

Solution:

$$w(A, B, C, D) = \Sigma(2, 12, 13)$$

$$x(A, B, C, D) = \Sigma(7, 8, 9, 10, 11, 12, 13, 14, 15)$$

$$y(A, B, C, D) = \Sigma(0, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 15)$$

$$z(A, B, C, D) = \Sigma(1, 2, 8, 12, 13)$$

Using K Map,

For w ,

$AB \setminus CD$	00	01	11	10
00				1
01				
11	1	1		
10				

$$\therefore w = ABC' + A'B'CD'$$

For x ,

$AB \setminus CD$	00	01	11	10
00				
01			1	
11	1	1	1	1
10	1	1	1	1

$$\therefore x = A + BCD$$

For y ,

$AB \setminus CD$	00	01	11	10
00	1		1	1
01	1	1	1	1
11			1	
10	1	1	1	1

$$\therefore y = CD + A'B + AB' + A'D'$$

Q. 2, AB\CD 00 01 11 10

00		1		1
01				
11	1	1		
10	1			

$$z = ABC' + AC'D' + A'B'C'D + A'B'CD'$$

$$= W + AC'D' + A'B'C'D'$$

Implementation of given functions using PLA.

No. of buffer = 3.

No. of programmable AND gate = 10

No. of programmable OR gate = 4

