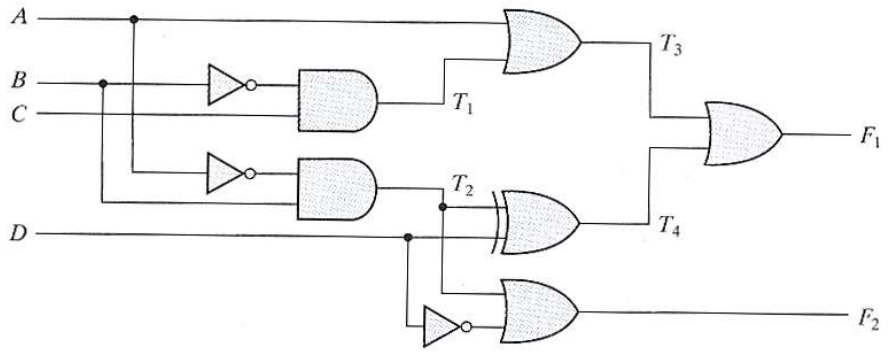
Homework #5

4.1 Consider the combinational circuit



Derive the Boolean expressions for T_1 through T_4. Evaluate the outputs F_1 and F_2 as a function of the four inputs.

4.4 Design a combinational circuit with three inputs and one output.

(a)* The output is 1 when the binary value of the inputs is less than 3 and greater than 6. The output is 0 otherwise.

4.8 Design a code converter that converts a decimal digit from

(a)* The 8, 4, –2, –1 code to BCD.

4.14* Assume that the exclusive-OR gate has a propagation delay of 10 ns and that the AND or OR gates have a propagation delay of 5 ns. What is the total propagation delay time in the four-bit adder of Fig. 4.12?

4.18 Design a combinational circuit that generates the 9's complement of a

(a)* BCD digit.