

1419121

Tutorial-7

$$Q1) f(A, B, C) = \sum m(0, 2, 3, 4, 5, 6)$$

	$\bar{B}\bar{C}$	$\bar{B}C$	BC	$B\bar{C}$		0. 0 0 0
A	1	0	1	0	$A' B$	2. 0 1 0
\bar{A}	0	1	0	1		3. 0 1 1
1	1	1	1	1		4. 1 0 0
0	0	0	0	0		5. 1 0 1
C	1	0	1	0		
	1	1	0	1		
	0	1	1	0		
	0	0	0	1		

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

$$Q2) F(A, B, C, D) = \sum m(2, 3, 6, 7, 8, 10, 11, 13, 14)$$

	$\bar{C}\bar{D}$	$\bar{C}D$	$\bar{C}D$	$\bar{C}\bar{D}$		1 0 0 0 0 1
$\bar{A}\bar{B}$	1	0	1	0	$1 \rightarrow \bar{C}D$	1 0 0 0 0 1
$\bar{A}B$	0	1	0	1	$2 \rightarrow \bar{A}C$	1 0 0 0 0 1
AB	1	1	1	1		1 1 1 1 0 1
$A\bar{B}$	1	1	0	0		0 0 0 1 0 0
$ABCD$	1	1	0	1		1 0 0 1 0 0
						0 1 1 1 0 0
						1 1 1 1 0 0
						0 1 1 1 0 0
						1 1 1 1 0 0
						0 0 0 1 1 0
						1 0 0 1 1 0
						0 1 1 1 1 0
						1 1 1 1 1 0
						0 1 1 1 1 0
						1 1 1 1 1 0
						0 0 0 1 1 1
						1 0 0 1 1 1
						0 1 1 1 1 1
						1 1 1 1 1 1

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

$$\Theta(3) f(CA, BA, CL, D, E) = 71 \text{ m} (1, 4, 5, 6, 7, 9, 9, 14, 15, 22, 23, 27, 25, 28, 29, 30, 31)$$

	$\bar{D}\bar{E}$	$A=0$	
$\bar{B}C$			
$\bar{B}B$			
$B\bar{B}$			
AB			

	$D\bar{E}$	$\bar{D}\bar{E}$	$D\bar{E}$	$D\bar{E}$	$\bar{D}\bar{E}$
$\bar{B}C$					
$\bar{B}B$					
$B\bar{B}$					
AB					

	$\bar{D}\bar{E}$	$\bar{D}\bar{E}$	$D\bar{E}$	$D\bar{E}$
$\bar{B}C$				
$\bar{B}B$				
$B\bar{B}$				
AB				

$A = 0$

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

$\bar{B}D$

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

1	0 0 0 0 1
4	0 0 1 0 0
5	0 0 1 0 1
6	0 0 1 1 0
7	0 0 1 1 1
8	0 1 0 0 0
9	0 1 0 0 1
14	0 1 1 1 0
15	0 1 1 1 1
22	0 1 0 1 0
23	1 0 1 1 1
24	1 1 0 0 0
25	1 1 1 0 0
28	1 1 1 0 0
29	1 1 1 0 1
30	1 1 1 1 0
31	1 1 1 1 1

$A = i$

$\bar{B}A$

$$18A + 10\bar{A} + 2\bar{B} + 9\bar{D} = 0$$

$$f(A, B, C, D, E) = CD + \bar{C}B\bar{D} + AD\bar{D} + \bar{A}BC$$

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

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

$$\cdot (A + \bar{B} + D + \bar{E})$$

Q4)

- i) Make a table & arrange all the minterms/max terms according to the number of 1s / 0s contained.

lygroup	minterms	Binary representation
0	0	0 0 0 0
	1	0 0 0 1
	2	0 0 1 0
	3	1 0 0 0
1	5	0 0 1 1
	10	0 1 0 0
	12	1 0 1 0
	7	0 1 1 1
2	13	1 1 0 1
3	15	

E) IV)

	A	B	C	D
(0,1)	0	0	0	-
(0,2)	0	0	-	0
(0,8)	-	0	0	0
<u>(1,3)</u>	0	0	-	1
(1,5)	0	-	0	1
(2,3)	0	0	1	-
(2,10)	-	0	1	0
(8,10)	1	0	-	0
<u>(8,12)</u>	1	-	0	0
(3,7)	0	-	1	1
(5,7)	0	1	-	1
(5,15)	-	1	0	1
<u>(12,13)</u>	1	1	0	-
(7,15)	-	1	1	1
<u>(13,15)</u>	1	1	-	1

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

III)

	A	B	C	D
(0,1), (2,3)	0	0	-	-
(0,2), (1,3)	0	0	-	-
(0,2), (8,10)	-	0	-	0
(0,8), (2,10)	-	0	-	0
(4,3), (5,7)	0	-	-	1
(1,5), (3,7)	0	-	-	1
(5,7), (13,15)	-	1	-	1
(5,13), (7,15)	-	1	-	1

 $\bar{A}\bar{B}$ $\bar{B}\bar{D}$ $\bar{A}D$ BD

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