

TI-RSLK **MAX**

Texas Instruments Robotics System Learning Kit



Module 16

Activity: Tachometer



Activity: Tachometer

Question 1

If Timer_A is clocked at 12 MHz, with a prescale of 32, what is the slowest period that can be measured?

Question 2

Read the MSP432 data sheet on the Timer_A. Assume two or more input capture pins are armed to create interrupts on TA3_N_IRQhandler. Explain how the TA3IV register is used to determine which pin caused the interrupt.

Question 3

Read the MSP432 data sheet on the Timer_A. First, explain how to configure the ACLK to oscillate at 32.768 kHz. Second, explain how to configure the input capture to use the ACLK with prescale equal to 1. At these settings what will be the range, resolution and precision of the input capture measurement?

Question 4

Explain how to measure pulse width, PW, using input capture?



Question 5

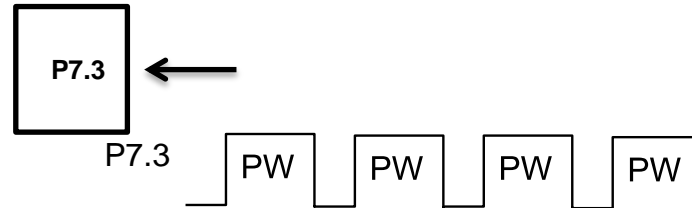
Explain how to measure duty cycle using input capture?

$$\text{Duty cycle} = H/(H+L)$$



Question 6

Assume an input is connected to P7.3. Write software that measures pulse width (rising to falling edges) using interrupts.



Question 7

Read the MSP432 data sheet for the **Timer_A** module. Where does the clock TAxCLK come from? Think of applications that might use this clock to run input capture mode?

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