Digital Logic Design

Problem Set #5

Due Date: 1400/9/1

1. Design a full adder module with data inputs A and B, carry input C_{in}, sum output S, and carry output C_{out} using two 4-to-1 multiplexers. *(20 points)*

2. Design a logic circuit that multiplies two 3-bit numbers, $(a_2a_1a_0)_2$ and $(b_2b_1b_0)_2$, using only NAND gates. The product should be a 6-bit number $(p_5p_4p_3p_2p_1p_0)_2$ *(30 points)*

3. Design a 16-to-4 priority encoder by cascading enough 74148 IC's. *(25 points)*

4. Design a 16bit ALU by cascading enough 74181 ALUs. Feel free to use any component you need. (hint: you may need a 74182 IC). *(25 points)*

Good Luck!

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Do not hesitate to ask your question
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