

King Fahd University of Petroleum & Minerals
Department of Electrical Engineering

EE200-(01/03)

(101)



Homework # 4

1. Problem 3.6(c) in your textbook

Simplify the following function using 4- variable K-map

$$F(A, B, C, D) = A'B'C'D' + A'CD' + AB'D' + ABCD + A'BD$$

2. Problem 3.8(c) in your textbook

Find the minterms of the following function by first plotting the function in a k-map

$$F(w, x, y, z) = wyz + w'x' + wxz'$$

3. Problem 3.13 (b) in your textbook

Simplify the following function to 1) SOP, 2)POS forms

$$F(A, B, C, D) = ACD' + C'D + AB' + ABCD$$

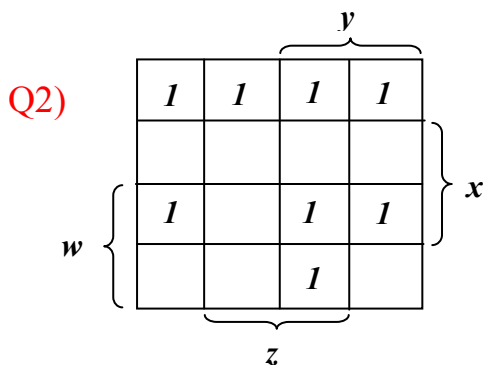
4. Problem 3.24 in your textbook

Implement the following Boolean function using the two-level forms:

- a. NAND - AND
- b. AND - NOR
- c. OR - NAND
- d. NOR - OR

$$F(w, x, y, z) = wxy' + wx'z + xyz$$

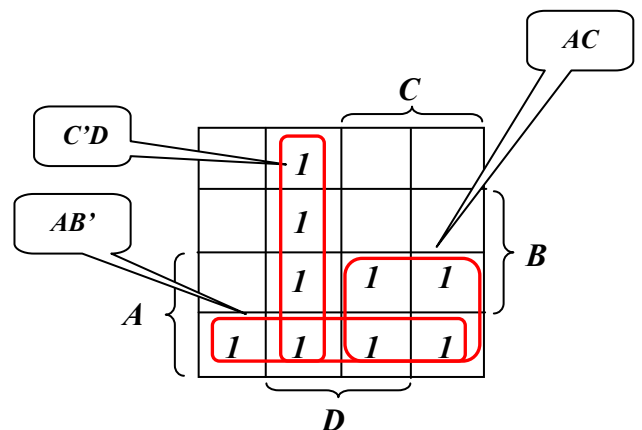
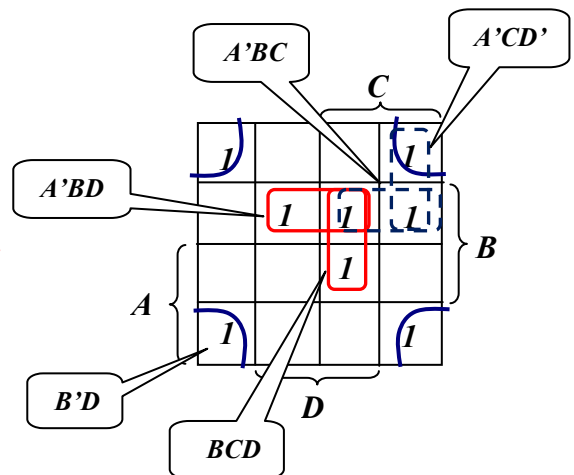
Q1) $F(A, B, C, D) = B'D' + A'BD + BCD + A'BC$
 Or $F(A, B, C, D) = B'D' + A'BD + BCD + A'CD'$



$$F(w, x, y, z) = \sum (0,1,2,3,11,12,14,15)$$

Q3)

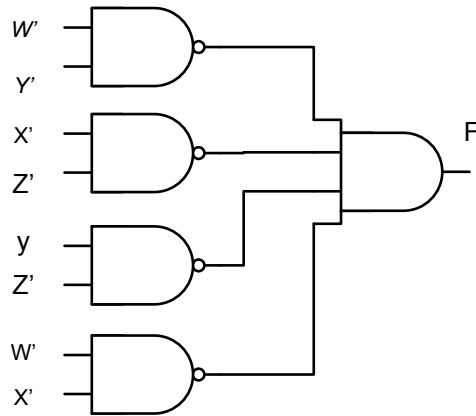
$$F(A, B, C, D) = AB' + C'D + AC$$



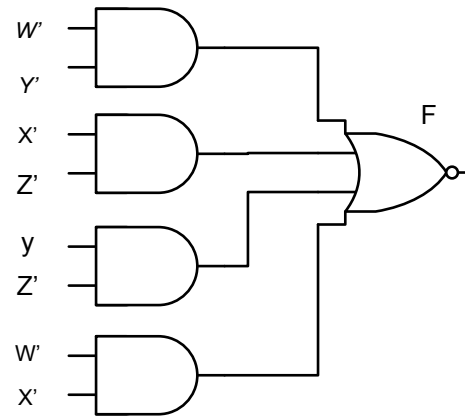
Q4) a&b We simplify F' in SOP form:

$$F' = w'y' + x'z' + yz' + w'x'$$

$$F = (w'y' + x'z' + yz' + w'x')' = (w'y')'(x'z')'(yz')'(w'x')'$$



(a)



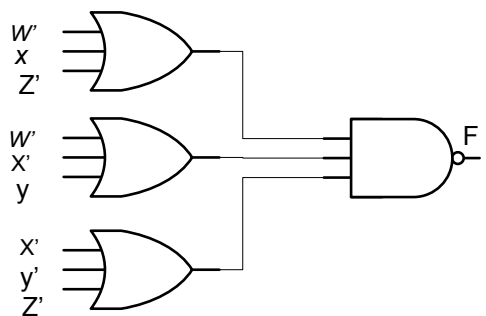
(b)

C&d We simplify F' in POS form:

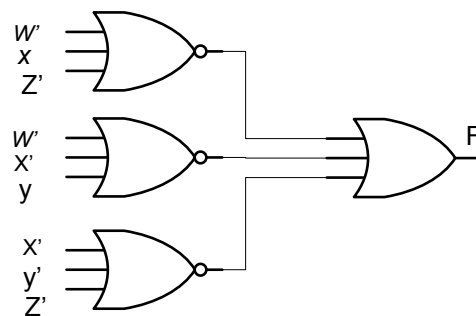
$$F' = (w' + x + z')(w' + x' + y)(x' + y' + z')$$

$$F = [(w' + x + z')(w' + x' + y)(x' + y' + z')]'$$

$$F = (w' + x + z')' + (w' + x' + y)' + (x' + y' + z')'$$



(c)



(d)