Department of Electronics Engineering
National Chiao Tung University

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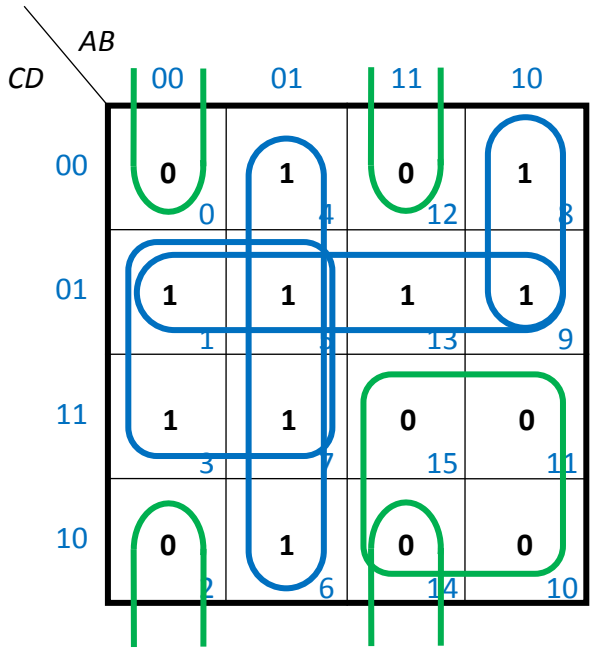
Logic design (2016 spring)

Quiz # 5

Name:_____ID:_____

1. (40%) Given $f(A,B,C,D) = C'D + A'CD + A'BD' + AB'C'D'$
   Using a Karnaugh map to find the minimum sum of products and the minimum product of sums.

Ans:



$f = A'B + A'D + C'D + AB'C'$

$= (A'+ C')(A'+B'+D)\ (A+B+D)$

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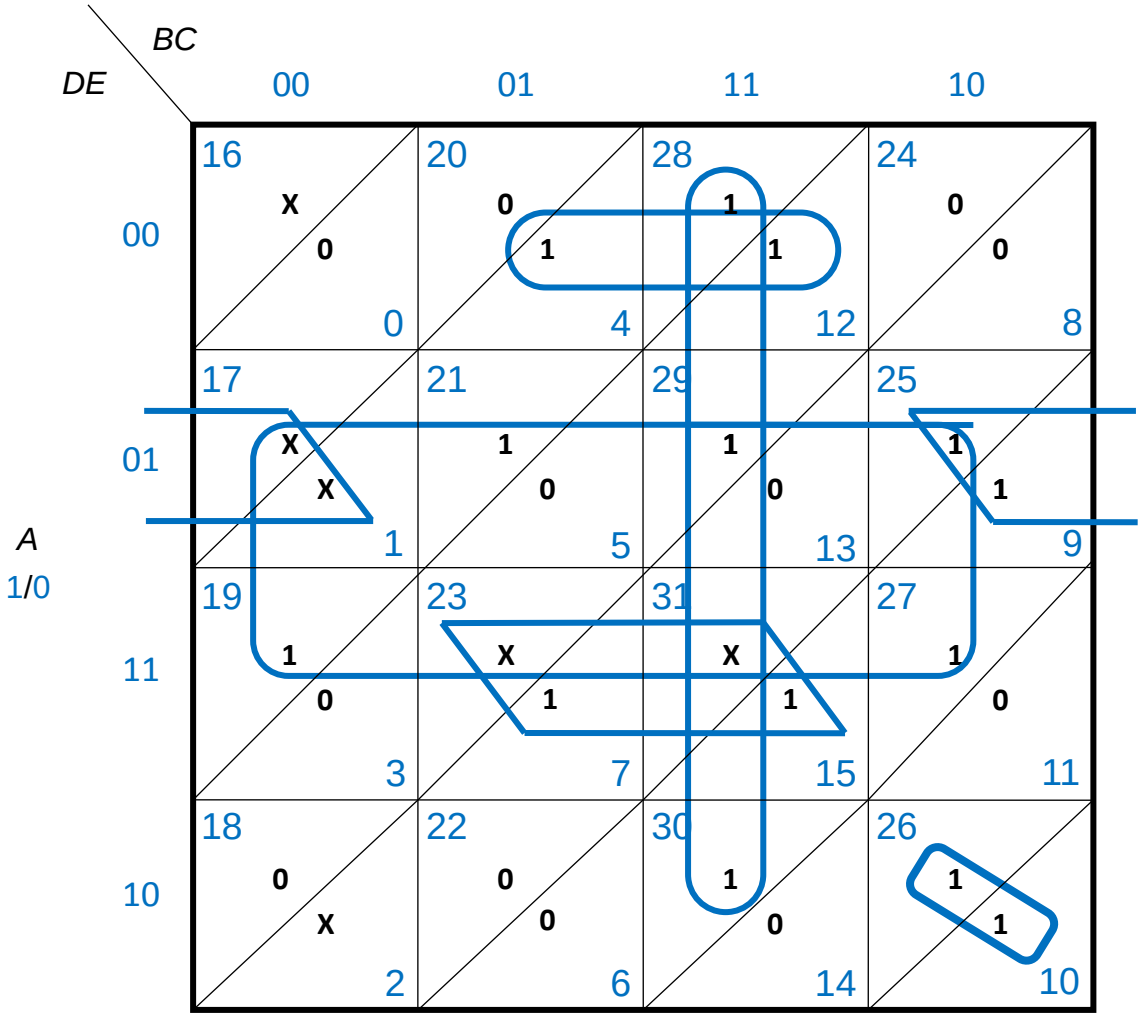
2. (60%) Given $f(A,B,C,D,E) = \Sigma\, m(4, 7, 9, 10, 12, 15, 19, 21, 25, 26, 27, 28, 29, 30) + \Sigma\, d(1, 2, 16, 17, 23, 31)$. Using a Karnaugh map to find the minimum sum of products expression and underline essential prime implicants in your answer.

Ans:



$f = \underline{AE} + ABC + \underline{CDE} + \underline{C'D'E} + \underline{A'CD'E'} + BC'DE'$