ELEC 418 Test 2 Review

Practice Questions:

1. Perform the following multiplication using the 4-bit two's complement floating-point format. Normalize the result and verify your answer in base 10.

\((-5/8 \times 2^{-3}) \times (-1/4 \times 2^4) = ?\)

2. Given the SM Chart from Problem 5.21 on page 306:
   a. Convert the SM Chart to the proper format for a microprogram.
   b. Write the microprogram using the two-address structure shown in Figure 5-29.

3. Given the state diagram for an unsigned binary divider, draw an SM Chart for the controller.

4. Write a structural VHDL model for a circuit that has two inputs: an N-bit vector A, and a 1-bit control signal B. The circuit has an N-bit output C. When B = 1, C \( \leq A \). When B = 0, C is all 0’s. Use a generic to specify N in the entity. Use a generate statement in the architecture to instantiate N 2-input AND gates to implement the logic.