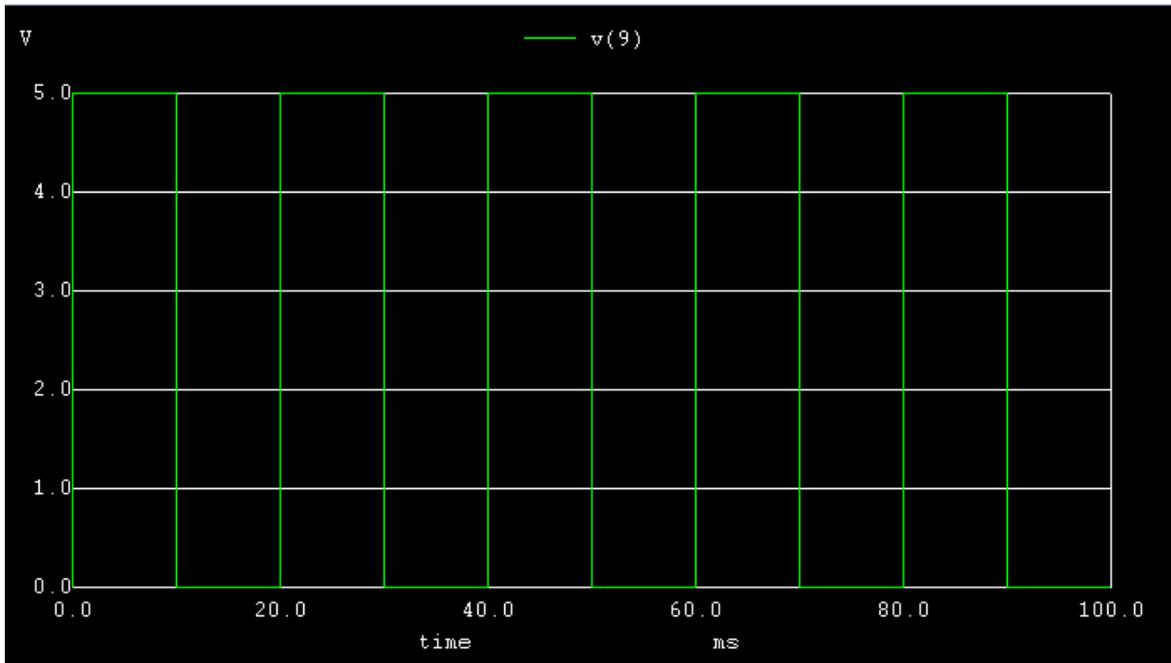


**Input Waveform:**

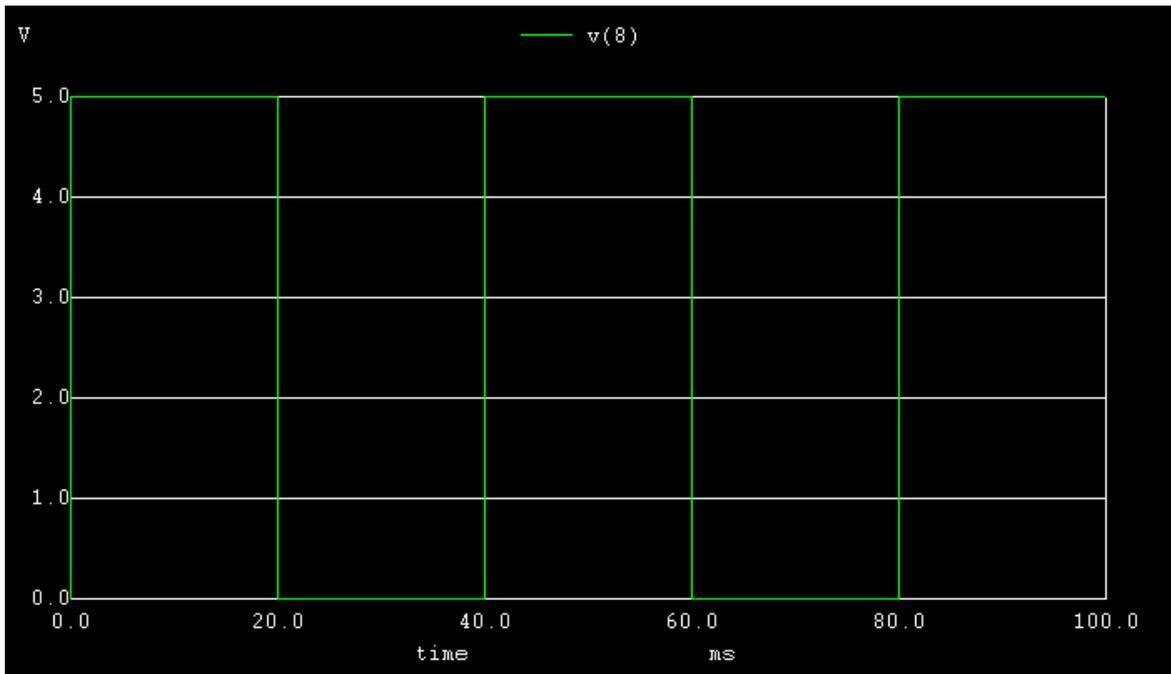
**A:**



**B:**

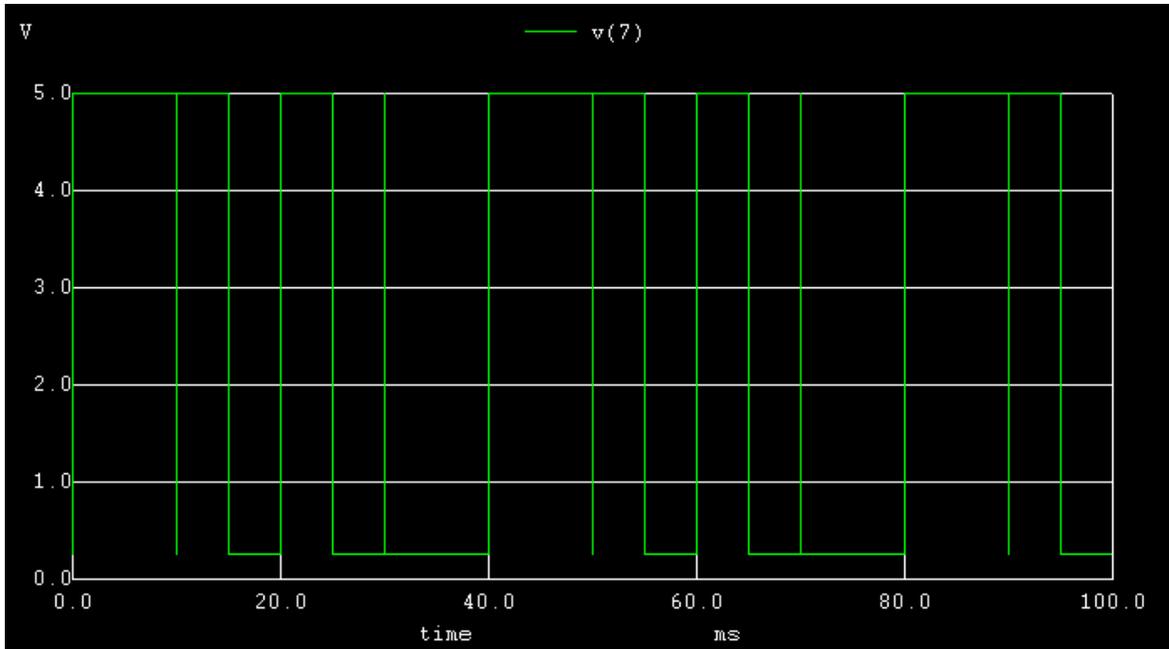


**Cin:**

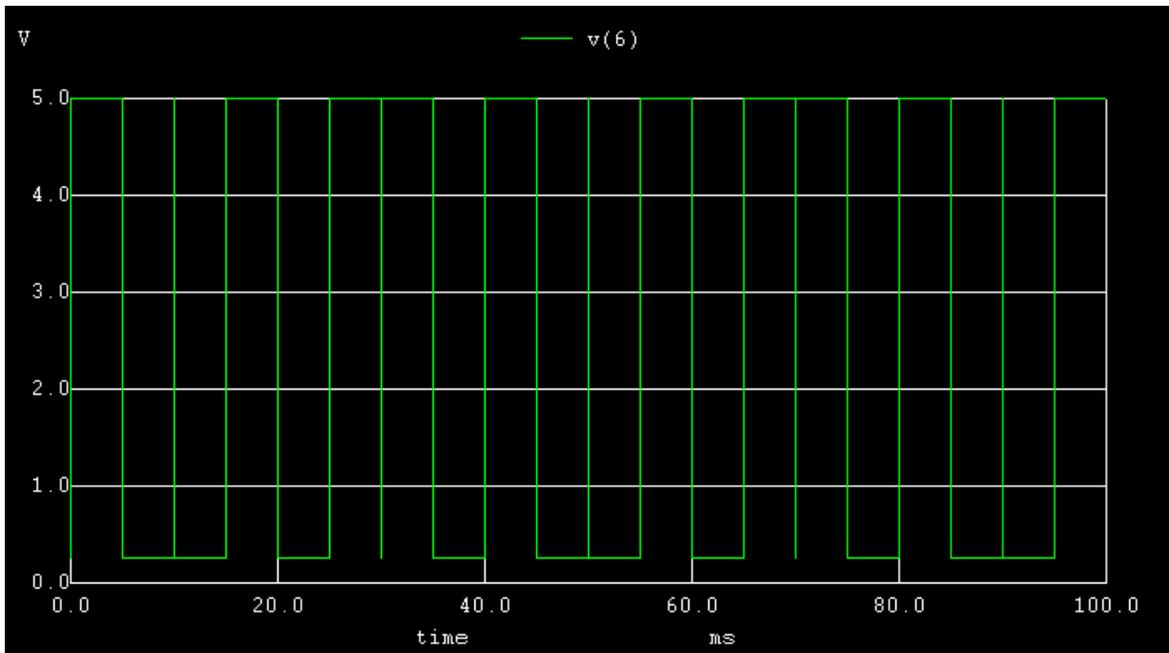


**Output Waveform:**

**Sum(S):**



**Cout:**



**Conclusion:**

**Date:**

**Signature of the Student**

**NAME:**

**ROLL NO.:**

**GROUP ID:**

**SUB GROUP NO.:**

**Experiment Mark:            / 20**

**Instructor's Signature**