

EE 40

Homework #1:

Solutions and Grading

Add 4 points to every paper!

Problem 1: 15 Points Total Possible

Answer, Part 1 (Truth Table) 10 Points possible

A	B	C	S_0
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

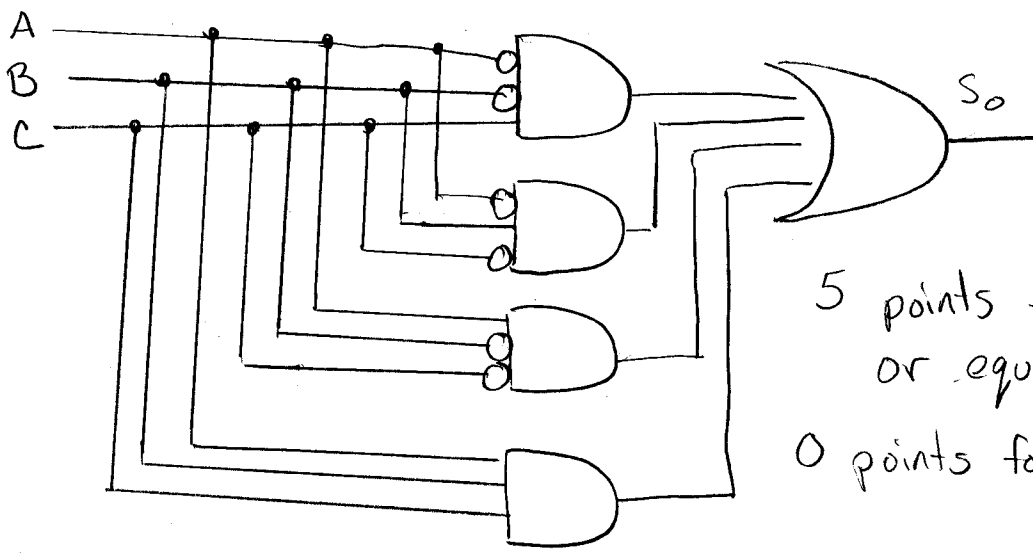
10 points for correct table

10 points for rows in different order

5 points for 1 or 2 errors

0 points for more than 2 errors

Answer, Part 2 (Circuit) 5 points possible



5 points for correct or equivalent circuit

0 points for incorrect circuit

Problem 2: 20 Total Points, 5 Bonus Possible

Answer, Part 1 (Boolean Function) 10 Points Possible

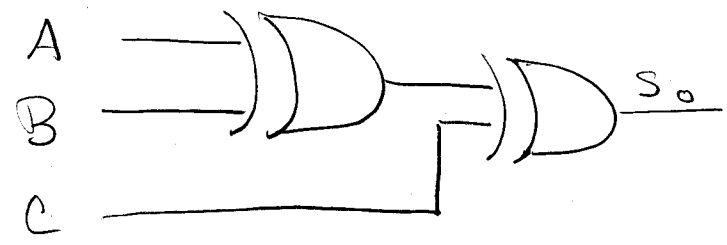
$$S_0 = A \oplus B \oplus C$$

10 Points for above function

10 Points for other function with 2 2-input gates

5 Points for something close, else 0 points

Answer, Part 2 (Circuit) 10 Points + 5 Bonus Possible



10 points for above circuit

10 points for correct implementation of Part 1

15 points for 3-input XOR



else 0 points

Problem 3: 15 Total Points Possible

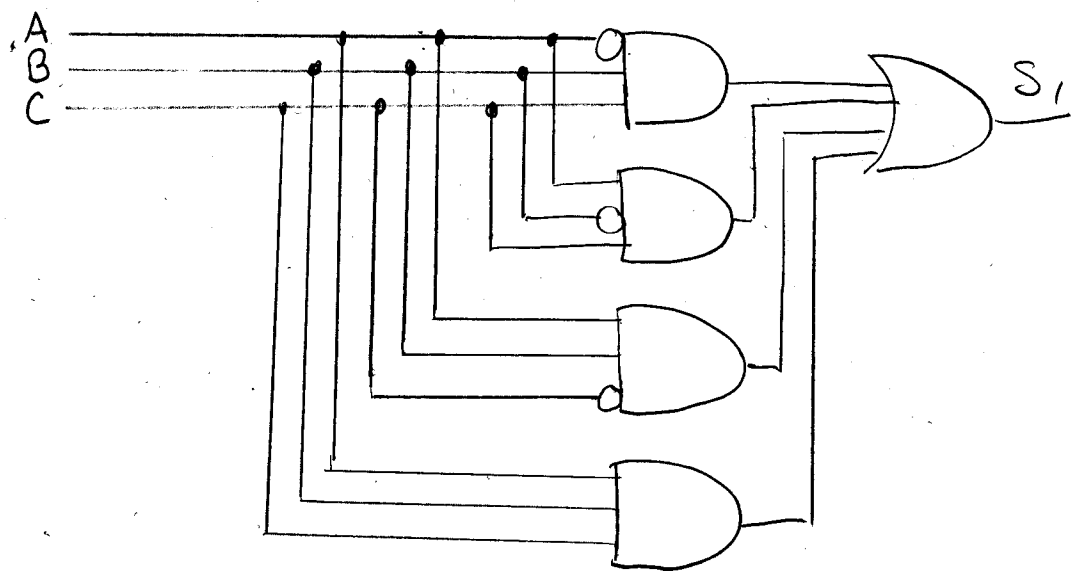
Answer, Part 1 (Boolean Function) 10 Points Possible

$$S_1 = \bar{A}Bc + A\bar{B}c + AB\bar{C} + ABC$$

10 Points for correct or equivalent

else 0

Answer, Part 2 (circuit) 5 points Possible



5 points for correct or equivalent circuit
 5 points for correct implementation of incorrect function
 else 0

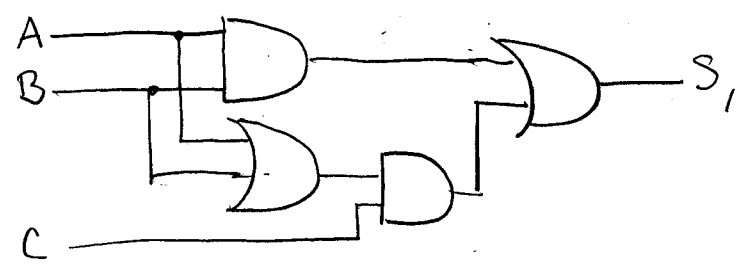
Problem 4: 20 Total Points Possible

Answer, Part 1 (Boolean Function) 20 Points Possible

$$S_1 = AB + BC + AC \text{ or } AB + C(A+B), \text{ etc.}$$

20 Points for above function
 20 Points for other function using 3 products of size 2,
 for example $AB + C(A \oplus B)$
 10 Points for something simpler than Problem 3 Answer: 1
 0 else

Answer, Part 2 (circuit) 0 Points Possible NOT REQUIRED



NOT
REQUIRED

- 0 Points for above circuit
- 0 Points for any 4 gate implementation
(in real life, minimize #gates, then #gate inputs)
- 0 Points for correct implementation of Answer Part 1 function
- 0 else

Problem 5: 10 Points Total Possible

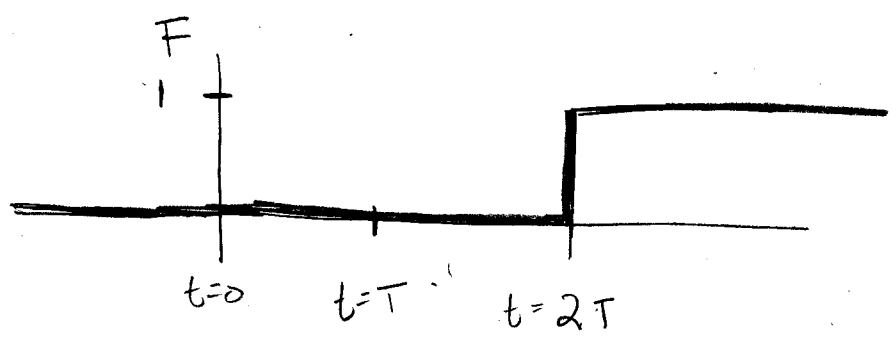
Answer: ADD or COUNT

10 points for something involving "ADD" or "COUNT"
(addition, adding, etc) or the like

0 points else

Problem 6: 20 Points Total Possible

Answer:



20 Points for correct diagram

10 Points if other diagrams drawn
are correct

0 else

Remember to add 4 Points to all papers!