List 1

0	0 0 0 0	✓
4	0 1 0 0	✓
8	1 0 0 0	✓
10	1 0 1 0	✓
12	1 1 0 0	✓
11	1 0 1 1	✓
13	1 1 0 1	✓
15	1 1 1 1	✓

List 2

0,4	0 x 0 0	✓
0,8	x 0 0 0	✓
8,10	1 0 x 0	
4,12	x 1 0 0	✓
8,12	1 x 0 0	✓
10,11	1 0 1 x	
12,13	1 1 0 x	
11,15	1 x 1 1	
13,15	1 1 x 1	

List 3

0,4,8,12	x x 0 0

Figure 4.36. Generation of prime implicants for $f = \sum m(0, 4, 8, 10, 11, 12, 13, 15)$.

Prime implicant	Minterm							
	0	4	8	10	11	12	13	15
p_1 = 1 0 x 0			✓	✓				
p_2 = 1 0 1 x				✓	✓			
p_3 = 1 1 0 x						✓	✓	
p_4 = 1 x 1 1					✓			✓
p_5 = 1 1 x 1							✓	✓
p_6 = x x 0 0	✓	✓	✓			✓		

(a) Initial prime implicant cover table

Prime implicant	Minterm			
	10	11	13	15
p_1	✓			
p_2	✓	✓		
p_3			✓	
p_4		✓		✓
p_5			✓	✓

(b) After the removal of essential prime implicants

Prime implicant	Minterm			
	10	11	13	15
p_2	✓	✓		
p_4		✓		✓
p_5			✓	✓

(c) After the removal of dominated rows

Figure 4.37. Selection of a cover.

List 1		
0	0 0 0 0	✓
1	0 0 0 1	✓
2	0 0 1 0	✓
8	1 0 0 0	✓
5	0 1 0 1	✓
6	0 1 1 0	✓
9	1 0 0 1	✓
12	1 1 0 0	✓
7	0 1 1 1	✓
13	1 1 0 1	✓
15	1 1 1 1	✓

List 2		
0,1	0 0 0 x	✓
0,2	0 0 x 0	
0,8	x 0 0 0	✓
1,5	0 x 0 1	✓
2,6	0 x 1 0	
1,9	x 0 0 1	✓
8,9	1 0 0 x	✓
8,12	1 x 0 0	✓
5,7	0 1 x 1	✓
6,7	0 1 1 x	
5,13	x 1 0 1	✓
9,13	1 x 0 1	✓
12,13	1 1 0 x	✓
7,15	x 1 1 1	✓
13,15	1 1 x 1	✓

List 3	
0,1,8,9	x 0 0 x
1,5,9,13	x x 0 1
8,9,12,13	1 x 0 x
5,7,13,15	x 1 x 1

Figure 4.38. Generation of prime implicants for $f = \sum m(0,2,5,6,7,8,9,13) + D(1,12,15)$.

Prime implicant	Minterm							
	0	2	5	6	7	8	9	13
p_1 = 0 0 x 0	✓	✓						
p_2 = 0 x 1 0		✓		✓				
p_3 = 0 1 1 x				✓	✓			
p_4 = x 0 0 x	✓					✓	✓	
p_5 = x x 0 1			✓				✓	✓
p_6 = 1 x 0 x						✓	✓	✓
p_7 = x 1 x 1			✓		✓			✓

(a) Initial prime implicant cover table

Prime implicant	Minterm					
	0	2	5	6	7	8
p_1 = 0 0 x 0	✓	✓				
p_2 = 0 x 1 0		✓		✓		
p_3 = 0 1 1 x				✓	✓	
p_4 = x 0 0 x	✓					✓
p_5 = x x 0 1			✓			
p_6 = 1 x 0 x						✓
p_7 = x 1 x 1			✓		✓	

(b) After the removal of columns 9 and 13

Prime implicant	Minterm					
	0	2	5	6	7	8
p_1	✓	✓				
p_2		✓		✓		
p_3				✓	✓	
p_4	✓					✓
p_7			✓		✓	

(c) After the removal of rows p_5 and p_6

Prime implicant	Minterm	
	2	6
p_1	✓	
p_2	✓	✓
p_3		✓

(d) After including p_4 and p_7 in the cover

Figure 4.39. Selection of a cover.

Prime implicant	Minterm 0	3	10	15
p_1 = 0 0 x x	✓	✓		
p_2 = x 0 x 0	✓		✓	
p_3 = x 0 1 x		✓	✓	
p_4 = x x 1 1		✓		✓
p_5 = 1 x 1 x			✓	✓

(a) Initial prime implicant cover table

Prime implicant	Minterm 0	15
p_1	✓	
p_2	✓	
p_4		✓
p_5		✓

(b) After including p_2 in the cover

Prime implicant	Minterm 0	3	10	15
p_1	✓	✓		
p_2	✓		✓	
p_4		✓		✓
p_5			✓	✓

(c) After excluding p_2 from the cover

Figure 4.40. Selection of a cover for the function in Figure 4.15.