0907333 Embedded Systems (Fall 2011)

Quiz 4

الاسم: رقم التسجيل: رقم الشعبة: 3

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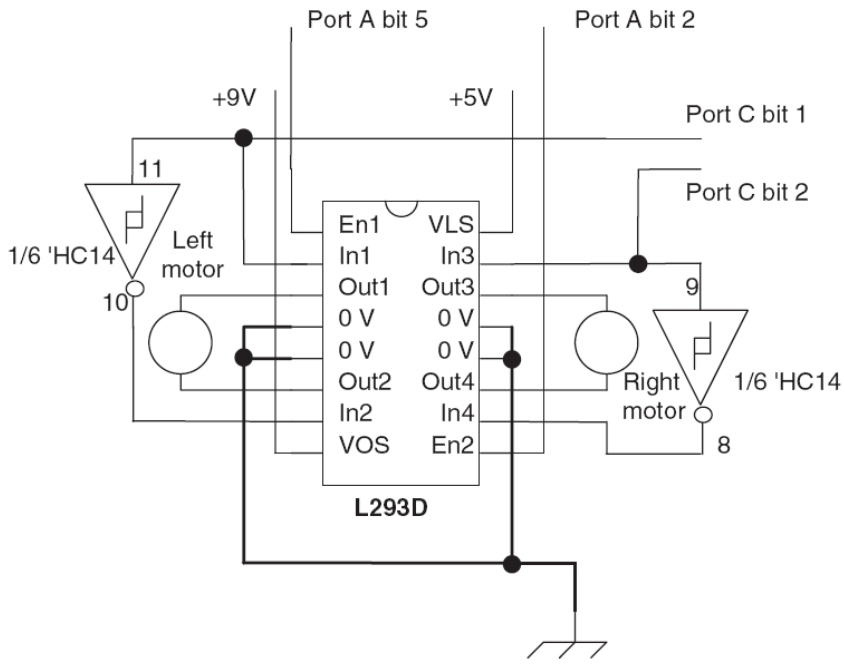
Instructions: Time **10** minutes. Closed books and notes. No calculators. Please answer all problems in the space provided. **No questions are allowed**.

<Good Luck>

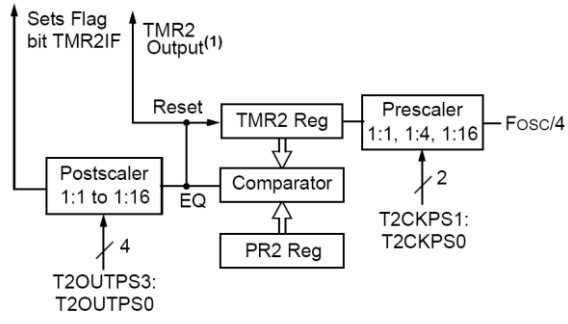
Q1. For the following circuit, what happens when `Port A bit 5 = Port A bit 2 = Port C bit 1 = 1 and Port C bit 2 = 0`?

One motor rotates in one direction and the other rotates in the reverse direction.



Q2. Assuming an oscillator frequency of 2^{24} Hz, what is the slowest 'clock tick' rate that can be obtained from Timer 2 (shown below)?

Slowest interrupt rate with prescaler ÷16 and postscaler ÷16
The input frequency is
(2^{24} Hz / 4) /16 = 2^{22} Hz/2^4 = 2^{18} Hz
If PR2 is preset to 255, the frequency is divided
by 256 to produce the reset frequency,
which will be 2^{18} Hz /256=2^{18} Hz/2^8=2^{10} Hz.
With postscaler of 16, then the interrupt frequency will be
2^{10} Hz /16 = 2^{10} Hz/2^4 = 2^6 Hz = 64 Hz



Note 1: TMR2 register output can be software selected by the SSP module as a baud clock.