

4.2 Obtain the simplified Boolean expressions for output F and G in terms of the input variables in the circuit of Fig. P4.2.

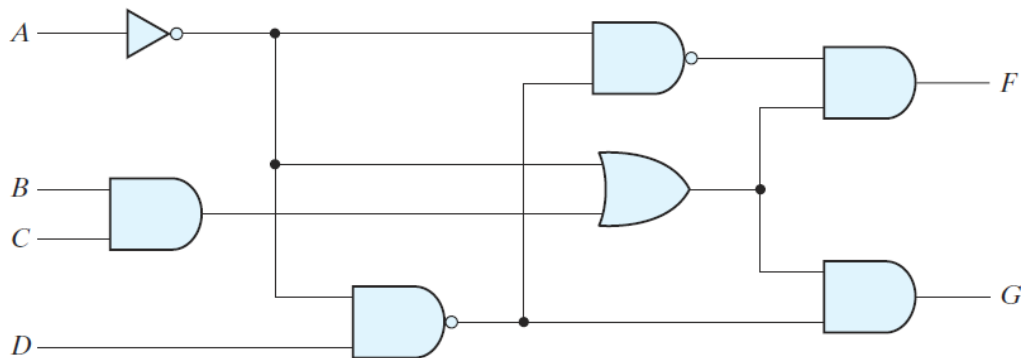


FIGURE P4.2

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. The output is 0 otherwise.

4.12 Design a full-subtractor circuit with three inputs x , y , B_{in} and two outputs $Diff$ and B_{out} . The circuit subtracts $x - y - B_{in}$, where B_{in} is the input borrow, B_{out} is the output borrow, and $Diff$ is the difference

4.26 Construct a 4-to-16-line decoder with five 2-to-4-line decoders with enable.

4.32 Implement the following Boolean function with a multiplexer

(b) $F(A, B, C, D) = \prod(2, 6, 11)$

4.35 Implement the following Boolean function with a 4x1 multiplexer and external gates.

(a) $F(A, B, C, D) = \sum(1, 3, 4, 11, 12, 13, 14, 15)$