



K Map Assignment

Q1)

CD \ AB	00	01	11	10
00	1	X		1
01		5	1	
11		7	15	11
10	X	1	1	X

SOP

$$\Sigma_m(0, 6, 8, 13, 14) + d(3, 4, 10)$$

~~$$\bar{A}CD + AB\bar{C}\bar{D} + A\bar{B}\bar{C}\bar{D} + C\bar{D}$$~~

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

Q2) $Y = \Sigma_m(0, 1, 3, 7, 8, 9, 11, 15) + d(6, 14)$

CD \ AB	00	01	11	10
00	1			1
01	1	5		1
11	1	7	1	1
10		X	X	

SOP

The simplified equation is

$$\bar{B}\bar{C} + CD$$

Q3) $\Pi_M(3, 5, 6, 11, 13, 14, 15) + d(4, 9, 10)$

CD \ AB	00	01	11	10
00	0	X		
01	1	5	0	
11	0	7	0	X
10	2	6	0	0

POS

0 - A

1 - \bar{A}

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

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

Q4) $\Sigma_m(1, 3, 4, 5, 9, 10, 11) + \Sigma_d(6, 8)$

AB \ CD	00	01	11	10
00	0	1	12	8 X
01	1	1	13	9 1
11	3 1	7	15	11 1
10	2	6 X	14	10 1

SOP

0 - \bar{A}

1 - A

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

Q5) $F = \Sigma_m(0, 1, 4, 6, 7, 8, 9, 10, 11, 15)$

AB \ CD	00	01	11	10
00	0 1	4 1	12	8 1
01	1 1	5	13	9 1
11	3	7 1	15 1	11 1
10	2	6 1	14	10 1

SOP

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

$$F = \sum m(1, 4, 6, 7, 8, 9, 10, 11, 15)$$

AB \ CD	00	01	11	10
00	0	4 1	12	8 1
01	1 1	5	13	9 1
11	3	7 1	15 1	11 1
10	2	6 1	14	10 1

$$\overline{A}\overline{B} + BCD + \overline{A}BC + \overline{B}\overline{C}D + \overline{A}B\overline{D}$$

$$F(A, B, C, D) = \sum m(0, 4, 5, 6, 12, 13) + d(7, 15)$$

AB \ CD	00	01	11	10
00	0	4 1	12 1	8
01	1 1	5 1	13 1	9
11	3	7 X	15 X	11
10	2	6 1	14	10

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

$$F(P, Q, R, S) = \prod m(1, 2, 3, 8, 9, 10, 11, 14)$$

AB \ CD	00	01	11	10
00	0	4	12	8 1
01	1 1	5	13	9 1
11	3 1	7	15	11 1
10	2 1	6	14 1	10 1

$$\overline{AB} + \overline{BD} + A\overline{CD} + \overline{BCD} \neq A$$

$$F(W, X, Y, Z) = \sum m(2, 3, 6, 7, 8, 10, 11, 12, 14, 15)$$

AB \ CD	00	01	11	10
00	0	4	12 1	8 1
01	1	5	13	9
11	3 1	7 1	15 1	11 1
10	2 1	6 1	14 1	10 1

$$A + AD$$

$$F(A, B, C, D) = \sum m(1, 5, 6, 12, 13, 14) + d(2, 4)$$

AB \ CD	00	01	11	10
00	0	4 X	12 1	8
01	1 1	5 1	13 1	9
11	3	7	15	11
10	2 X	6 1	14 1	10

$$\overline{A}\overline{C}D + B\overline{C}D + AB\overline{D} + AB\overline{C}$$