

פתרון תרגיל בית מס' 5:

$$F(A, B, C, D) = \bar{A}\bar{B}\bar{C}\bar{D} + \bar{A}\bar{B}C\bar{D} + \bar{A}B\bar{C}\bar{D} + \bar{A}B\bar{C}D + \bar{A}B\bar{C}\bar{D} + \bar{A}B\bar{C}D + \bar{A}B\bar{C}\bar{D} + \bar{A}B\bar{C}D \quad (1)$$

$$F(A, B, C, D) = (A+B+C+\bar{D})(A+\bar{B}+C+\bar{D})(\bar{A}+B+C+\bar{D})(\bar{A}+\bar{B}+C+\bar{D})(\bar{A}+B+\bar{C}+\bar{D})(\bar{A}+\bar{B}+\bar{C}+\bar{D})$$

$$Y(A, B, C, D) = \overline{A \oplus B} + \overline{B+C} + \overline{C \cdot D} \quad (2)$$

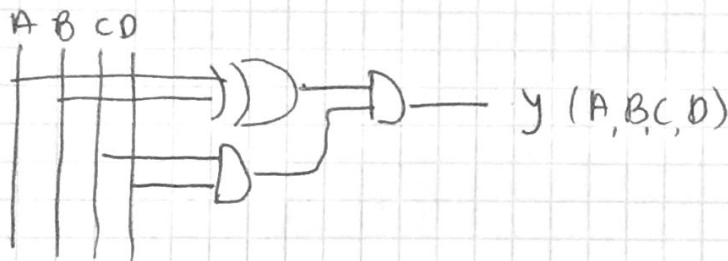
$$\overline{A \oplus B} \cdot \overline{B+C} \cdot \overline{C \cdot D}$$

$$(A \oplus B) \cdot (B+C) (CD)$$

$$(\bar{A}B + A\bar{B}) (BCD + \cancel{C}CD)$$

$$(\bar{A}B + A\bar{B}) (CD(B+1))$$

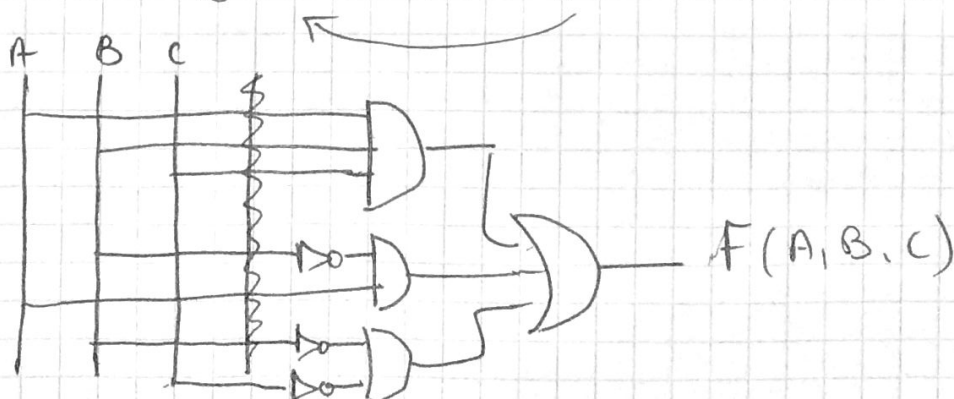
$$(\bar{A}B + A\bar{B}) (CD) = (A \oplus B) (CD)$$



$$\overline{ABC + (\bar{B} + \bar{C})} \cdot \overline{(\bar{A}\bar{B} + \bar{B}\bar{C})} \quad (3)$$

$$\overline{ABC + (\bar{B} + \bar{C})} + \overline{(\bar{A}\bar{B} + \bar{B}\bar{C})}$$

$$ABC + \bar{B} \cdot \bar{C} + A\bar{B} + \bar{B}\bar{C} = ABC + A\bar{B} + \bar{B}\bar{C}$$



$$F(A, B, C) = \overline{(AB \cdot \overline{BC})} \cdot (\overline{B+C} + \overline{BC})$$

$$(\overline{AB} + \overline{BC}) \cdot (\overline{B} \cdot \overline{C} + \overline{B} + \overline{C})$$

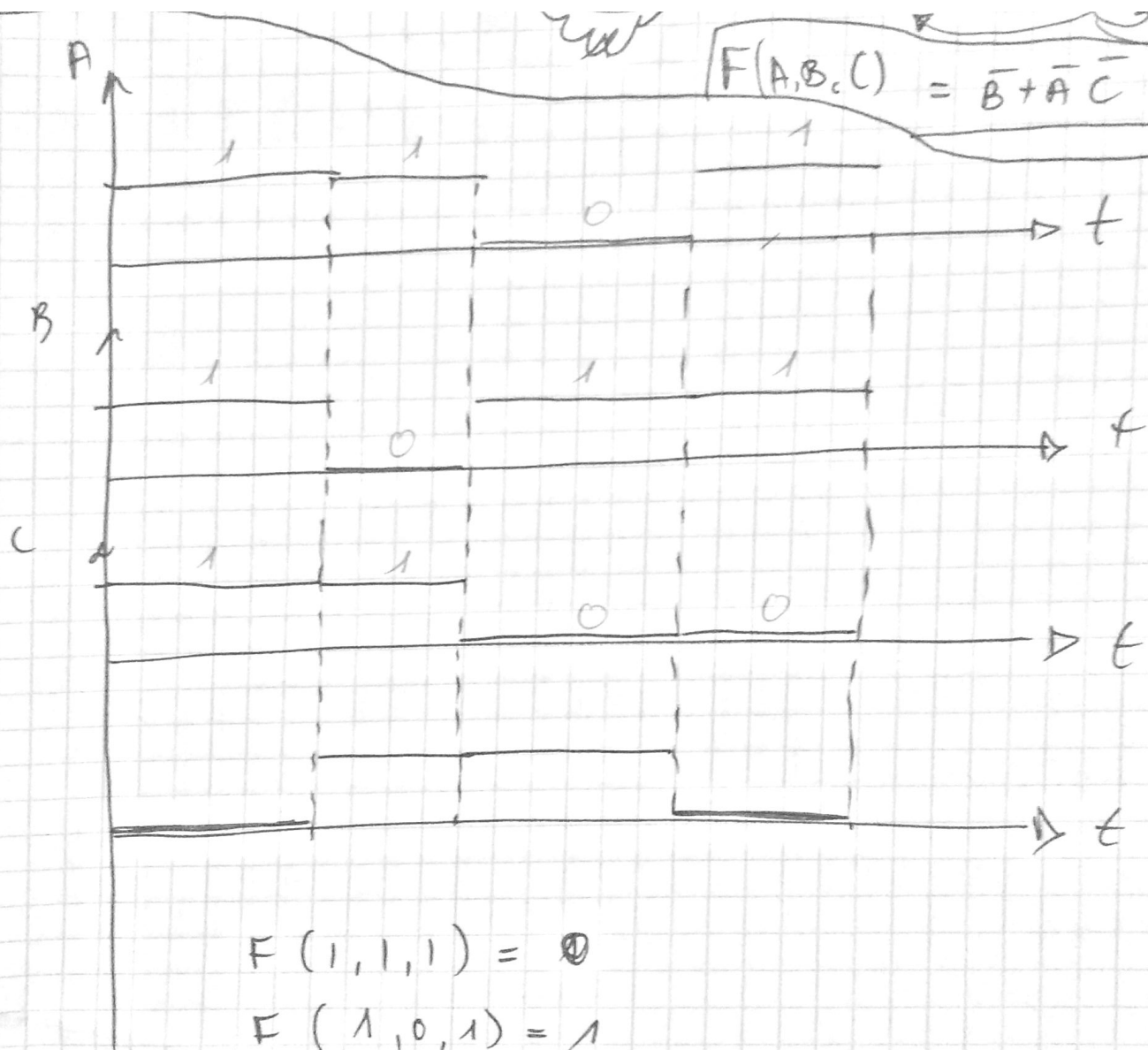
$$(\overline{A} + \overline{B} + \overline{BC}) \cdot (\overline{B} \overline{C} + \overline{B} + \overline{C})$$

$$(\overline{A} + \overline{B} + \overline{C}) (\overline{B} + \overline{C}) = \overline{A} \overline{B} + \overline{A} \overline{C} + \underbrace{\overline{B} \overline{B}}_{\overline{B}} + \overline{B} \overline{C} + \overline{B} \overline{C} + \underbrace{\overline{C} \overline{C}}_0$$

$$\cancel{\overline{A} \overline{B}} + \overline{A} \overline{C} + \overline{B} + \cancel{\overline{B} \overline{C}} + \cancel{\overline{B} \overline{C}} =$$

$$F(A, B, C) = \overline{A} \overline{C} + \overline{B}$$

$$F(A, B, C) = \bar{B} + \bar{A} \bar{C}$$



$$F(1, 1, 1) = 0$$

$$F(1, 0, 1) = 1$$

$$F(0, 1, 0) = 1$$

$$F(1, 1, 0) = 0$$