

### Tutorial 5

1. Write the simplified Boolean function for the following K-Map.

a.

A \ BC	00	01	11	10
	0	1	0	1
0	1	0	0	1
1	1	0	0	1

b.

cd \ ab	00	01	11	10
	00	01	11	10
00	1	X	X	1
01	X			1
11				
10	1			X

2. Simplify the below function expressions using K-Map (Note that A' denotes  $\bar{A}$ )

a.  $F(A,B) = A'B' + A'B + AB$

b.  $F(A,B,C) = A'B'C' + A'BC' + AB'C' + ABC' + ABC$

c.  $F(A,B,C,D) = A'B'C'D' + A'B'CD' + A'BCD' + A'BCD + AB'C'D' + AB'CD'$

3. Consider the K-Map given below and answer the question.

A \ BC	00	01	11	10
	0	1	0	1
0	1	1		1
1				1

a. Write the Boolean function (F) expressed in above K-Map.

b. Simplify the function (F) using K-Map.

c. Consider that the minterm  $\bar{A}\bar{B}\bar{C}$  is a don't care minterm.

d. Indicate this don't care minterm in the same K-map.

e. Simplify the function (F) again with the don't care minterm.