Digital Logic Design

Problem Set #3

Due Date: 1400/08/04 - 23:59

1. Obtain the equal complex CMOS representation of these equations with simplification. Use as few transistors as possible. *(30 points)*
   a) $Y = ((A + B)(C + D)(E + F + GH))'$
   b) $Y = (A + B)' + A'C'$

2. Minimize the functions below using the K-map. (Nelson, P3.32) *(30 points)*
   a) $f(A, B, C, D, E) = \prod_M(1,4,6,7,9,12,15,17,20,21,22,23,28,31)$
   b) $f(A, B, C, D) = \sum m(1,3,4,5,6,7,9,11,12,13,14,15)$

3. Consider the functions below: *(40 points)*
   a) $f(a, b, c, d, e) = \sum_m(1,4,6,7,9,10,12,15,17,20,23,25,26,27,28,30,31).d(8,16,21,22)$
   b) $f(a, b, c, d, e) = \prod_M(0,1,2,3,5,10,16,17,18,19,24,26).d(7,9,11,21,27)$

   3.1. Obtain minimum SOP using K-map for both functions.
   3.2. Obtain minimum POS using K-map for both functions.

Good Luck!
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Do not hesitate to ask your question
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