

Assignment #3 CENG 355

1. An SCI receiver (not necessarily an HC11 CSI receiver) samples the input at 16 times the bit rate of the transmitter. The protocol has 1 start bit, 8 data bits and 1 stop bit. 3 samples are normally taken in the middle of each bit to determine if a bit is a 0 or a 1. How much faster can the receiver bit rate be compared to the transmitter bit rate to still have error free communication?
2. Consider a 4 bit charge redistribution A/D where a least significant bit represents 0.5 volts. If the A/D structure and control algorithm as given in the course pack are used, what digital value is obtained for an analog input of 3.77 volts? What is the error for this conversion? What is the maximum error that would ever be obtained with this algorithm? If $1/2$ of a least significant bit voltage is added to the analog voltage before it is sampled, what would the maximum error be?
3. What are the key features of the HC11 A/D subsystem?
4. In 2 or 3 concise sentences describe how portC handshaking works in the HC11.
5. List in short point form the key features of the HC11 SCI receiver.