

EECS 42 – Introduction to Electronics for Computer Science



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UC Berkeley
Course Web Site

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Solution to Problem Set # 6 (by Farinaz Koushanfar)

6.1.

- a) $X = A+B$ $Y = (BC)' = C'+B'$
 b) $F = X' + Y' = (A+B)' + (C'+B')' = B'A'+BC$
 c) Table s6.1

A	B	C	X= A+B	Y= C'+B'	F= B'A'+BC
0	0	0	0	1	1
0	0	1	0	1	1
0	1	0	1	1	0
0	1	1	1	0	1
1	0	0	1	1	0
1	0	1	1	1	0
1	1	0	1	1	0
1	1	1	1	0	1

Table s6.1

6.2.

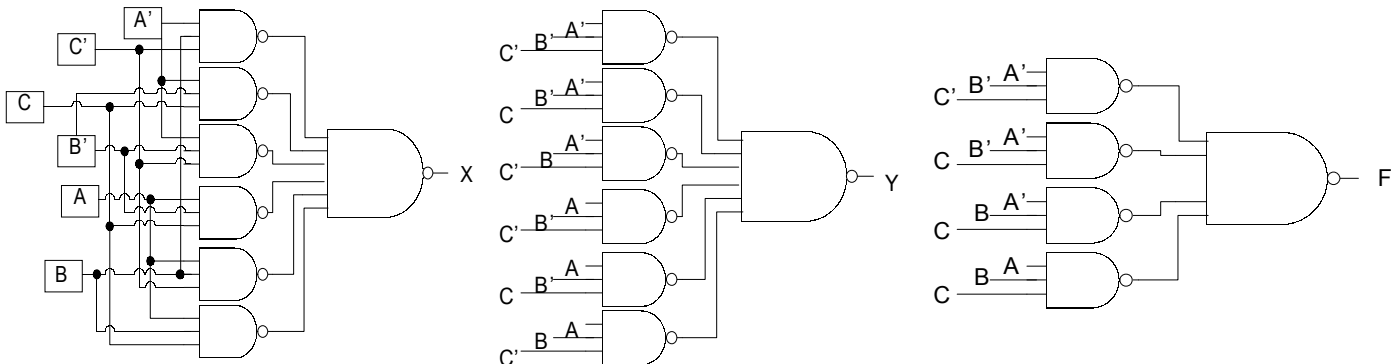
From the truth table:

$$X = A'BC' + A'BC + AB'C' + AB'C + ABC' + ABC = A'B(C'+C) + AB'(C'+C) + AB(C+C') = A'B + AB' + AB = (A'B + AB) + (AB + AB') = (A'+A)B + A(B+B') = A+B$$

$$Y = A'B'C' + A'B'C + A'BC' + AB'C' + AB'C + ABC' = (A'+A)B'C' + (A'+A)BC' + (A'+A)C' = B'C' + BC' + C' = B'C' + C'(B+B') = B'+C'$$

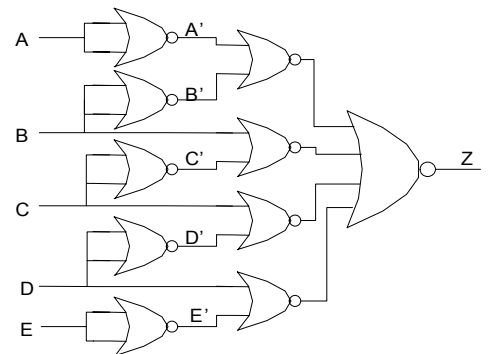
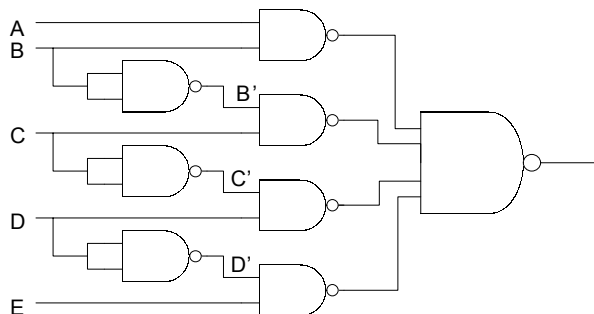
$$B'C' = B'C + BC' + B'C' = B'C + B'C' + C'B + C'B' = B'(C+C') + C'(B+B') = B'+C'$$

$$F = A'B'C' + A'B'C + A'BC + ABC = A'B'(C'+C) + (A'+A)BC = A'B' + BC$$



6.3.

- a) $Z = AB + B'C + C'D + D'E$
 b) $Z = ((AB)'(B'C)'(C'D)'(D'E)')'$
 c) $Z = ((A'+B')(B+C')(C+D')(D+E'))'$



6.4.

