

# Digital Logic Design

## Problem Set #2

Due Date: 1400/07/26 - 23:59



1. Assume the following pairs of numbers a, b.
  - i) Convert A, B to binary assuming a sign & magnitude number system with 8 bits (1 bit for sign and 7 bits for magnitude). (10 points)
  - ii) Calculate  $A - B$  for each of the following pairs. (10 points)
  - iii) Calculate  $A + B$  for each of the following pairs. (10 points)
    - a)  $A = -47$ ,  $B = -28$
    - b)  $A = -7$ ,  $B = 19$
2. Obtain the equal complex CMOS representation of these equations without any simplification. (40 points)
  - a.  $Y = (A'B' + C)D'$
  - b.  $Y = ((A + B)(A + C)(BD'))'$
  - c.  $Y = ((AB)(D + C))'$
  - d.  $Y = ((AC)(B + D)(E + FG) + H)'$
3. Use the K-map to expand the following POS functions into canonical form (i.e. SPOS). (Nelson, P3.5) (30 points)
  - a)  $f(A, B, C, D) = (B + \bar{C})(\bar{B} + D)$
  - b)  $f(A, B, C) = (A + \bar{C})(\bar{A} + C)(C + \bar{B})$

Good Luck!

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Do not hesitate to ask your question  
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