

Digital Design

COE 211

Sheet - 06

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| 1. Using Boolean notation, write an expression that is a 0 only when all of its variables (A, B, C, and D) are 0s | 2. Write an expression that is a 0 when one or more of its variables (A, B, and C) are 0s |
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3. Find the values of the variables that make each product term 1 and each sum term 0.

a) ABC

d) $\bar{A} + \bar{B} + C$

b) $A+B+C$

e) $A + \bar{B} + \bar{C}$

c) $\bar{A}\bar{B}C$

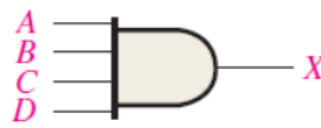
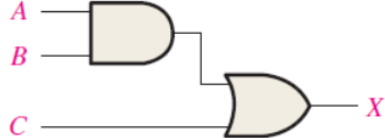
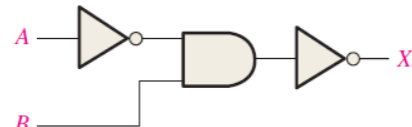
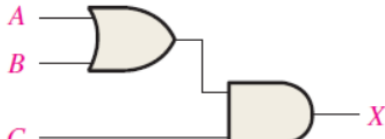
f) $\bar{A} + \bar{B} + \bar{C}$

4. Find the value of X for all possible values of the variables.

a) $X = (\bar{A} + \bar{B})(A + B)$	b) $X = (A + B)C$
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c) $X = (A + B)(\overline{B + C})$	d) $X = (A + B)(\overline{AB + BC})$
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5. Write the Boolean expression for each of the logic circuits in Figures below

		<table><tr><th>$A B C$</th><th>X</th></tr><tr><td>0 0 0</td><td>0</td></tr><tr><td>0 0 1</td><td>1</td></tr><tr><td>0 1 0</td><td>0</td></tr><tr><td>0 1 1</td><td>0</td></tr><tr><td>1 0 0</td><td>1</td></tr><tr><td>1 0 1</td><td>1</td></tr><tr><td>1 1 0</td><td>0</td></tr><tr><td>1 1 1</td><td>1</td></tr></table>	$A B C$	X	0 0 0	0	0 0 1	1	0 1 0	0	0 1 1	0	1 0 0	1	1 0 1	1	1 1 0	0	1 1 1	1
$A B C$	X																			
0 0 0	0																			
0 0 1	1																			
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1 0 0	1																			
1 0 1	1																			
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1 1 1	1																			
																				

6. Draw the logic circuit represented by each expression

a) $X = (A + B)(\overline{B + C})$	b) $X = AB + \overline{AB}$
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