ET 540 – Introduction to Digital Computing Theory
HOMEWORK # 3 - Boolean Algebra and DeMorgan'sTheorem

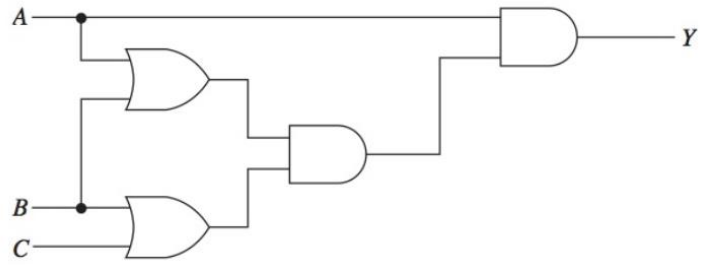
Student's Name_____
Instructions:

- Show all work to receive full credit
- Student's Name_____

Boolean Analysis of Logic Circuits

Find the output and use Boolean algebra to simplify the output. Also sketch the simplified circuit.

1.



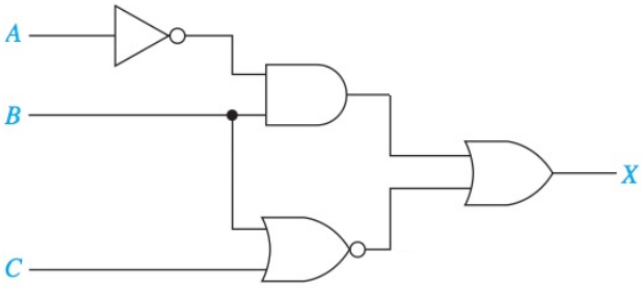
a. (5 pts) Output Y _____

b. (10 pts) Simplified output Y _____

c. (3 pts) Draw the simplified circuit

Find the output X and use Boolean algebra and DeMorgan's theorem to simplify the output. Also sketch the simplified circuit.

2.

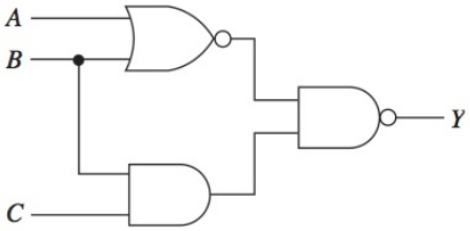


a. (6 pts) Output X _____

b. (12 pts) Simplified output X _____

c. (3 pts) Draw the simplified circuit

3.



a. (6 pts) Output X _____

b. (12 pts) Simplified output X _____

c. (3 pts) Draw the simplified circuit

4. Simplify the following output using Boolean algebra and/or DeMorgan's techniques (12 pts a-b, 13 pts c-d)

a. $X = AB + (\bar{A} + \bar{B})C + AB$

b. $Z = \bar{A}B + \bar{A}B\bar{C} + \bar{A}BCD + \bar{A}B\bar{C}\bar{D}E$

c. $W = \overline{\bar{\bar{A}} + B.\overline{BC}} + \bar{B}C$

d. $Y = \overline{(A + \bar{B})(\bar{\bar{C}} + D)}$

----------Homework 4 Ends Here ----------