L7

1a)

F(X,Y,Z) = X’Y + X’Y’Z = X’(Y+Y’Z)

X Y Z F

0 0 0 0

0 0 1 1

0 1 0 1

0 1 1 1

1 0 0 0

1 0 1 0

1 1 0 0

1 1 1 0

1b)

F(A,B,C,D) = (((A+B’)’+C)’+D)’

= ((A’B+C)’+D)’ = ((A+B’)C’ + D)’

= (AC’+B’C’ +D)’

=(AC’)’(B’C’)’D’ = (A’+C)(B+C)D’

A B C D F

0 0 0 0 0

0 0 0 1 0

0 0 1 0 1

0 0 1 1 0

0 1 0 0 1

0 1 0 1 0

0 1 1 0 1

0 1 1 1 0

1 0 0 0 0

1 0 0 1 0

1 0 1 0 1

1 0 1 1 0

1 1 0 0 0

1 1 0 1 0

1 1 1 0 1

1 1 1 1 0

Q2

F = ∑ m(1,2,3)

Q3

F = ∏ M(0,1,3,5,7,8,9,11,12,13,15)

Q4

a)

Z = ABC+AB’(A’C’)’

=ABC+ AB’(A+C)

=ABC + AB’ +AB’C

=AB’+ AC(B+B’)

=AB’ +AC

b)

X = (A’+B)(A+B+D)D’

=(A’D’+BD’)(A+B+D)

=A’AD’+A’D’B+A’DD’+BD’A+BBD’+BD’D

=0+A’D’B+0+BD’A+BD’+0

=BD’(A’+A+1)

=BD’