Unit 10 Practice Sheet: Serial Communications Interface **EET 2261**
Reeder

Recall the formula that determines the HCS12's baud rate is

Baud rate = Bus clock freq / (16 × SBR)

where SBR is a 13-bit number in the SCIBDH:SCIBDL registers.

1. Suppose our bus clock frequency is 24 MHz and SCIBDH = $02 and SCIBDL = $71. What is the baud rate?

2. Suppose our bus clock frequency is 24 MHz and we're trying to communicate with a device operating at 38,400 baud.
    a. To get a baud rate of exactly 38,400, what number would we need for SBR in the equation above?

    b. Since we can only load integers (not floating-point numbers) into the SCIBDH and SCIBDL registers, round your previous answer off the nearest integer.

    c. What baud rate will this integer value for SBR actually give us?

3. Suppose we are sending the ASCII character "H" followed by the ASCII character "i."
    a. Complete the timing diagram below, showing the sequence of bits transmitted. Assume that for each character, we send the least significant bit first. Also assume that we are using two stop bits. The diagram is initially 1 to show that we have been "marking time."

    b. Calculate the overhead due to framing. In other words, what percentage of the bits transmitted are start bits or stop bits?

4. Repeat part a. of the previous question, assuming we are sending a single ASCII character "d," using even parity and one stop bit.