

Guided Work Series N° 03

Exercise 1:

Demonstrate that:

1. $x + y = x + \bar{x} \cdot y$
2. $\overline{x + y} = \bar{x} \cdot \bar{y}$
3. $(x + y)(\bar{x} + z)(y + z) = (x + y)(\bar{x} + z)$

Exercise 2:

Let the following functions:

1. $f(A, B, C, D) = A\bar{B} + \bar{C}D + CD$
 2. $f(A, B, C, D) = \bar{A}B(A + \bar{B} + \bar{C} + D) + \bar{B}D$
 3. $f(A, B, C, D) = ((A + \bar{B})C + \bar{D})A\bar{B} + C\bar{D}(\bar{D} + \bar{A}(B + \bar{C}D))$
- ☞ Give the value of $f(0,1,0,1)$.

Exercise 3:

Demonstrate that:

1. $(\bar{B} + C)(\bar{B} + D) = \bar{B} + CD$
2. $\bar{X}Z + \bar{X}Y + XZ = \bar{X}YZ + \bar{X}\bar{Y}Z + \bar{X}Z$

Exercise 4:

Consider the functions given by the following truth tables:

$P(A, B, C)$

A	B	C	P
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	0

$Q(A, B, C)$

A	B	C	Q
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	0

1. Write **P** and **Q** in the 1st normal form: sum of minterms.
2. Write **P** and **Q** in the 2nd normal form: product of Maxterms.