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Assignment -3

problem - 2.10 + 5x + 5x) (5x + 5x + 5x) (5x + 5x + 5x)

Solm! Let f = m(1,2,3,4,5,6,7) tologinom od mos +I

The comonical sum-of-product for fix given by  $f = \overline{\chi_1}\overline{\chi_2}\chi_3 + \overline{\chi_1}\chi_2\overline{\chi_3} + \overline{\chi_1}\chi_2\overline{\chi_3} + \chi_1\overline{\chi_2}\overline{\chi_3} + \chi_1\overline{\chi_2}\overline{\chi_3$ 

(1+x+x)(1+x+1x)(1+x+1)x122x3+x1x2x3

It can be manipulated as follows:

 $f = (\chi_{1} \overline{\chi}_{2} \overline{\chi}_{3} + \chi_{1} \overline{\chi}_{2} \chi_{3} + \chi_{1} \chi_{2} \overline{\chi}_{3} + \chi_{1} \chi_{2} \overline{\chi}_{3} + \chi_{1} \chi_{2} \overline{\chi}_{3} + (\overline{\chi}_{1} \chi_{2} \overline{\chi}_{3} + \overline{\chi}_{1} \chi_{2} \overline{\chi}_{3} + \overline{\chi}_{1} \chi_{2} \overline{\chi}_{3} + \chi_{1} \chi_{2} \overline{\chi}_{3} + \chi_{1} \chi_{2} \chi_{3}) + (\overline{\chi}_{1} \overline{\chi}_{2} \chi_{3} + \overline{\chi}_{1} \chi_{2} \chi_{3} + \overline{\chi}_{1} \chi_{2} \chi_{3}) + (\overline{\chi}_{1} \overline{\chi}_{2} \chi_{3} + \overline{\chi}_{1} \chi_{2} \chi_{3} + \overline{\chi}_{1} \chi_{2} \chi_{3} + \overline{\chi}_{1} \chi_{2} \chi_{3} + \overline{\chi}_{1} \chi_{2} \chi_{3})$ 

=  $\chi_1(\bar{\chi}_2\bar{\chi}_3 + \bar{\chi}_2\chi_3 + \chi_2\bar{\chi}_3 + \chi_2\chi_3) + \chi_2(\bar{\chi}_1\bar{\chi}_3 + \bar{\chi}_1\chi_3 + \chi_1\bar{\chi}_3 + \chi_$ 

=  $\chi_1(\bar{\chi}_2(\bar{\chi}_3+\chi_3)+\chi_2(\bar{\chi}_3+\chi_3))+\chi_2(\bar{\chi}_1(\bar{\chi}_3+\chi_3))+\chi_1(\bar{\chi}_3+\chi_3))+\chi_2(\bar{\chi}_1(\bar{\chi}_3+\chi_3))+\chi_3(\bar{\chi}_1(\bar{\chi}_2+\chi_2)+\chi_1(\bar{\chi}_2+\chi_2))$ =  $\chi_1+\chi_2+\chi_3$ 

Problem - 2.11 Name - Samuer Islam Almed Solno The canonical product-of-sums for f is  $f = (x_1 + x_2 + x_3)(x_1 + x_2 + \overline{x_3})(x_1 + \overline{x_2} + \overline{x_3})(x_1 + \overline{x_2} + \overline{x_3})$  $(\bar{\chi}_1 + \chi_2 + \chi_3)(\bar{\chi}_1 + \chi_2 + \bar{\chi}_3)(\bar{\chi}_1 + \bar{\chi}_2 + \bar{\chi}_3)$ It can be manipulated an follows:  $f = (\chi_1(1+\chi_2+\chi_3)(1+\chi_2+\tilde{\chi}_3)(1+\tilde{\chi}_2+\tilde{\chi}_3)(1+\tilde{\chi}_2+\tilde{\chi}_3)(1+\tilde{\chi}_2+\tilde{\chi}_3)$  $(\chi_{2}(\chi_{1}+1+\chi_{3})(\chi_{1}+1+\chi_{3})(\bar{\chi}_{1}+1+\chi_{3})(\bar{\chi}_{1}+1+\bar{\chi}_{3}))$  $(\chi_3(\chi_1+\chi_2+)(\chi_1+\chi_2+1)(\chi_1+\chi_2+1)(\chi_1+\chi_2+1)$  $= (\chi_{1}, 1, 1, 1, 1) (\chi_{2}, 1, 1, 1, 1) (\chi_{3}, 1, 1, 1, 1)$ ナシメニンスンスを大きなメストランスメストランスストランスストラ Problem - 2.12 \_ Solve Usino algebraic manipulation for the minimum sum-of-products expression: f= スノス3 + スノス2 + スノメ2×3 + スノス2×3 + (= x, (72+ x2) 23 + x, x2 (73+ x3) + 7, x2 x3+ (x)(x2+x2)+x1(x2+x3))

= 7, \(\frac{7}{2}\tag{3} + \chi\_1\chi\_2\chi\_3 + \chi\_1\chi\_2\chi\_3 + \chi\_1\chi\_2\chi\_3 + \chi\_1\chi\_2\chi\_3 + \chi\_1\chi\_2\chi\_3 + \chi\_1\chi\_2\chi\_3 + \chi\_1\chi\_2\chi\_3

=  $\chi_1 \chi_3 + (\chi_1 + \bar{\chi}_1) \chi_2 \chi_3 + (\chi_1 + \bar{\chi}_1) \bar{\chi}_2 \bar{\chi}_3$ 

= 7, ×3 + ×2×3 + 72×3 ×+× (x+x+x)=

## problem-2.20

Som: The simplest sum-of-products implementation of the function is

f= 7,7273+27273+x,7273+x,7273+7,7273

 $= (\overline{\chi}_1 + \chi_1) \chi_2 \chi_3 + \chi_1 (\overline{\chi}_2 + \chi_2) \overline{\chi}_3$ 

 $= \chi_2 \chi_3 + \chi_1 \overline{\chi}_3$ 

## problem - 2.22

2010: The simplest product-of-sums implementation of the function is,

 $f = (x_1 + x_2 + x_3)(x_1 + \bar{x}_2 + x_3)(\bar{x}_1 + x_2 + \bar{x}_3)$   $= ((x_1 + x_3) + x_2)((x_1 + x_3) + \bar{x}_2)(\bar{x}_1 + x_2 + \bar{x}_3)$ 

= (7,+73)(2,+72+23)

problem- 2.23 KOKIN + SKOKIN + SKOKIN = Solno The simplest product-of-sum implementation of the function to the sex ( set is ) +  $f = (x_1 + x_2 + x_3)(x_1 + x_2 + \overline{x_3})(\overline{x_1} + x_2 + \overline{x_3})$  $(\overline{\lambda}_1 + \overline{\lambda}_2 + \overline{\lambda}_3)$  $((\overline{x}_1 + \overline{x}_3) + \overline{x}_2)$ . Si nothing of to =  $(\chi_1 + \chi_2)(\chi_3 + \chi_3)(\chi_1 + \chi_3)(\chi_2 + \chi_2)$ = (2,+x2)(2,+23). (x+x) = = 1/2/13 + 21/23 + 21/23 = 1

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tion of the function of the roit

= (x1+x1+x1)(x1+x2+x3)(x1+x1+x)= ( 18 1 28 1 8 3 ( 18 1( 18 1( 18