

HW #1

TECH 3821

Ver1.1

Name: _____

Due Sep 28, 2018. Submit paper at start of class, submit excel spreadsheet for Ques #6 via online submission system from class website.

1. An 8 bit A/D has 0v connected to V_{rl} and 5v connected to V_{rh} . If the value returned by the A/D converter is $5C4$ calculate the following (show all calculations for full credit):

i. What is the Voltage/bit_change?

ii. What is the Full Scale Range?

iii. What is the input voltage?

iv. A pressure transmitter is connected to the A/D. If the FSR of the sensor is 0 to 30PSI what is the pressure?

2. Fred has a voltage of 4.725V going into an 8 bit A/D converter. Assuming that $V_{RH} = 9V$ and $V_{RL} = 2V$ what is the hex value out of the A/D converter? Show all your calculations.

3. Fred decided to change the A/D used in the previous question to a 12 bit A/D. If the references remain the same, what will be the hex output of the new A/D converter? Show all your calculations.

4. Fred has a voltage of 3.725V going into a 10 bit A/D converter. Assuming that $V_{RH} = 5V$ and $V_{RL} = -5V$ what is the hex value out of the A/D converter? Show all your calculations.

5. If the signal from the question above is coming from a flowmeter that has a range of 0-1000 Gallons Per Minute gives a range of -2v to 5v. What is the flow?

6. Create an excel spreadsheet similar to the one shown below. XY plots are REQUIRED. Yellow cells indicate user input, all other cells should be calculated.

