

Digital Logic Design

Quiz# 4

Solution

1. A Boolean function is given as $F(a, b, c, d) = ac' + b'd + a'cd + abcd$

(a) Write down the function F in Σ notation.

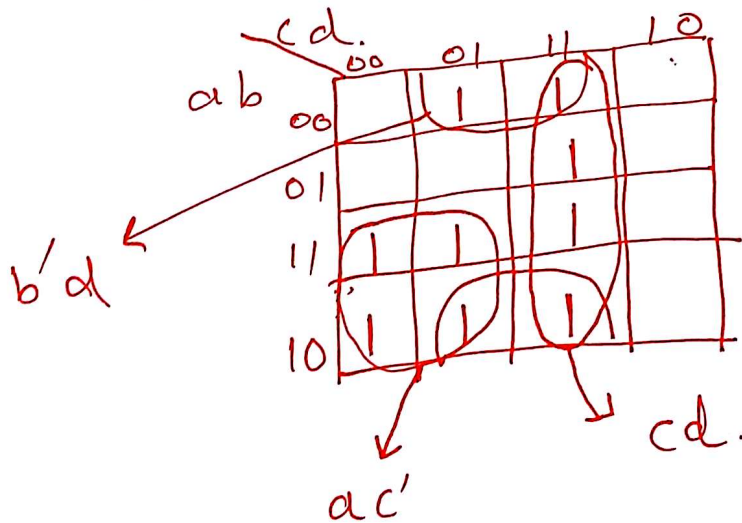
[5]

(b) Optimize the Boolean expression F using K-map.

[5]

0 0 0 0	Decimal	0 0 0 1	Decimal	0 0 1 1	Decimal	1 1 1 1	Decimal
1 0 0 0	8	0 0 0 1	1	0 0 1 1	3		15
1 0 0 1	9	0 0 1 1	3	0 1 1 1	7		
1 1 0 0	12	1 0 0 1	9				
1 1 0 1	13	1 0 1 1	11				

$$F = \Sigma m(1, 3, 7, 8, 9, 11, 12, 13, 15)$$



(b). $F(a, b, c, d) = ac' + b'd + cd$