Chapter 28: Turn in your responses to

28.4.1 #7, 28.4.7 #7, 28.4.9 #8

28.4.10 #5

28.4.12 #5

28.4.1

SPI from SDI1, pin 4&5.

ADC input from AN0, pin 2.

Digital output from RB12, pin 23.

Output compare from OC1 (RPB 15), pin 26.

Timer from timer 3, pin.

Which timers will you use to implement the 200 Hz position control ISR and the 5 kHz current control ISR? What priorities will you use?

200Hz from timer 4, pin .

5kHz from time 5, pin.

Based on your answers to these questions, and your understanding of the project, annotate the block diagram of Figure 27.7. Each block should clearly indicate which devices or peripherals perform the operation in the block, and each signal line should clearly indicate how the signal is carried from one block to the other. (After this step, there should be no question about the hardware involved in the project. The details of wiring the H-bridge, current sensor, and encoder are left to later.)

Based on which circuit boards need to be connected to which pins of the NU32, and the connections of the circuit boards to the motor and encoder, sketch a proposed layout of the circuit boards relative to the NU32 so that wire crossing is approximately minimized. (Do not make a full circuit diagram at this time.)

Diagram

Description automatically generated

Turn in your best ITEST plot, and indicate the control gains you used, as well as their units.

Turn in your best plots of following the step and cubic trajectories in Figure 28.5 with the load attached. Indicate the control gains you used, as well as their units.