T62 Tutorial 9

1. Given that the clock frequency is 4 MHz, calculate T_{ACQ} and T_{AD}.

(4 marks)

T_{ACQ} = 1 us
T_{AD} = 0.5 us

2. Given that the clock frequency is 4 MHz, show the changed instruction so that T_{ACQ} and T_{AD} are equal to 8μs and 1μs, respectively.

(4 marks)

movlw 0xA4

Use the MPLAB (choose Pickit 3 as the Debugger) to examine the program.

1. Open a watch windrow to check PRODH and PRODL
2. Set a break point at the first NOP instruction.
3. Tune the variable resistor.
4. Press "Run" button.
5. Check the contents at PRODH and PRODL.
6. Repeat step 3 to step 5 for a number of times.

3. Write a program that performs the ADC operation on AN0 with 8-bit resolution and display the 8-bit value on the 8 LEDs using PORTD. Copy the program from the editor window.

(8 marks)

```
            LIST    P=18F4520
            #include <P18F4520.INC>
            CONFIG      OSC = XT
            CONFIG      WDT = OFF
            CONFIG      LVP = OFF
            ORG 0x00
            goto start
            ORG 40
start:      movlw 0x01          ; select channel AN0 and enable A/D
            movwf ADCON0,A
            movlw 0x0E          ; use VDD & VSS as reference voltages &
            movwf ADCON1,A      ; configure channel AN0 as analog input
            movlw 0x08          ; select left justification , set TACQ and TAD
            movwf ADCON2,A
            clrf  TRISD
            clrf  PORTD
here:       bsf ADCON0,GO,A             ; start A/D conversion
wait_con:   btfsc ADCON0,DONE,A         ; wait until conversion is done
            bra wait_con
            movff ADRESH,PRODH          ; save conversion result
            movff ADRESL,PRODL
            movff PRODH,PORTD
            nop
            nop
            goto here
            END
```