

# CPE 390: Microprocessor Systems

## HW8

Due: 4/26/18

1. Sketch the logical and electrical outputs of the two character sequence \$5 at the TxD pin when it is transmitted by SCI0 using the format of 1 start bit, 8 (=7+1) data bits, 1 stop bit and odd parity. Employ the minimum possible spacing (time) between the two characters. Assume the output driver uses  $\pm 5V$  signaling. (10 points)
2. Write a program starting at \$4000 to configure the SCI0 to operate with the following parameters:
  - 19,200 baud (assume E-clock is 8 MHz)
  - One start bit, 8 data bits, 1 stop bit and even parity
  - Enable both transmit and receive operations
  - Enable both transmit (based on TDRE) and receive (based on RDRF) interrupts. Assume the ISR is labeled SCI0\_isr and the vector table address for interrupts from SCI0 is \$FFD6

Once the SCI0 is configured, the main program should branch to a label *useful\_work*. (10 points)

3. Write a subroutine to output the contents of a single memory location as two hex digits to serial channel SCI0. For example, if the specified memory location contains "11000101" the routine would output the two character sequence "C5". You may assume the existence of the subroutine `putc_SCI0` that we developed in class. The address of the memory location is passed to the subroutine in the X register. You should save any registers/accumulators that you use in this routine. (10 points)