DISCRETE STRUCTURES – QUIZ #7

Marasigan, Vem Aiensi A.
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Use a table to express the values of each of these Boolean functions.

a. $\mathbf{F(x, y, z) = \bar{x}\, y}$

x	y	z	$\bar{x}$	$\bar{x}\, y$
1	1	1	0	0
1	1	0	0	0
1	0	1	0	0
1	0	0	0	0
0	1	1	1	1
0	1	0	1	0
0	0	1	1	1
0	0	0	1	0

b. $\mathbf{F(x, y, z) = x + yz}$

x	y	z	yz	$x + yz$
1	1	1	1	1
1	1	0	0	1
1	0	1	0	1
1	0	0	0	1
0	1	1	1	1
0	1	0	0	0
0	0	1	0	0
0	0	0	0	0

c. $\mathbf{F(x, y, z) = x\bar{y} + \overline{(xyz)}}$

x	y	z	$\bar{y}$	$x\bar{y}$	xyz	$\overline{(xyz)}$	$x\bar{y} + \overline{(xyz)}$
1	1	1	0	0	1	0	0
1	1	0	0	0	0	1	1
1	0	1	1	1	0	1	1
1	0	0	1	1	0	1	1
0	1	1	0	0	0	1	1
0	1	0	0	0	0	1	1
0	0	1	1	0	0	1	1
0	0	0	1	0	0	1	1

d. $\mathbf{F(x, y, z) = x\,(yz + \bar{y}\,\bar{z})}$

x	y	z	$\bar{y}$	$\bar{z}$	yz	$\bar{y}\,\bar{z}$	$yz + \bar{y}\,\bar{z}$	$\mathbf{x\,(yz + \bar{y}\,\bar{z})}$
1	1	1	0	0	1	0	1	1
1	1	0	0	1	0	0	0	0
1	0	1	1	0	0	0	0	0
1	0	0	1	1	0	1	1	1
0	1	1	0	0	1	0	1	0
0	1	0	0	1	0	0	0	0
0	0	1	1	0	0	0	0	0
0	0	0	1	1	0	1	1	0