

Tutorial-7

$$\begin{aligned}
 1. (a) F_1(A, B) &= A' + B' \\
 &= A(B + B') + B'(A + A') \\
 &= AB + AB' + A'B + A'B' \\
 F(A, B) &= \sum (0, 1, 2)
 \end{aligned}$$

$$(b) F_2(A, B, C, D) = A + BC' + ABD' + ABCD$$

	A	B	C	D	F
0	0	0	0	0	0
1	0	0	0	1	0
2	0	0	1	0	0
3	0	0	1	1	0
4	0	1	0	0	1
5	0	1	0	1	1
6	0	1	1	0	0
7	0	1	1	1	0
8	1	0	0	0	1
9	1	0	0	1	1
10	1	0	1	0	1
11	1	0	1	1	1
12	1	1	0	0	1
13	1	1	0	1	1
14	1	1	1	0	1
15	1	1	1	1	1

$$\begin{aligned}
 F &= \sum m(4, 5, 8, 9, 10, 11, 12, 13, 14, 15) \\
 F &= \prod M(0, 1, 2, 3, 6, 7)
 \end{aligned}$$

2. $F = \prod M(2, 8, 9, 10, 11, 12, 14)$.

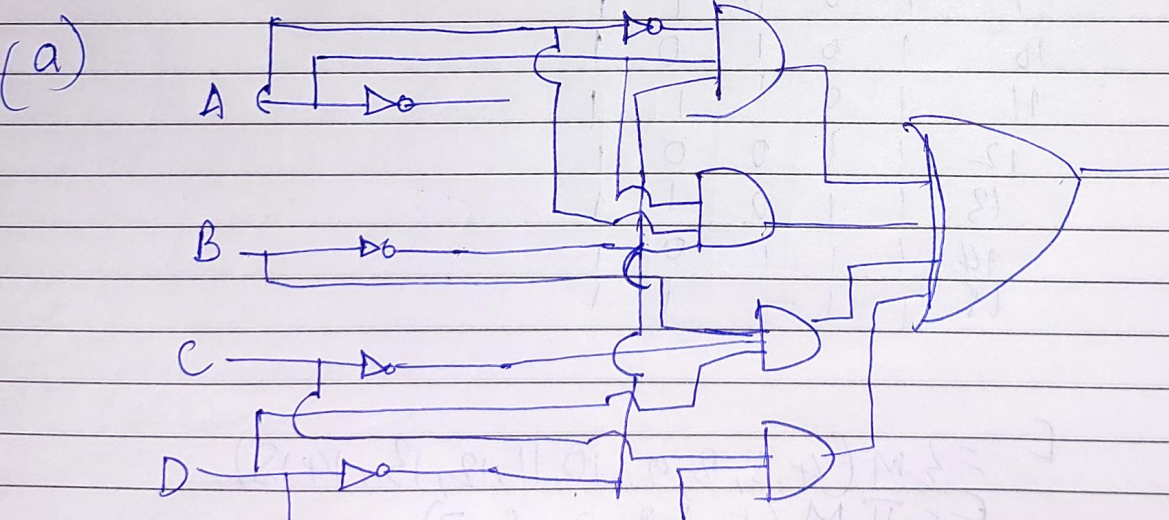
$AB \backslash CD$	CD	$C\bar{D}$	$\bar{C}D$	$\bar{C}\bar{D}$
$A+B$	0	1	3	2
$A+\bar{B}$	4	5	7	6
$A+B'$	0	1	12	15
$A+B$	0	8	9	10

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

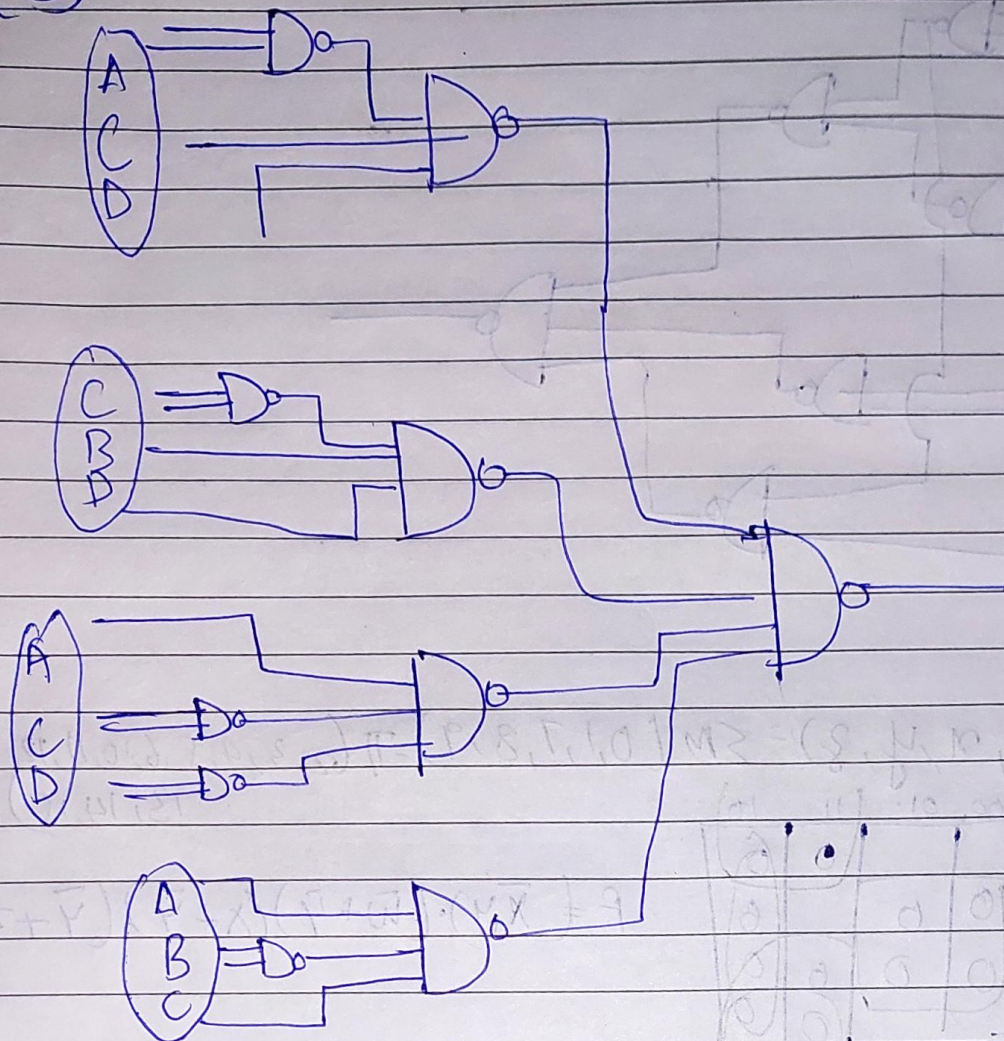
3. $f = \sum m(3, 5, 7, 8, 10, 11, 12, 13)$

$AB \backslash CD$	$\bar{C}\bar{D}$	$\bar{C}D$	CD	$C\bar{D}$
$A \oplus B$	0	1	3	2
$\bar{A} \oplus B$	4	5	7	6
$A \oplus B$	9	13	15	14
$A \oplus B$	1	8	11	10

$CD\bar{A} + \bar{C}DB + A\bar{C}\bar{D} + \bar{A}BC$



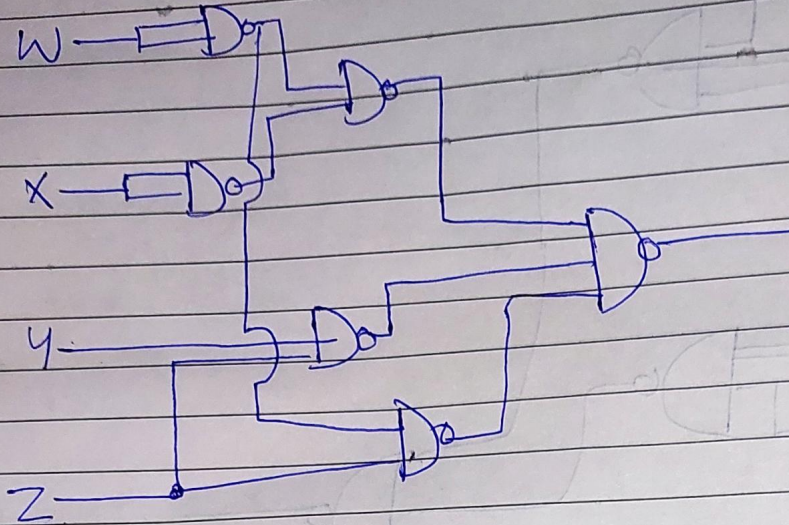
(b)



A. $F(x, y, w, z) = \sum m(1, 3, 7, 11, 15) + \sum d(0, 2, 4, 6, 8, 10, 12, 14)$

	00	01	11	10
00	X	1	1	X
01		X	1	
11			1	
10			1	

$F = \overline{w}x + zw + yz$



5. $F(W, X, Y, Z) = \sum m(0, 1, 7, 8, 9) = \prod (2, 3, 4, 5, 6, 10, 11, 12, 13, 14, 15)$

	00	01	11	10
00	0	0	0	0
01	0	0	0	0
11	0	0	0	0
10	0	0	0	0

$$F = (\bar{X} + Y) \cdot (\bar{W} + \bar{Y}) \cdot (X + \bar{Y}) \cdot (\bar{Y} + Z)$$

