ECE 3411 Microprocessor Application Lab: Fall 2015

Question X

There is 1 question in this quiz. There are 2 pages in this quiz booklet. Answer each question according to the instructions given.

You have **5 minutes** to answer the questions.

If you find a question ambiguous, be sure to write down any assumptions you make.
Be neat and legible. If we can't understand your answer, we can't give you credit!

Write your name in the space below. Write your initials at the bottom of each page.

THIS IS A CLOSED BOOK, CLOSED NOTES QUIZ.
PLEASE TURN YOUR NETWORK DEVICES OFF.

Any form of communication with other students is considered cheating and will merit an F as final grade in the course.

Do not write in the box below

Total (xx/10)

Name:

Student ID:

1. The code given below generates PWM signal using Timer 1.

```
int main(void)
{
    DDRB = 0xFF;     // Setting Port B as output

    // Setting up Timer1
    OCR1A  = 100;
    OCR1B  = 30;
    TCCR1B |= (1<<WGM13) | (1<<WGM12);   // Turn on Fast PWM mode
    TCCR1A |= (1<<WGM11) | (1<<WGM10);   // Fast PWM mode with OCR1A as TOP
    TCCR1A |= (1<<COM1B1)|(1<<COM1B0);   // OC1B sets on compare match, clears at BOTTOM
    TCCR1B |= (1<<CS12);                 // Set pre-scalar to divide by 256

    while(1);     // Nothing to do
}
```

a. At which pin of the microcontroller does this code produce the PWM signal? You may write the logical name of the pin if you don't remember the corresponding physical pin.

b. The figure below shows the TCNT1 register behavior over time. Draw the resulting PWM signal in the space provided below.
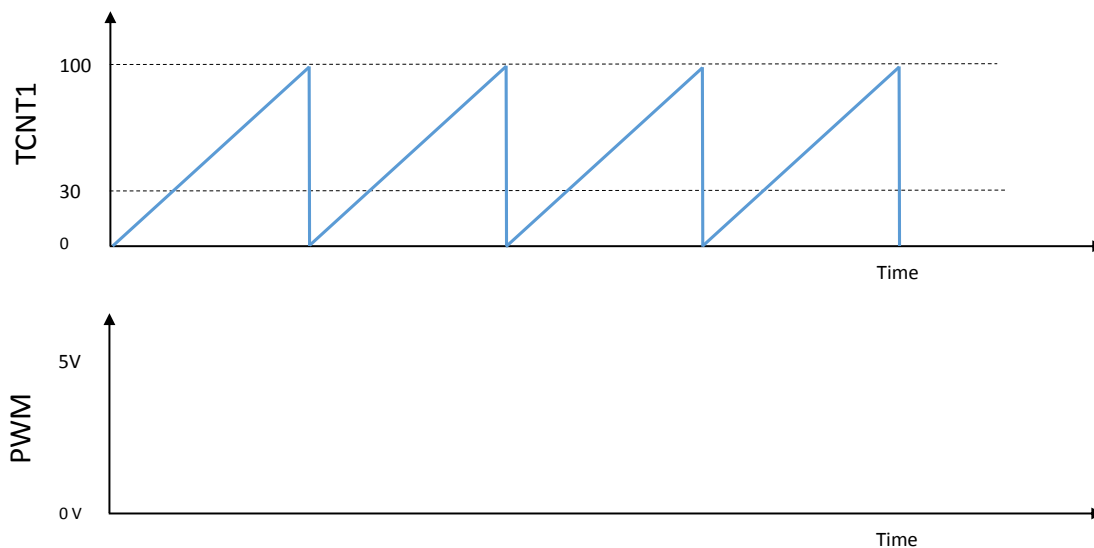
End of Question

Please double check that you wrote your name on the front of the question.

Initials: