متین گلپایگانی

۹۸۲۴۰۷۳

آزمایش۷

آز ریز پردازنده

۱) به کمک مد نرمال یک پالس ۵KHz تولید کنید:

```
Timer1 Status | Requirements

Timer Period: 0.1 ms

Output Pulse(s):
OC1A Period: 0.2 ms Width: 0.1 ms


Timer0 | Timer1 | Timer2 | Watchdog

Clock Source:   System Clock          ∨
Clock Value:    8000.000 kHz          ∨
Mode:  Normal top=0xFFFF              ∨
Out. A: Toggle on compare match       ∨
Out. B: Disconnected                  ∨

Input Capture:
☐ Noise Cancel
☐ Rising Edge
Interrupt on:
☑ Timer1 Overflow    ∧
☐ Input Capture      ∨

Value:  FCE0  h   Inp. Capture: 0   h
Comp. A: 0  h B: 0  h
```

```c
 5    // Timer1 overflow interrupt service routine
 6    interrupt [TIM1_OVF] void timer1_ovf_isr(void)
 7    {
 8    // Reinitialize Timer1 value
 9    TCNT1H=0xFCE0 >> 8;
10    TCNT1L=0xFCE0 & 0xff;
11    // Place your code here
12
13    }
14
15    void main(void)
16    {
17    // Clock value: 8000.000 kHz
18    // Mode: Normal top=0xFFFF
19    // OC1A output: Toggle on compare match
20    // OC1B output: Disconnected
21    // Timer Period: 0.1 ms
22    // Output Pulse(s):
23    // OC1A Period: 0.2 ms Width: 0.1 ms
24    // Timer1 Overflow Interrupt: On
25    TCCR1A=(0<<COM1A1) | (1<<COM1A0) | (0<<COM1B1) | (0<<COM1B0) | (0<<WGM11) | (0<<WGM10);
26    TCCR1B=(0<<ICNC1) | (0<<ICES1) | (0<<WGM13) | (0<<WGM12) | (0<<CS12) | (0<<CS11) | (1<<CS10);
27    TCNT1H=0xFC;
28    TCNT1L=0xE0;
29    ICR1H=0x00;
30    ICR1L=0x00;
31    OCR1AH=0x00;
32    OCR1AL=0x00;
33    OCR1BH=0x00;
34    OCR1BL=0x00;
```

۲) به کمک مد CTC یک پالس 10KHz تولید کنید:

Timer1 Status | Requirements

Timer Period: 0.05 ms

Output Pulse(s):
OC1A Period: 0.1 ms Width: 0.05 ms

Timer0 | Timer1 | Timer2 | Watchdog

Clock Source: System Clock

Clock Value: 8000.000 kHz

Mode: CTC top=OCR1A

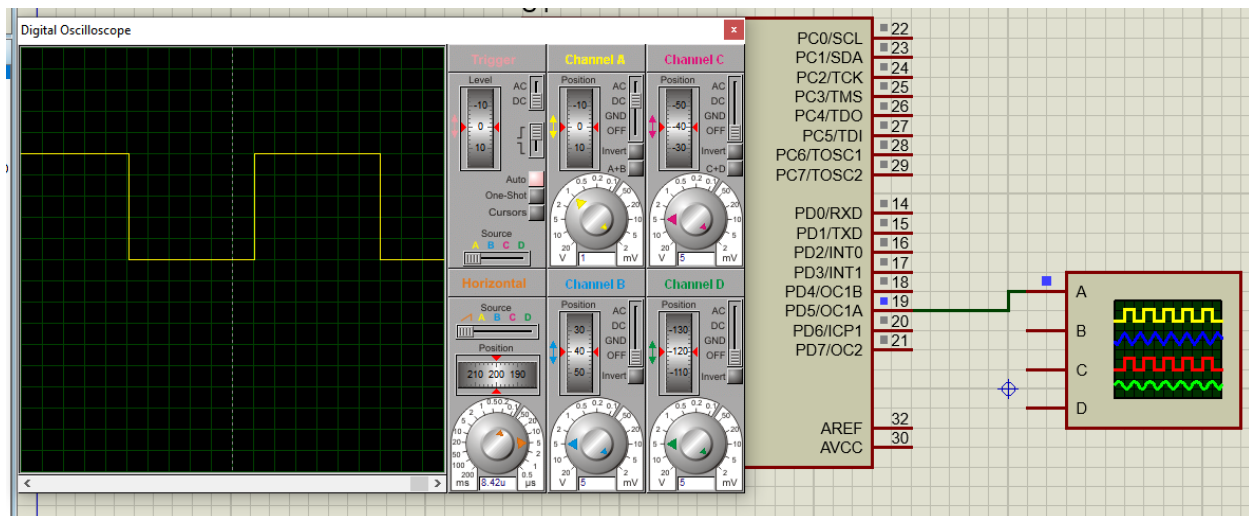Out. A: Toggle on compare match

Out. B: Disconnected

Input Capture:
☐ Noise Cancel
☐ Rising Edge

Interrupt on:
☐ Timer1 Overflow
☐ Input Capture

Value: 0 h Inp. Capture: 0 h

Comp. A: 18F h B: 0 h

۳) به کمک مد fastpwm یک پالس 3KHz با 30% = DC تولید کنید:

Timer1 Status | Requirements

Timer Period: 0.256 ms

Output Pulse(s):
OC1A Period: 0.256 ms Width: 0.076298 ms

Timer0 | Timer1 | Timer2 | Watchdog

Clock Source: System Clock

Clock Value: 1000.000 kHz

Mode: Fast PWM top=0x00FF

Out. A: Non-Inverted PWM

Out. B: Disconnected

Input Capture:
☐ Noise Cancel
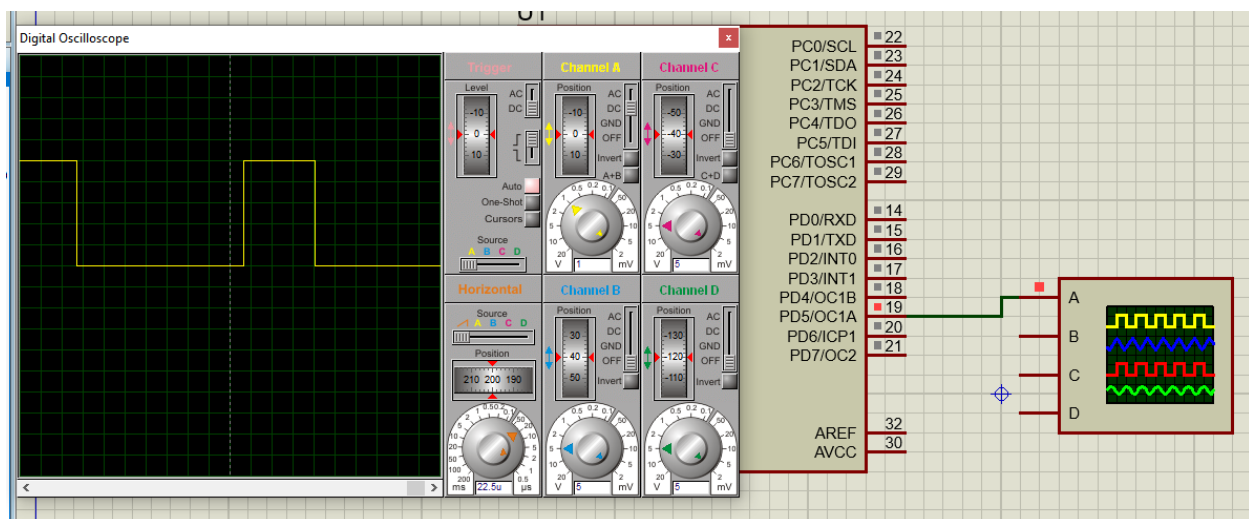☐ Rising Edge

Interrupt on:
☐ Timer1 Overflow
☐ Input Capture

Value: 0 h   Inp. Capture: 0 h

Comp. A: 4C h B: 0 h

۴) به کمک مد phase correct pwm یک پالس با 40% = DC تولید کنید. فرکانس را ۱۵کیلو هرتز انتخاب میکنیم:

Timers/Counters Settings

Timer1 Status | Requirements

Timer Period: 0.06375 ms

Output Pulse(s):
OC1A Period: 0.06375 ms Width: 0.0255 ms

Timer0 | Timer1 | Timer2 | Watchdog

Clock Source: System Clock

Clock Value: 8000.000 kHz

Mode: Ph. correct PWM top=0x00FF

Out. A: Inverted PWM

Out. B: Disconnected

Input Capture:
☐ Noise Cancel
☐ Rising Edge

Interrupt on:
☐ Timer1 Overflow
☐ Input Capture

Value: 0 h   Inp. Capture: 0 h

Comp. A: 99 h B: 0 h