Bodea Mihaela Alexandra S11

A.

$$g(x,y,z) = x\bar{y} \vee \bar{y}\bar{z} \vee xyz \vee \bar{x}yz.$$

$$x\bar{y} = x\bar{y}\bar{z} \vee x\bar{y}z$$

$$\bar{y}\bar{z} = x\bar{y}\bar{z} \vee \bar{x}\bar{y}\bar{z}$$

$$g(x,y,z) = x\bar{y}\bar{z} \vee x\bar{y}z \vee xyz \vee \bar{x}yz \vee \bar{x}\bar{y}\bar{z}$$

X	y	z	g
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	1

$$DCF(g) = x\bar{y}\bar{z} \vee x\bar{y}z \vee xyz \vee \bar{x}yz \vee \bar{x}\bar{y}\bar{z}$$

$$CCF(g) = (x^0 \vee y^0 \vee z^1) \wedge (x^0 \vee y^1 \vee z^0) \wedge (x^1 \vee y^1 \vee z^0)$$

$$CCF(g) = (x \vee y \vee \bar{z}) \wedge (x \vee \bar{y} \vee z) \wedge (\bar{x} \vee \bar{y} \vee z) =$$
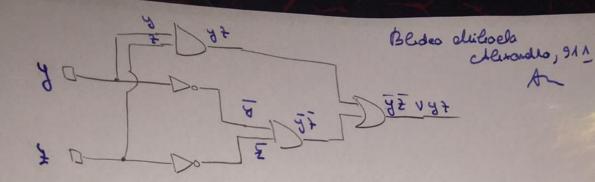
$$DCF = m_4 \vee m_5 \vee m_7 \vee m_3 \vee m_0$$

The DCF is build by using the minterms corresponding to the values 1 of the function.

The CCF is build by using the maxterms corresponding to the values 0 of the function.

$max_1 = m_0 \vee m_4 = \bar{y}\bar{z} \rightarrow$ simple factorization

$max_2 = m_4 \vee m_5 = x\bar{y} \rightarrow$ simple factorization

$max_3 = m_5 \vee m_7 = xz \rightarrow - \text{''} \underline{\quad\quad\quad}$

$max_4 = m_3 \vee m_7 = yz \rightarrow - \text{''} \underline{\quad\quad\quad}$

$M(g) = \{max_1, max_2, max_3, max_4\} \rightarrow$ maximal monoms

$CC(g) = \{max_1, max_4\} \rightarrow$ central monoms

$CC(g) \ne M(g)$ and $CC(g) \ne \emptyset \Rightarrow 2^{nd}$ case of simplification algorithm

$g = max_1 \vee max_4$

All the minterms are covered by the central monoms

$\Rightarrow$ We have a unique simplified form

$g^S(x, y, z) = max_1 \vee max_4 = \bar{y}\bar{z} \vee yz$

2.

Bladeo Mihaela
Alexandra, 911_
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$$CC\mp(g) = M_1 \wedge M_2 \wedge M_6$$

X \ yz	00	01	11	10
0		M_1		M_2
1				M_6

$$max_1 = M_2 \vee M_6$$

$$max_2 = M_1$$

$$M(g) = \{ max_1, max_2 \}$$

$$CC(g) = \{ max_1, max_2 \}$$

3.