

Assignment-1

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1 Question

Derive a Canonical POS expression for a Boolean function FN, represented by the following truth table :

X	Y	Z	FN(X,Y,Z)
0	0	0	1
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1

2 Answer

The Canonical POS expression for the Boolean function FN can be represented as: $\pi M(2,3,5,6)$ and the expression is as follows:-

The Boolean Function is:

$$(X + Y' + Z).(X + Y' + Z').(X' + Y + Z').(X' + Y' + Z)$$

Now, the reduced or non-canonical form of the expression is as follows:-

The Boolean Function is:

$$(X + Y')(Y' + Z)(X' + Y + Z')$$

The reduced expression was obtained using the following k-map.

	YZ			
X	00	01	11	10
0	1	1	0	0
1	1	0	1	0