

King Fahd University of Petroleum & Minerals
Department of Electrical Engineering

EE200-(01/03)

(101)



Homework # 3

1. Problem 2.5 in your textbook

Draw the logic circuits that implement the original and simplified expression in:

- a. $xyz' + x'yz + xyz + x'yz'$
 b. $(x + y + z')(x' + z')$

2. Problem 2.9(b, c) in your textbook

Find the complement of the following expressions:

- a. $(A'B + CD)E' + E$
 b. $(x' + y + z')(x + y')(x + z)$

3. Problem 2.11 (b) in your textbook

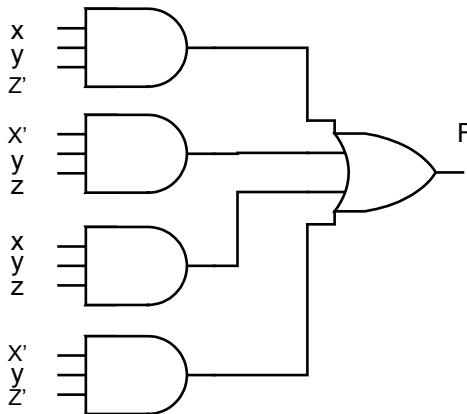
List the truth table of the function: $F = x'z' + yz$

4. Problem 2.17 (b, c) in your textbook

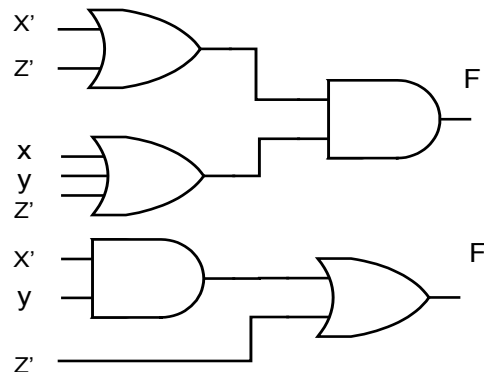
Obtain the truth table of the following functions, and express each function in sum of minterms and product of maxterms form:

- a. $(x + y')(y' + z)$
 b. $x'z + wx'y + wyz' + w'y'$

Q1.a $xyz' + x'yz + xyz + x'yz' = xyz' + xyz + x'yz + x'yz' = xy(z' + z) + x'y(z' + z) = xy + x'y = y$



Simplified expression is y.
 No gates are needed.



Q1.b $(x + y + z')(x' + z') = (x + y)x' + z' = xx' + x'y + z' = 0 + x'y + z' = x'y + z'$

Q2.a $F^d = [(A' + B)(C + D) + E']E \rightarrow F' = [(A + B')(C' + D') + E]E'$

Q2.b $F^d = x'yz' + xy' + xz \rightarrow F' = xy'z + x'y + x'z'$

Q.3

x	y	z	F
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

Q.4 a

x	y	z	F
0	0	0	1
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

$$F(x, y, z) = \sum(0,1,4,5,7) = \Pi(2,3,6)$$

Q.4 b

w	x	y	z	F
0	0	0	0	1
0	0	0	1	1
0	0	1	0	0
0	0	1	1	1
0	1	0	0	1
0	1	0	1	1
0	1	1	0	0
0	1	1	1	0
1	0	0	0	0
1	0	0	1	1
1	0	1	0	1
1	0	1	1	1
1	1	0	0	0
1	1	0	1	0
1	1	1	0	1
1	1	1	1	0

$$F(w, x, y, z) = \sum(0,1,3,4,5,9,10,11,14) = \Pi(2,6,7,8,12,13,15)$$