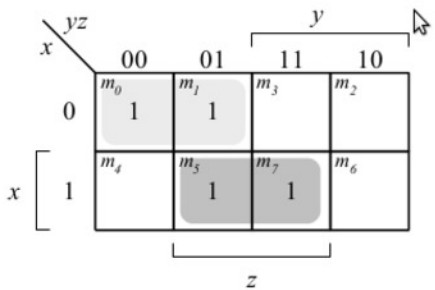
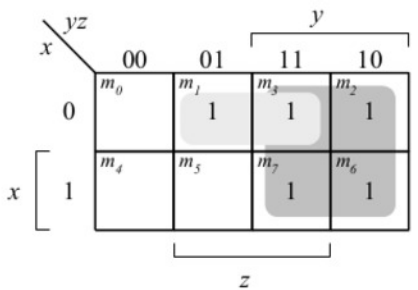
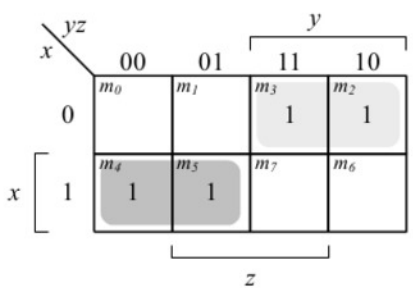
3.2



(a) $F = x'y' + xz$

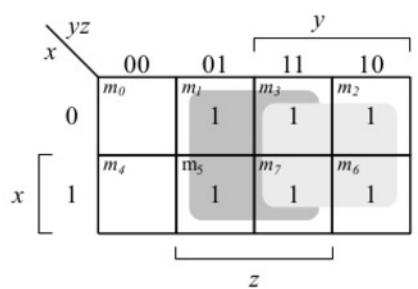


(b) $F = y + x'z$



$F = xy' + x'y$

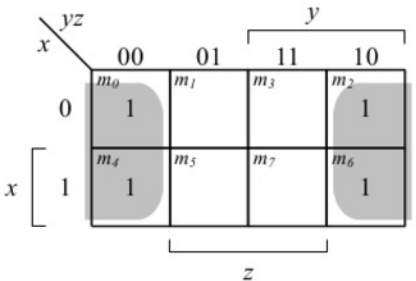
(c)



$F = y + z$

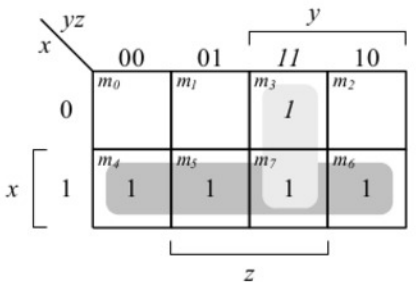
(d)

3.2


yz
x
y
00
01
11
10
m_0
m_1
m_3
m_2
0
1
1
m_4
m_5
m_7
m_6
x
1
1
1
1
z

$F = z'$

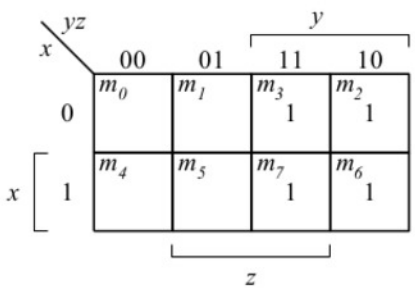
(e)


yz
x
y
00
01
11
10
m_0
m_1
m_3
m_2
0
1
m_4
m_5
m_7
m_6
x
1
1
1
1
1
z

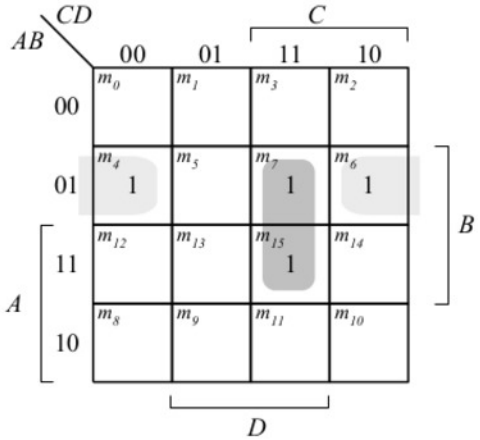
$F = x + y\,z$

(f)

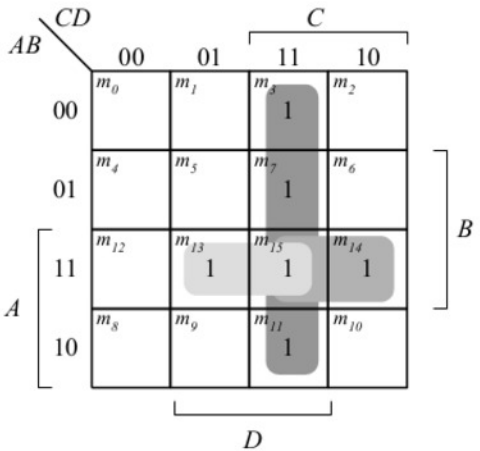
3.4



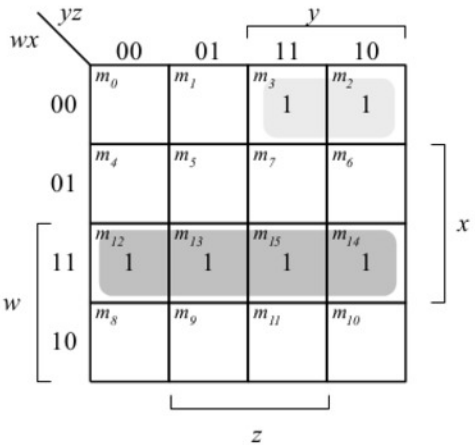
(a) $F = y$



(b) $F = BCD + A'BD'$

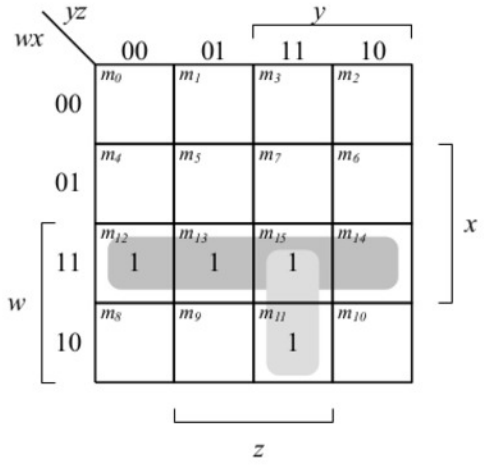


(c) $F = CD + ABD + ABC$



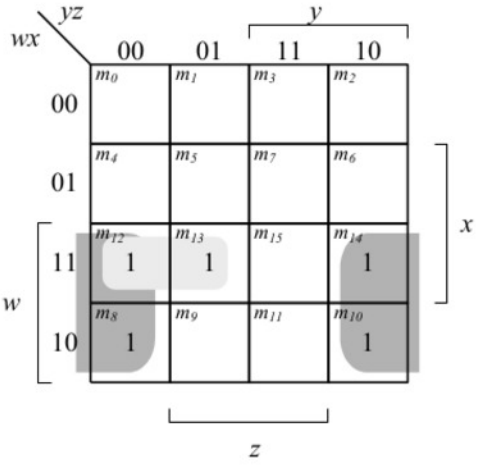
(d) $F = w'x'y + wx$

3.4



$F = wx + wyz$

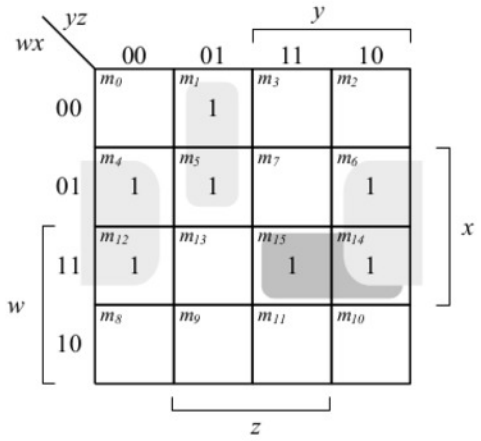
(e)



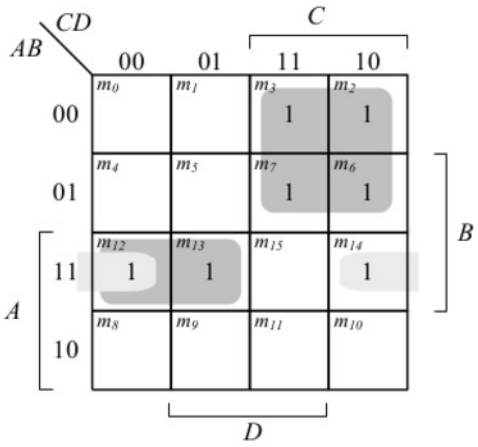
$F = wz' + xy'w$

(f)

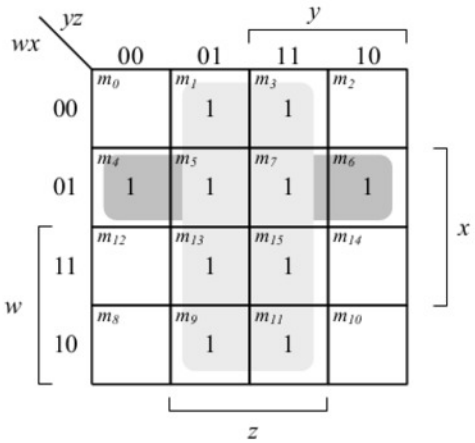
3.5



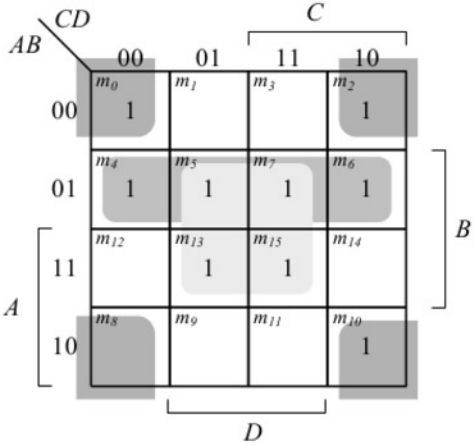
(a) $F = xz' + w'y'z + wxy$



(b) F=A'C + ABC' +ABD'
or
F=A'C + ABC' +BCD'



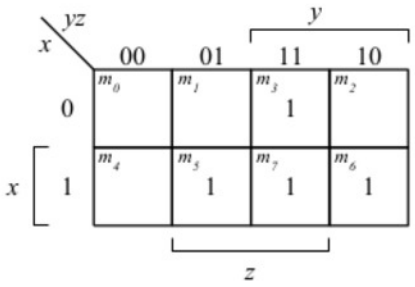
(c) $F = z + xw'$



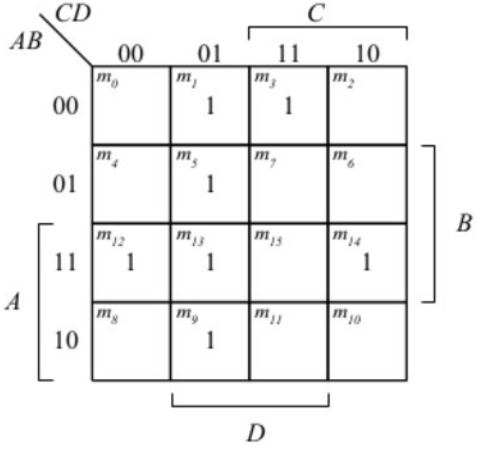
(d) $F = BD + A'B + B'D'$
$or = BD + B'D' + A'D'$

3.8

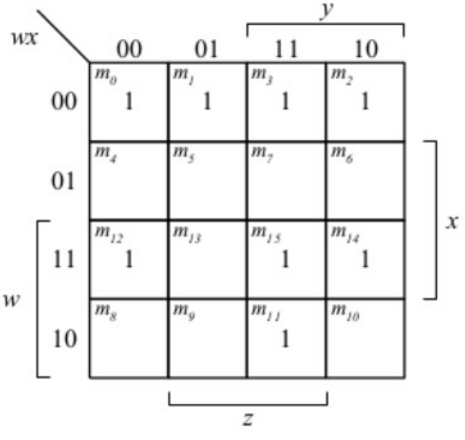
(a) $F(x, y, z) = \Sigma(3, 5, 6, 7)$



(b) $F = \Sigma(1, 3, 5, 9, 12, 13, 14)$

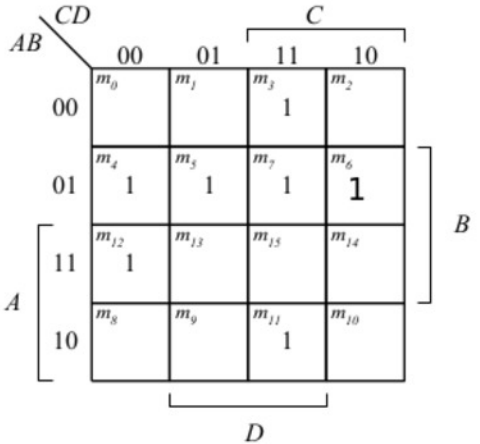


(c) $F = \Sigma(0, 1, 2, 3, 11, 12, 14, 15)$

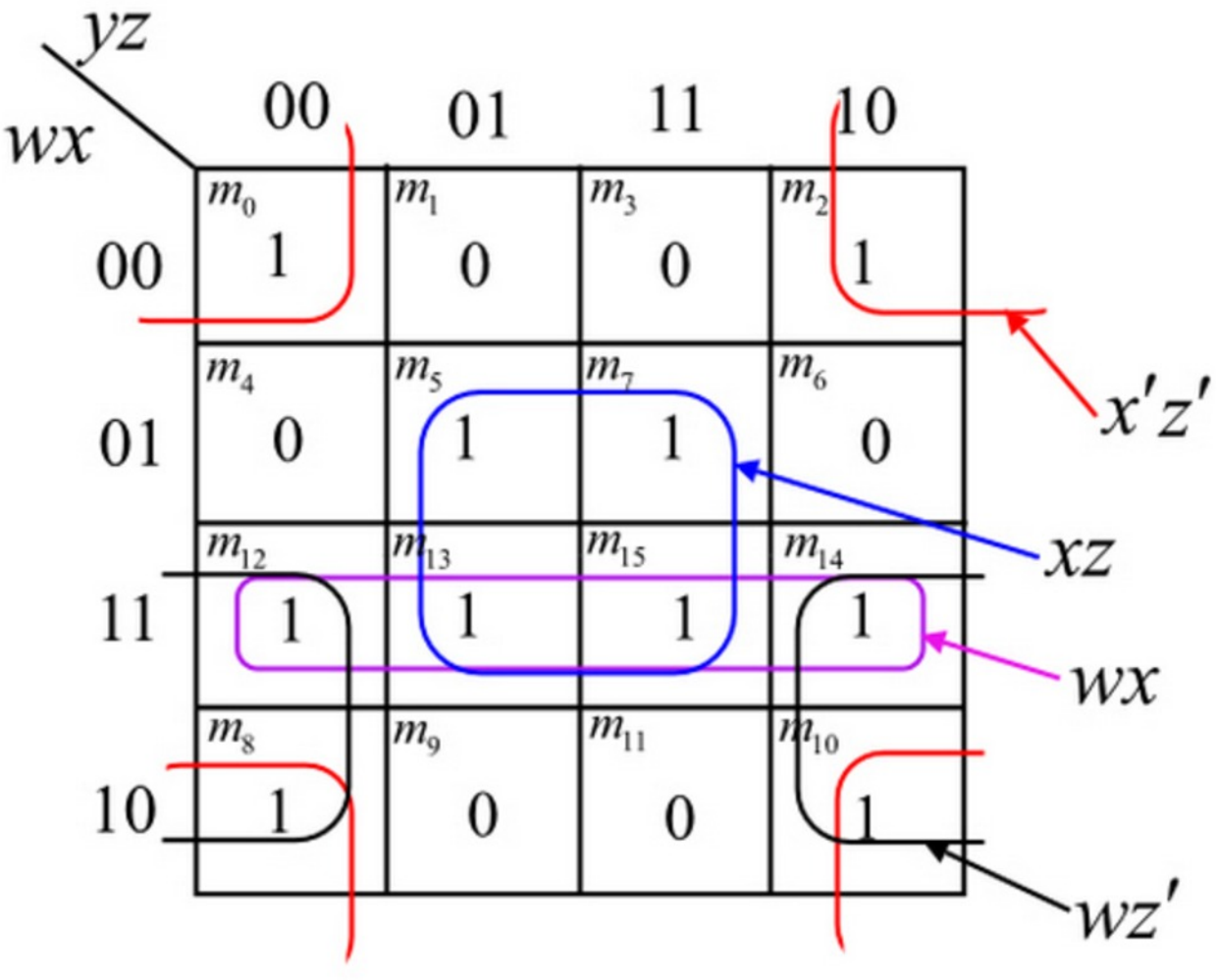


3.8

(d) $F = \Sigma(3, 4, 5, 6, 7, 11, 12)$



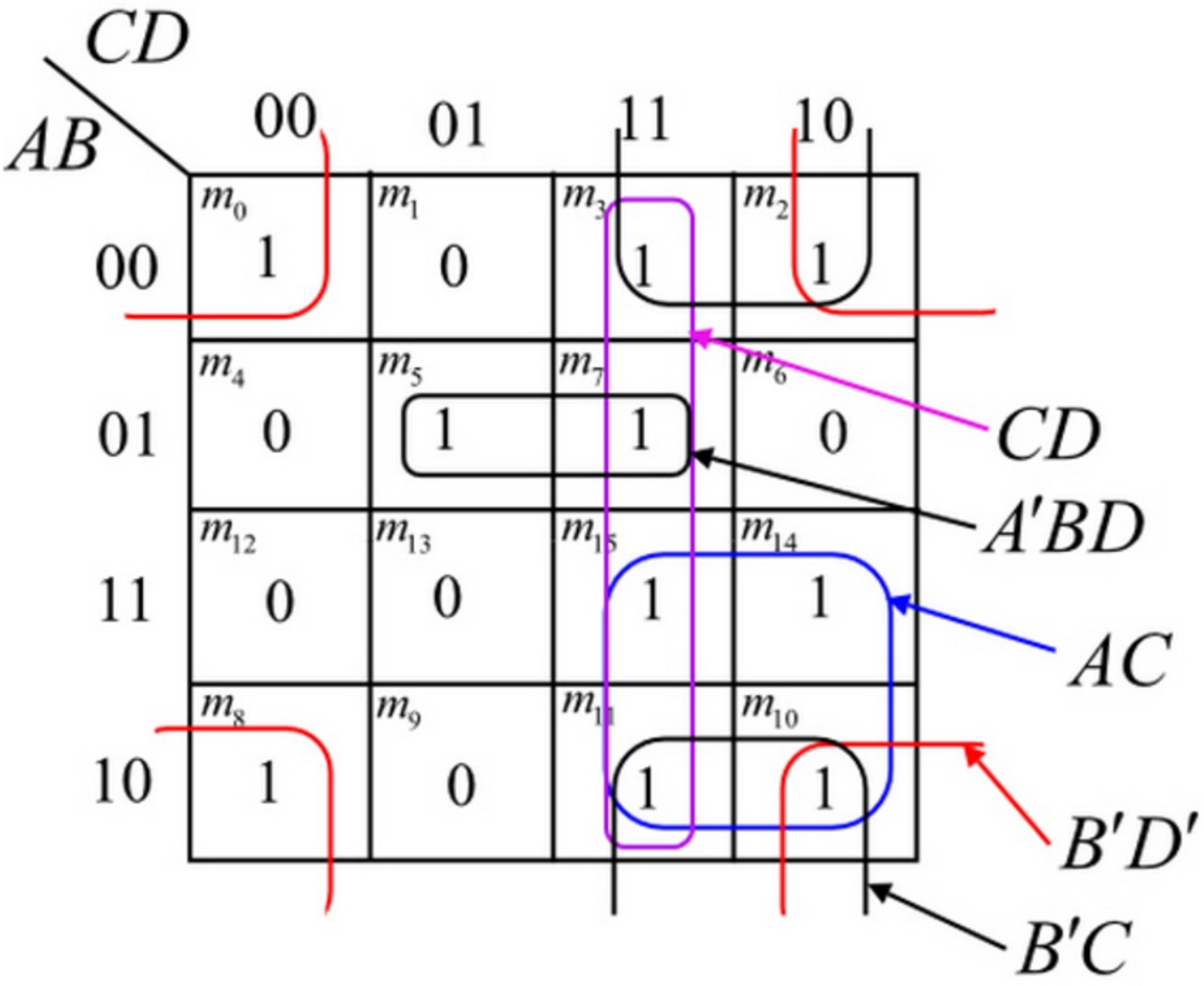
3.10 (a)



Prime Implicants: x'z',xz,wx,wz'

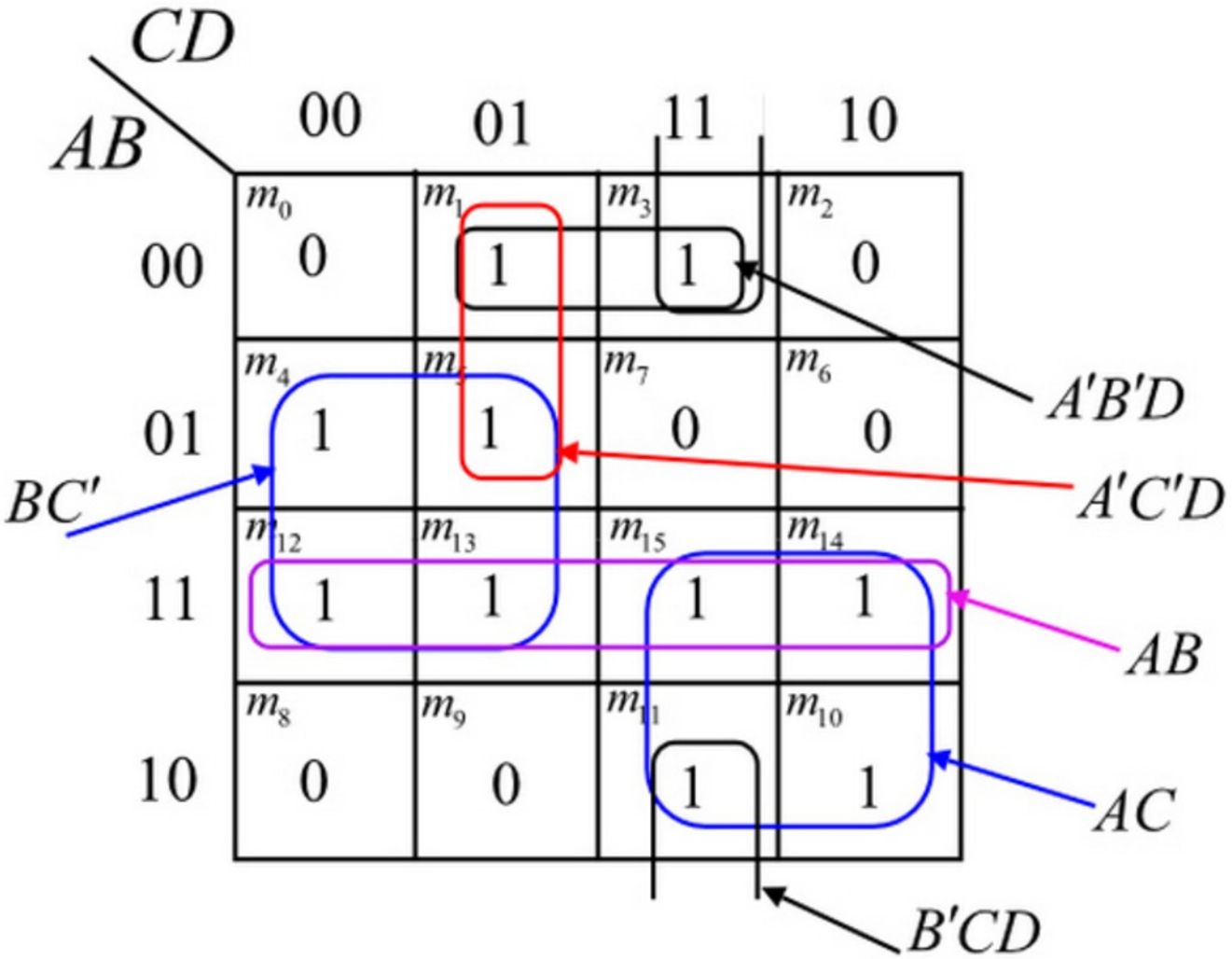
Essential Prime implicants: x'z', xz

3.10 (b)



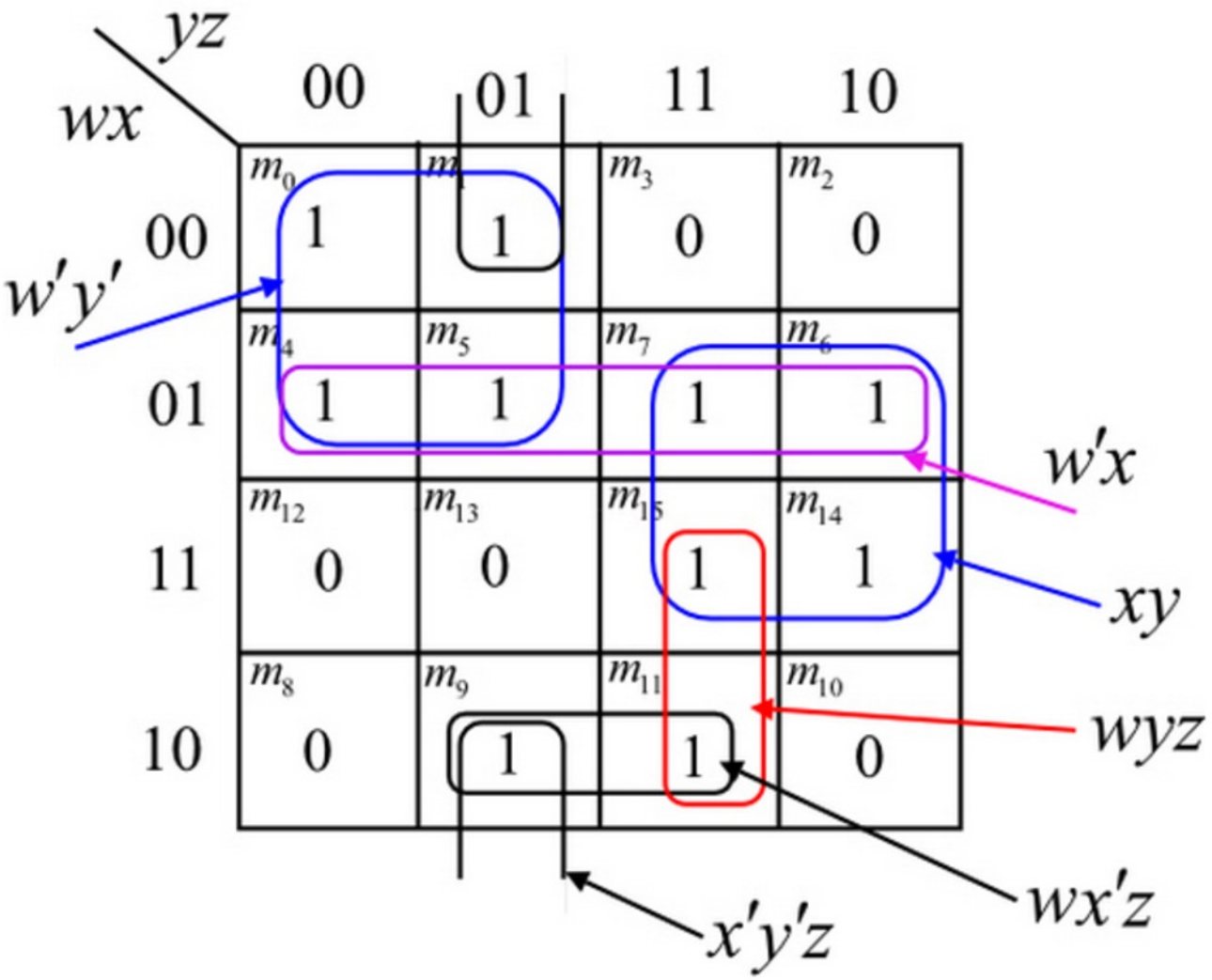
Prime Implicants: CD, A'BD, AC, B'D', B'C
Essential Prime Implicants: A'BD, AC, B'D'

3.10 (C)



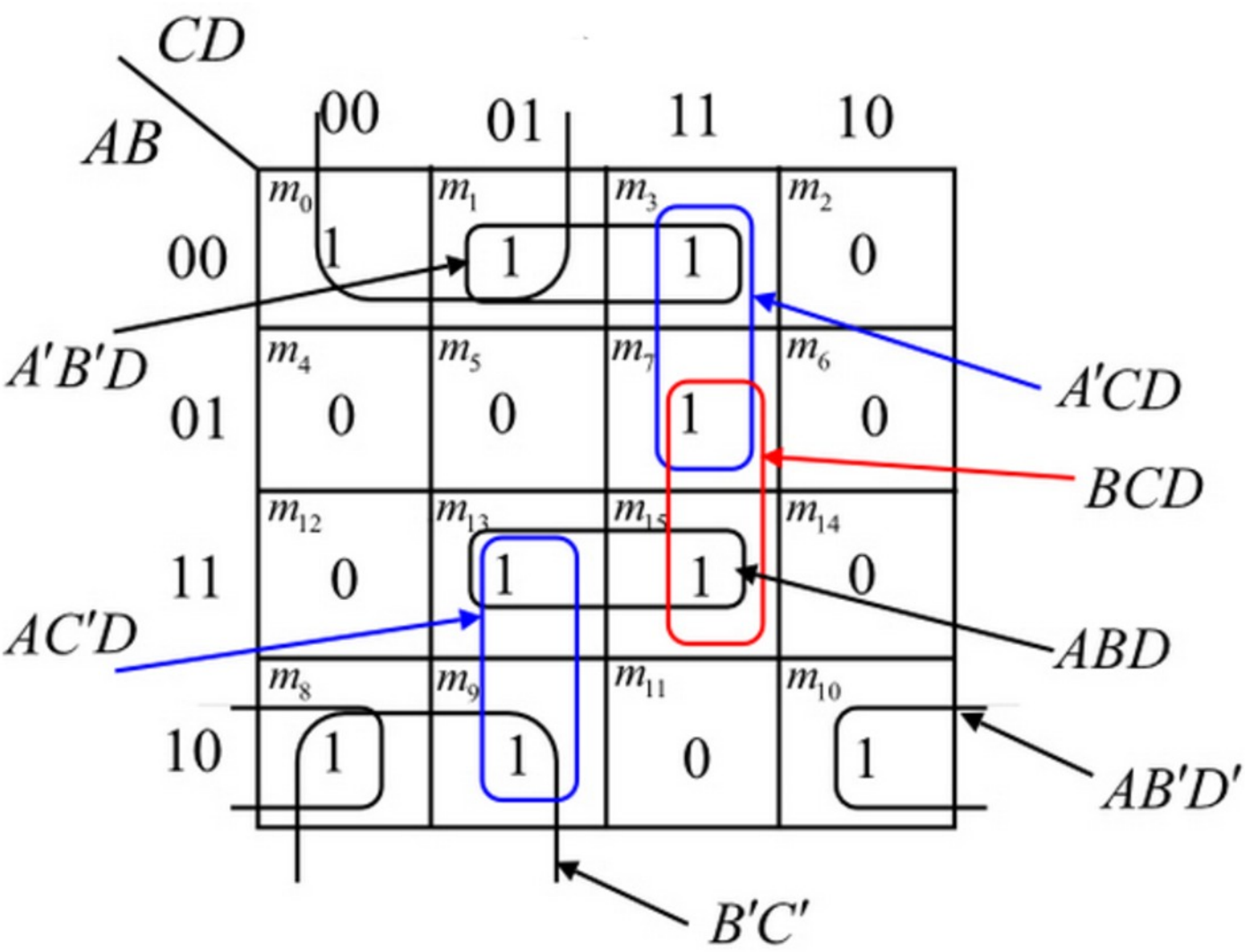
Prime Implicants: BC',B'CD,AC,AB,A'C'D,A'B'D
Essential Prime Implicants: BC',AC

3.10 (d)



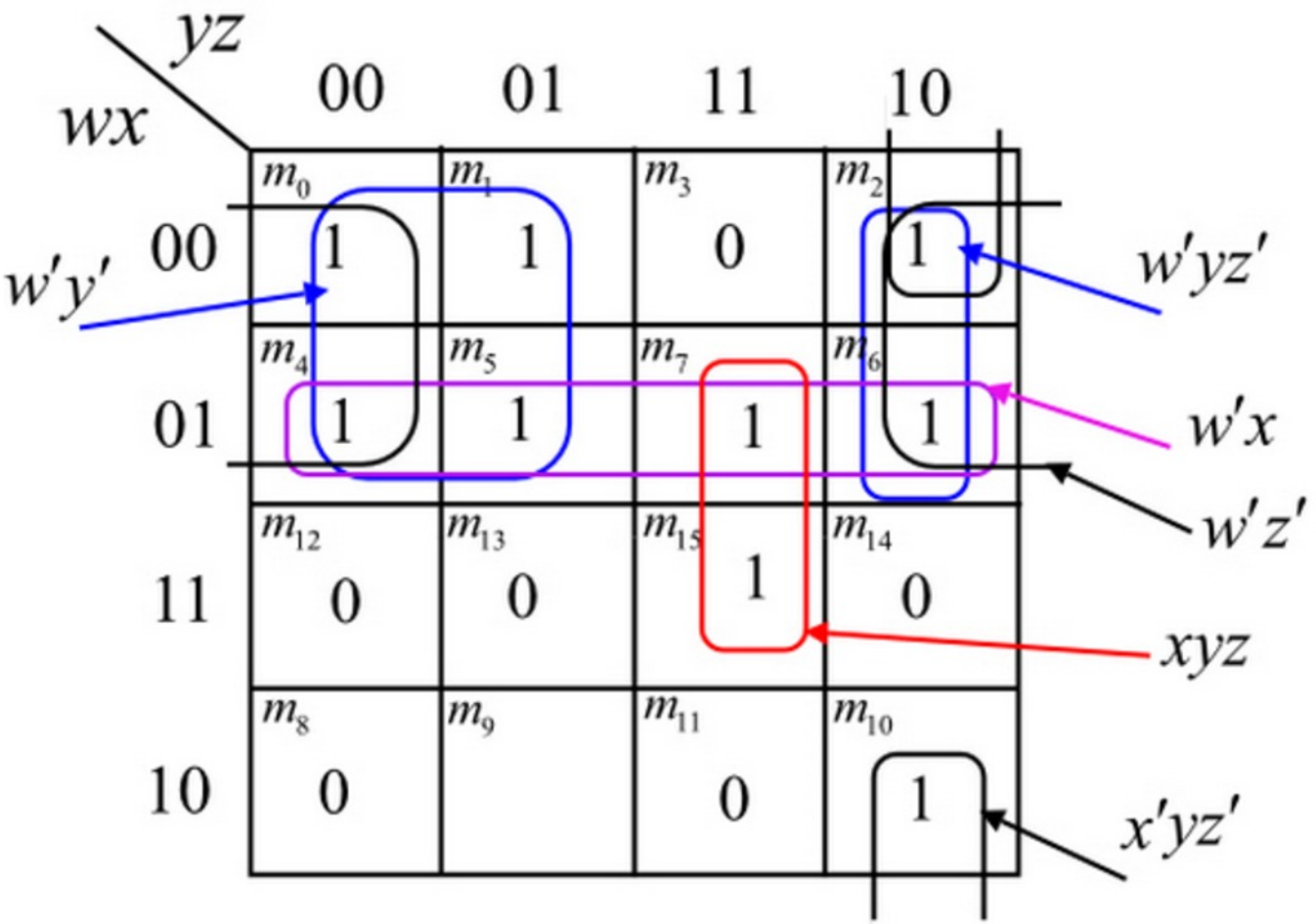
Prime Implicants: w'y',x'y'z,wx'z,wyz,xy,w'x
Essential prime implicants: w'y', xy

3.10 (e)



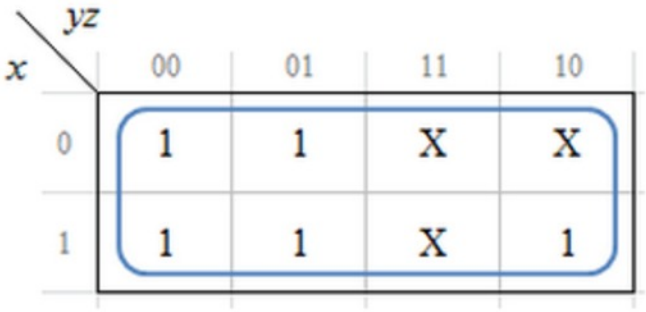
Prime implicants: A'B'D, AC'D, B'C', AB'D', ABD, BCD, A'CD
Essential Prime Implicants: B'C', AB'D'

3.10 (f)



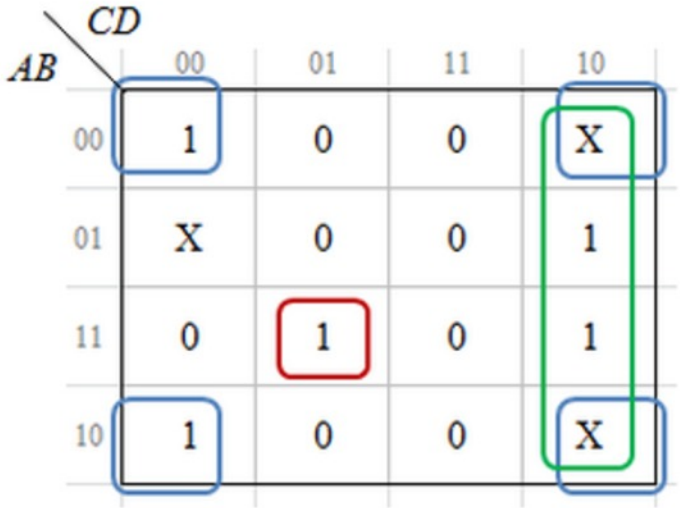
Prime Implicants: w'y',x'yz',xyz,w'z',w'x,w'yz'
Essential prime implicants: w'y',x'yz',xyz

3.15 (a)



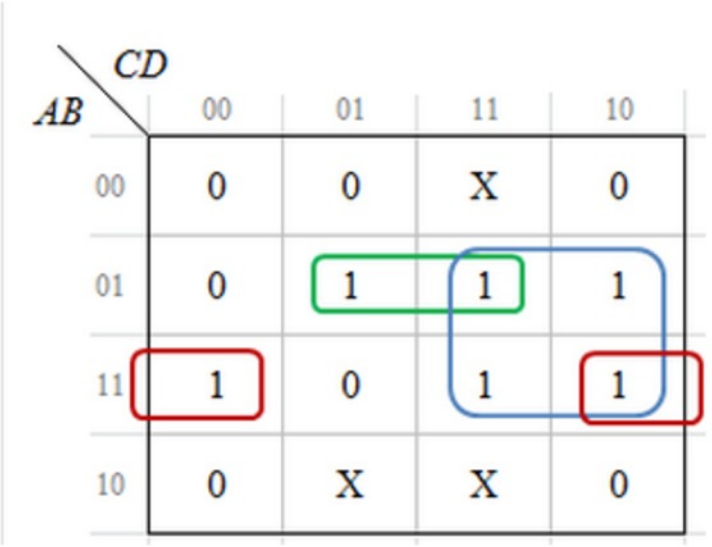
F=∑(0,1,2,3,4,5,6,7)=1

3.15 (b)



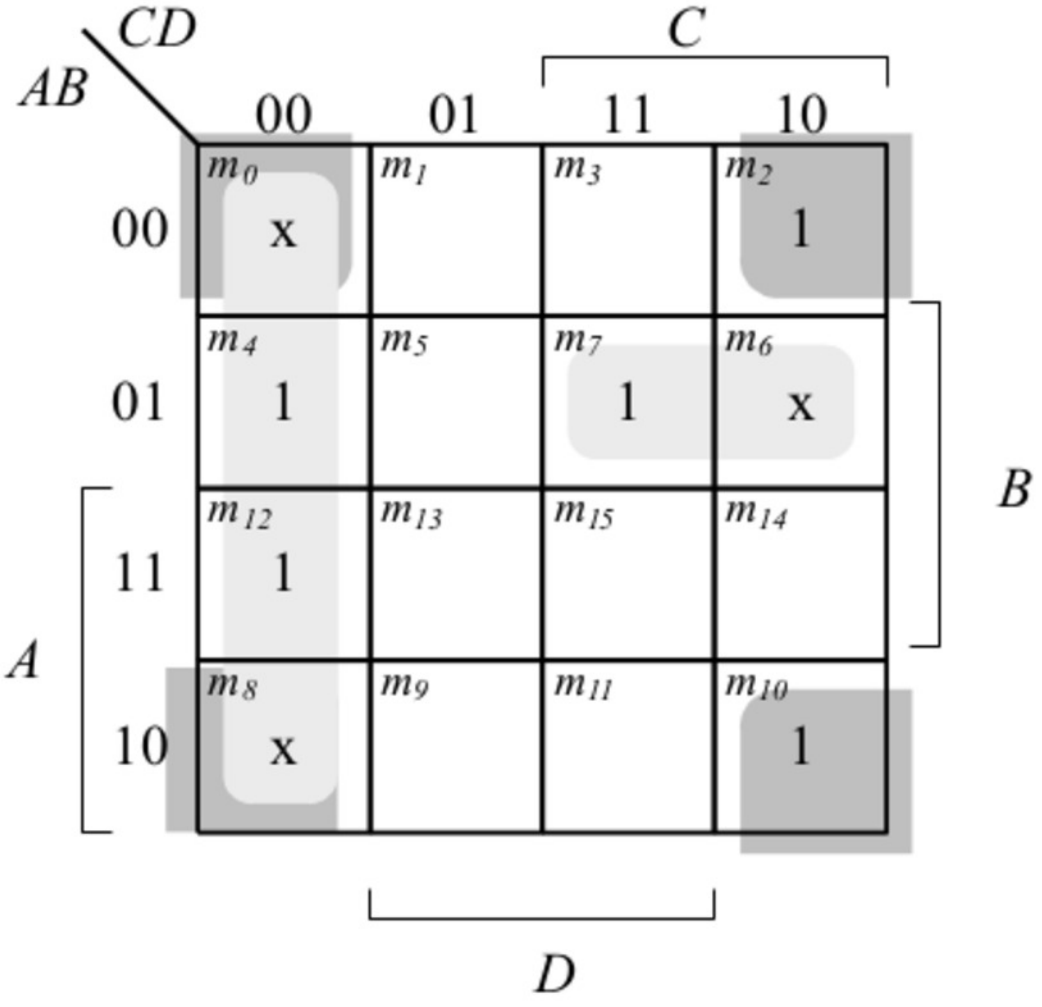
F=B'D'+CD'+ABC'D=∑(0,2,6,8,10,13,14)

3.15 (c)



F=ABD'+A'BD+BC=∑(5,6,7,12,14,15)

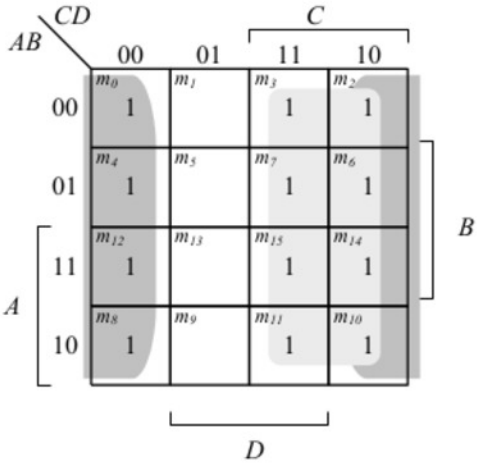
3.15 (d)



$$F = B'D' + C'D' + A'BC$$

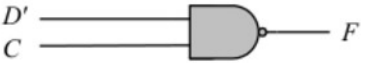
$$F = \quad F = \Sigma(0, 2, 4, 6, 7, 8, 10, 12)$$

3.16 (a)

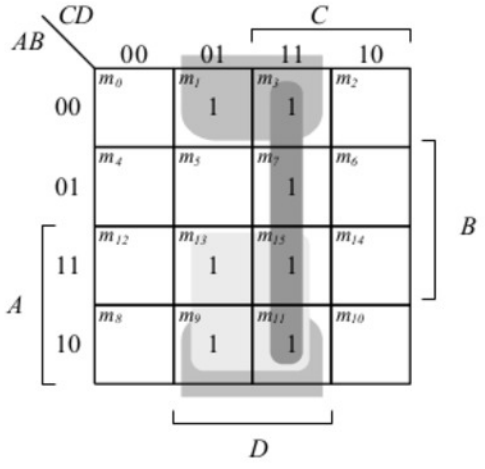

CD
AB
C
00
01
11
10
m_0 1
m_1
m_3 1
m_2 1
m_4 1
m_5
m_7 1
m_6 1
m_{12} 1
m_{13}
m_{15} 1
m_{14} 1
m_8 1
m_9
m_{11} 1
m_{10} 1
B
A
D

$F = C + D'$

$F = (C'D)'$

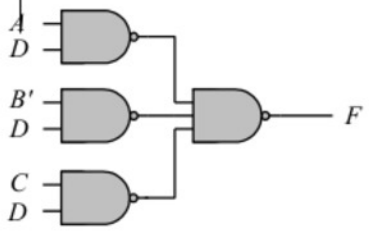

D'
C
F

3.16 (b)



$F = AD + B'D + CD$

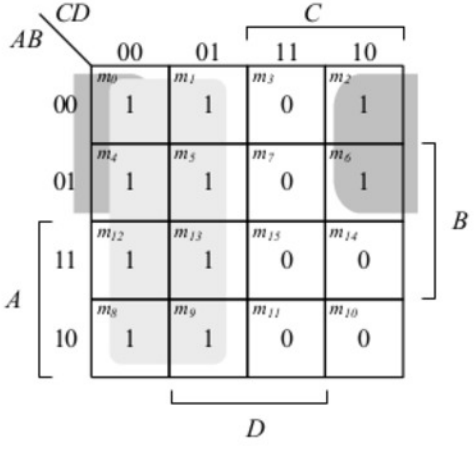
$F = ((AD)'(B'D)'(CD)')'$



(c) $F = (A' + C' + D')(A' + C')(C' + D')$

$F' = (A' + C' + D')' + (A' + C')' + (C' + D')'$

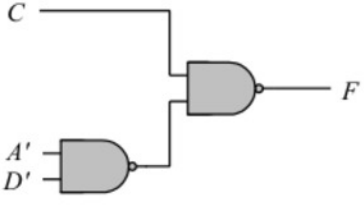
$F' = ACD + AC + CD$



$F = C' + A'D'$

$F = (C(A + D))'$

$F = (C(A'D')')'$



(d)

F(A,B,C,D)=A'+B+D'+B'C

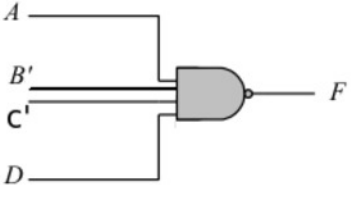
=>F' =(A'+B+D'+B'C)'

=AB'D(B+C')

=AB'DB+AB'DC'

F' =0+AB'DC'

Therefore, F=(AB'C'D)'



3.18 $F = (A \oplus B)'(C \oplus D) = (AB' + A'B)'(CD' + C'D)$

$= (AB + A'B')(CD' + C'D) = ABCD' + ABC'D + A'B'CD' + A'B'C'D$

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

$F' = ((A' + B')' + (A + B)')' + ((C' + D)' + (C + D')')'$

F= (((A'+B')'+(A+B)')'+((C'+D)'+(C+D')')')'