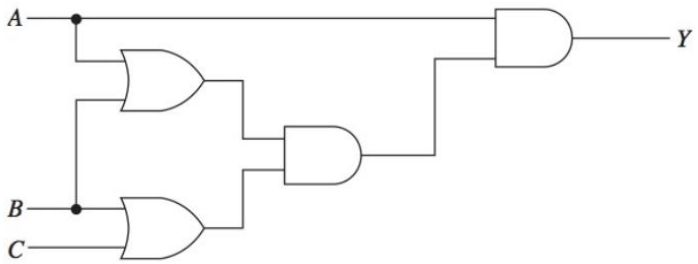
Introduction to Digital Computing Theory
Homework # 4 - Boolean Algebra and DeMorgan'sTheorem

Student's Name_____
Instructions:

- Show all work to receive full credit

Boolean Analysis of Logic Circuits

Question 1) Find the output and use Boolean algebra to simplify the output. Also sketch the simplified circuit.



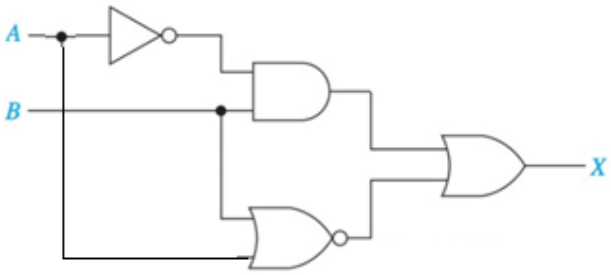
a. Output Y _____

b. Simplified output Y _____

c. Draw the simplified circuit

Question 2 and 3) Find the output X and use Boolean algebra and DeMorgan's theorem to simplify the output. Also sketch the simplified circuit.

2.

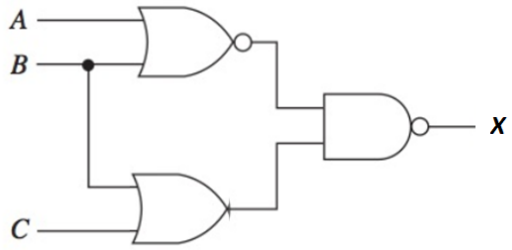


a. Output X _____

b. Simplified output X _____

c. Draw the simplified circuit

3.



a. Output X _____

b. Simplified output X _____

c. Draw the simplified circuit

Question 4) Simplify the following output using Boolean algebra and/or DeMorgan's techniques

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

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

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

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

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