Subject: تمرین سری ۱ مدارهای منطقی - تاریخ ۹۳/۱۲/۱۲

Year. Month. Date. ( )

a) $x'y + xy' + xy + x'y' = x' + x = 1$ (1

b) $(x+y)(x+y') = x + xy' + xy + 0 = x$

c) $a'b(d' + c'd) + b(a + a'cd) = a'bd' + a'bc'd + ab + a'bcd$

$= a'bd + a'bd' + ab = a'b + ab = b$

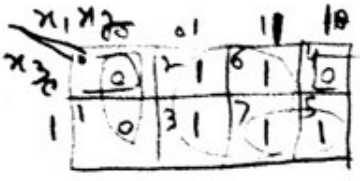
2) a) $(xy + z)(y + xz) = xy + xyz + zy + xz = \Sigma mi$

$(\bar{x} + \bar{y})(\bar{x} + \bar{y} + \bar{z})(\bar{z} + \bar{y})(\bar{x} + \bar{z}) = \Sigma Mi$

b) $y'z + wxy' + wxz' + w'x'z = \Sigma mi$

$(y + \bar{z})(\bar{w} + \bar{x} + y)(\bar{w} + \bar{x} + z)(w + x + \bar{z}) = \Sigma Mi$

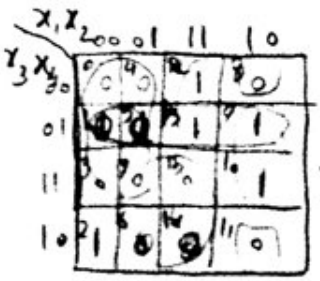
3) a) $F(A,B,C) = \Sigma m(3,4,6,7,8)$



mi: $F = x_2 + x_1x_3$

Mi: $F = (\bar{x}_1 + \bar{x}_2)(\bar{x}_2 + \bar{x}_3)$

b) $F(A,B,C,D) = \Sigma m(2,9,10,12,13) + d(1,5,14)$



Σmi $F = \bar{x}_3x_4 + x_1x_2\bar{x}_3 + x_1\bar{x}_2x_4 + \bar{x}_1\bar{x}_2x_3\bar{x}_4$

ΣMi $f = (\bar{x} + \bar{x}_3)(\bar{x}_1 + x_4)(x_2 + x_3)(x + \bar{x}_2 + \bar{x}_4)$

PdPCO

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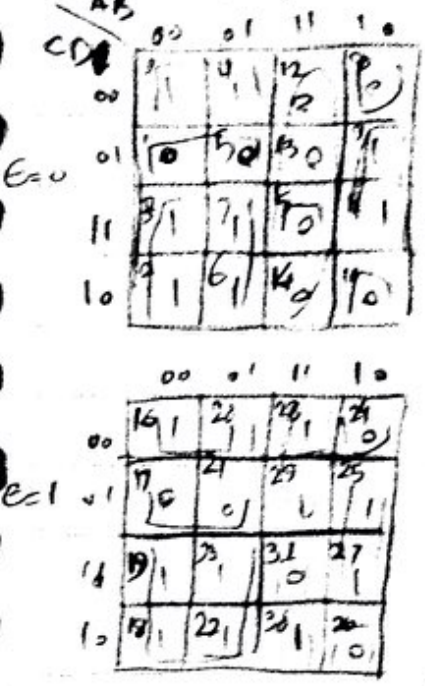
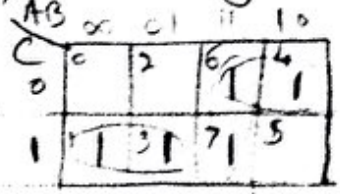
c) $F(A,B,C,D,E) = \pi M(1,5,8,10,12,13,14,15,17,21,24,26,31)$



$F = \Sigma m_i = \bar{A}\bar{C}\bar{D} + \bar{A}C + A\bar{B}D + AB\bar{C}E + AB\bar{D}E$

$F = \Sigma M_i = (\bar{A}+\bar{C}+D)(A+B+\bar{E})(A+\bar{B}+\bar{D})(A+B+C+D)$

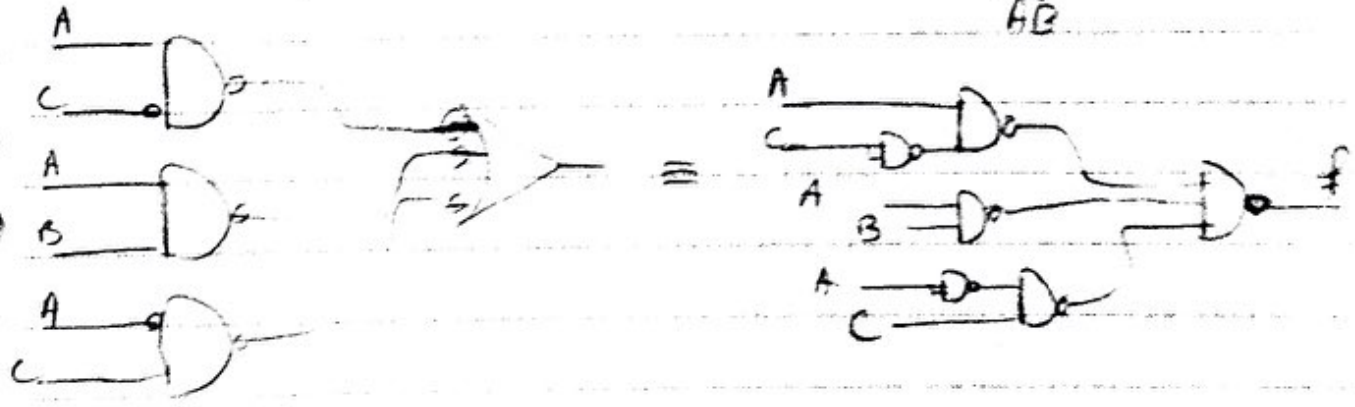
4) a) only nand $F(A,B,C,D) = \Sigma m(1,3,4,6,7)$



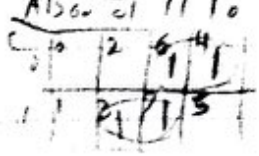
$F = A\bar{C} + AB + \bar{A}C$

$\bar{A}-\bar{B} = \overline{AB}$

$\overline{\bar{A}\bar{B}}$



b) only nor $F(A,B,C) = \Sigma m(3,4,6,7)$



$F = \Sigma m_i = BC + A\bar{C} \rightarrow \bar{f} = (\bar{B}-\bar{C})(\bar{A}+C)$