Assignement 4 II1500 Rdman Odeh

$T_2 = \bar{B}C$, $T_3 = \bar{A}B$, $T_1 = A + T_1 = A + \bar{B}C$

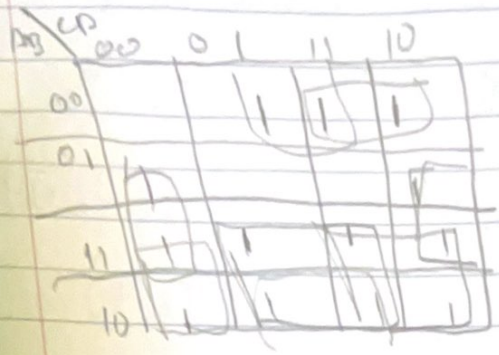
$T_4 = D \oplus T_2 = D \oplus (\bar{A}B) = \bar{A}B\bar{D} + D(A + \bar{B}) = \bar{A}B\bar{D} + AD + \bar{B}D$

$f_1 = A + \bar{B}C + B\bar{D} + \bar{B}D$ $f_2 = T_2 + \bar{D} = \bar{A}B + \bar{D}$

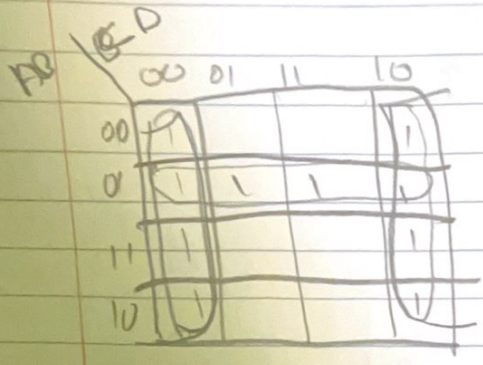
$F = T_2 + \bar{D} = \bar{A}B + \bar{D}$

$2^4 = 16$

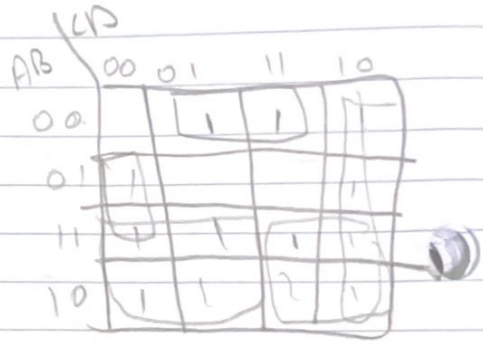
A B C D	T_1 T_2 T_3 T_4	F_1 F_2
0 0 0 0	0 0 0 0	0 1
0 0 0 1	0 0 0 1	1 0
0 0 1 0	1 0 1 0	1 1
0 0 1 1	1 0 1 1	1 0
0 1 0 0	0 1 0 1	1 1
0 1 0 1	0 1 0 0	0 1
0 1 1 0	0 1 0 1	1 1
0 1 1 1	0 1 0 0	0 1
1 0 0 0	0 0 1 0	1 1
1 0 0 1	0 0 1 1	1 0
1 0 1 0	1 0 1 0	1 1
1 0 1 1	1 0 1 1	1 0
1 1 0 0	0 0 1 0	1 1
1 1 0 1	0 0 1 1	1 0
1 1 1 0	0 0 1 0	1 1
1 1 1 1	0 0 1 1	1 0



$F_1 = A + \bar{B}C + B\bar{D} + \bar{B}D$



$F_2 = \bar{A}B + \bar{D}$

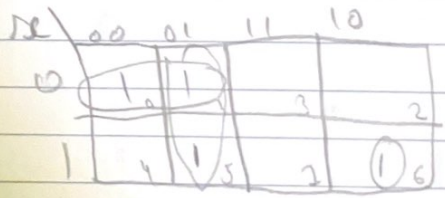


$F_2 = B\bar{D} + \bar{B}D + C\bar{D} + A$

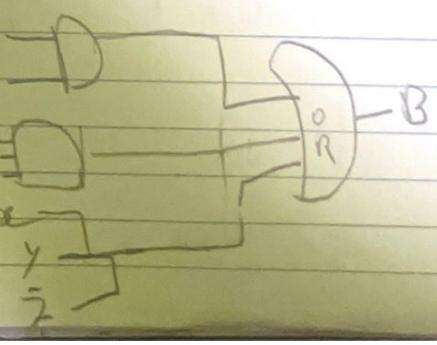
4.5

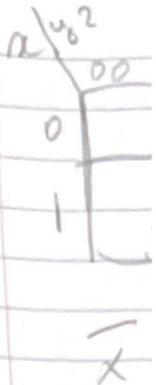
$2^3 = 8$

x y z	A B C
0 0 0	0 1 0
0 0 1	0 1 1
0 1 0	1 0 0
0 1 1	1 0 1
1 0 0	0 0 1
1 0 1	0 1 0
1 1 0	0 1 1
1 1 1	1 0 0

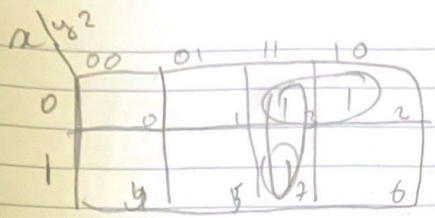


$B = x\bar{y}\bar{z} + \bar{x}\bar{y} + \bar{y}z$

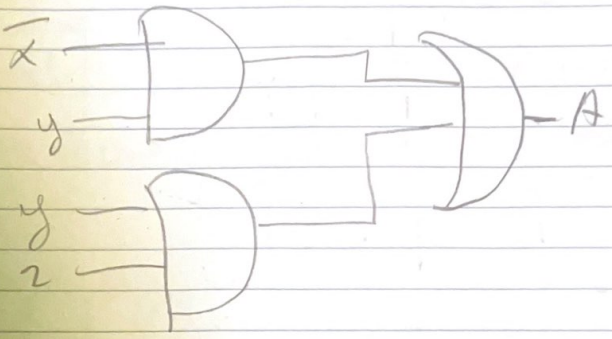




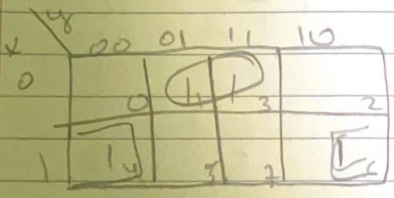
$\bar{x}$



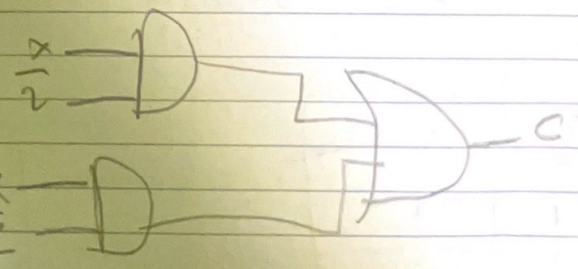
$A = y\bar{z} + \bar{x}y$



$B\bar{D} + C\bar{D} + A$

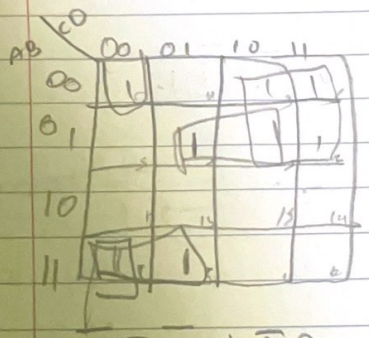


$c = x\bar{z} + \bar{x}z$

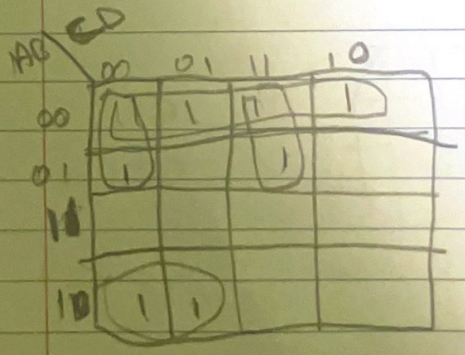


$2^4 = 16$

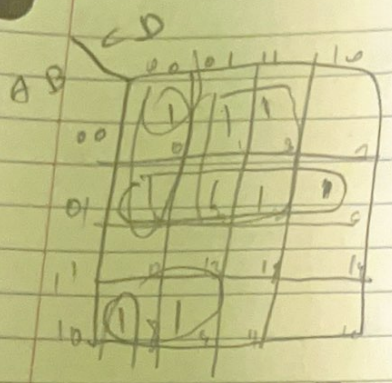
A	B	C	D	a	b	c	d	e	f	g
0	0	0	0	1	1	1	1	1	1	0
0	0	0	1	0	1	1	0	0	0	0
0	0	1	0	1	1	0	1	1	0	1
0	0	1	1	1	1	1	1	0	0	1
0	1	0	0	0	1	1	0	0	1	1
0	1	0	1	1	0	1	1	0	1	1
0	1	1	0	1	0	1	1	1	1	1
0	1	1	1	1	1	1	0	0	0	0
1	0	0	0	1	1	1	1	1	1	1
1	0	0	1	1	1	1	0	1	1	1



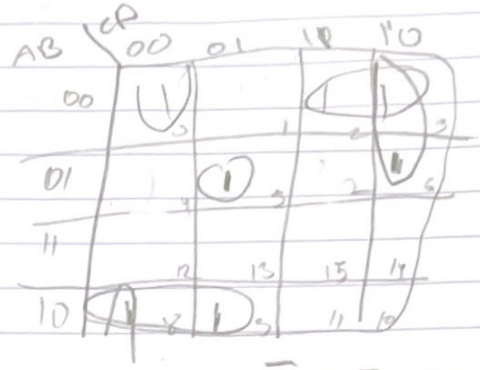
$a = B\bar{C}\bar{D} + \bar{A}D + \bar{A}B + A\bar{B}\bar{C}$



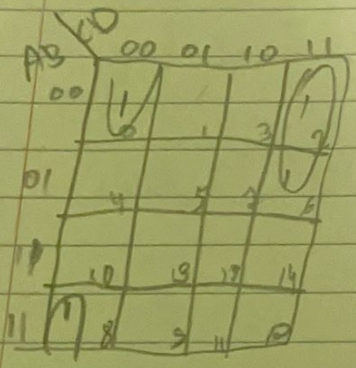
$b = A\bar{B}\bar{C} + \bar{A}\bar{B} + \bar{A}\bar{C}\bar{D} + \bar{A}CD$



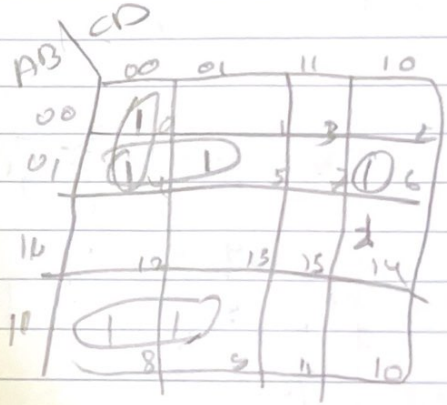
$C = \bar{A}B + \bar{A}D + A\bar{B}\bar{C} + \bar{B}\bar{C}\bar{D}$



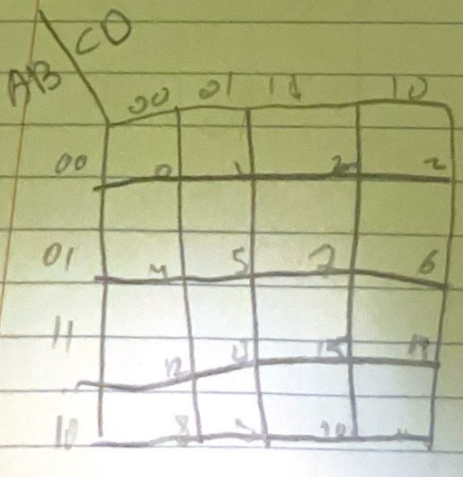
$d = \bar{A}B\bar{C}D + \bar{A}C\bar{D} + \bar{A}\bar{B}C + A\bar{B}\bar{C}$



$E = \bar{B}C\bar{D} + \bar{A}C\bar{D}$

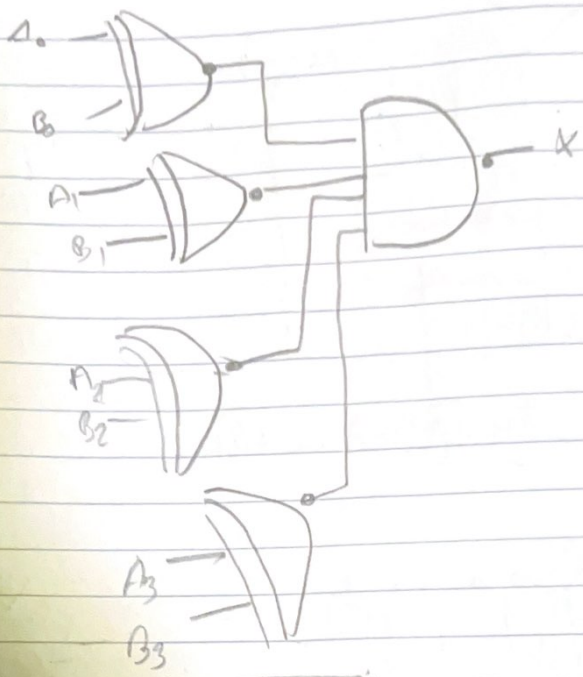


$F = \bar{A}\bar{B}\bar{C} + \bar{A}B\bar{D} + \bar{A}\bar{B}C + \bar{A}\bar{C}\bar{D}$



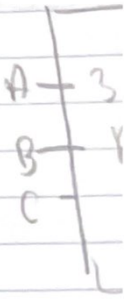
$G = \bar{A}C\bar{D} + \bar{A}B\bar{C} + A\bar{B}\bar{C}$

4.24



$X = \overline{(A_0 \oplus B_0)} \cdot \overline{(A_1 \oplus B_1)} \cdot \overline{(A_2 \oplus B_2)} \cdot \overline{(A_3 \oplus B_3)}$

4.27



4.2

a)

F_1

$F_2 =$

F_3

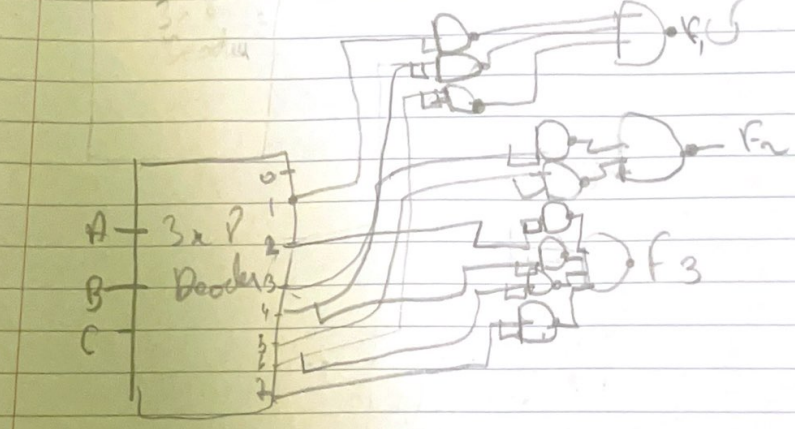
$\overline{B_3}$

4.27

$F_1(ABC) = \Sigma(1,2,6)$

$F_2(ABC) = \Sigma(3,5)$

$F_3(ABC) = \Sigma(2,4,6,7)$



4.28

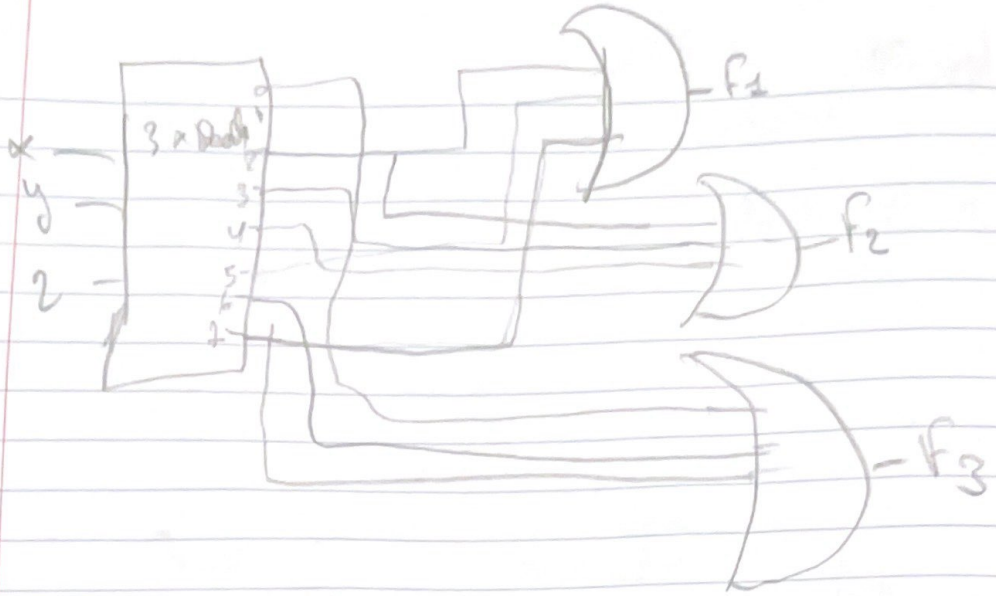
a)

$F_1 = \Sigma(2,5,7) = x(y+\bar{y})z + x\bar{y}\bar{z} + x\bar{y}z + \bar{x}y\bar{z}$

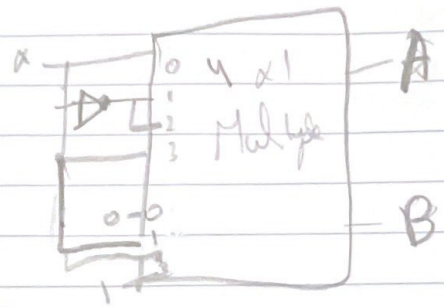
$F_2 = \Sigma(2,3,4) = x\bar{y}\bar{z} + \bar{x}y = x\bar{y}z + \bar{x}y\bar{z}$

$F_3 = \Sigma(0,6,7) = \bar{x}\bar{y}\bar{z} + xy(z+\bar{z}) = \bar{x}\bar{y}\bar{z} + xyz + xy\bar{z}$

$F_1 = \Sigma(1,2,5,7)$ $F_2 = \Sigma(2,3,4)$ $F_3 = \Sigma(0,6,7)$



4.33



$A(x,y,z) = \Sigma(1,2,4,7)$

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

		D_0	D_1	D_2	D_3
0	$\bar{x}$	0	1	2	3
1	x	4	5	6	7
		1	$\bar{0}$	$\bar{0}$	1
		x	$\bar{x}$	$\bar{x}$	x

	B	D_0	D_1	D_2	D_3
0	$\bar{x}$	0	1	2	3
1	x	4	5	6	7
		0	$\bar{0}$	$\bar{0}$	1
		0	$\bar{x}$	$\bar{x}$	1
		0			1