1. Please discuss the advantages and disadvantages of the following IC design styles: (1) custom design; (2) standard cell design; (3) FPGA.

2. Please discuss the advantages and disadvantages of those two implementation approaches: (1) FPGA (2) ASIC.

3. Please discuss the advantages and disadvantages of those two hardware description languages: (1) Verilog (2) VHDL.

4. Please write the symbol and truth table of Basic Gates – AND, OR, NOT, NAND, NOR.

5. Derive the truth table for the function $f(x_1, x_2, x_3, x_4) =$

   \[ x_1 \bar{x}_3 \bar{x}_4 + x_2 \bar{x}_3 x_4 + x_1 \bar{x}_2 \bar{x}_3 \]

6. Use DeMorgan’s theorem to implement the sum of products of problem 5 using only NAND and NOR gates. (Hint: Read examples 2.6 and 2.7 in the supplemental materials).