

1.

msec:

push w1 // address: 0x02E0

opcode: 781F81

78: the instruction code for push/pop

1F81: is storing W1 in the memory by knowing offset register, source Address, and source register.

mov #5330+31, w1 // address: 0x02E2

opcode: 214D31

2: the instruction code for MOV

14D3: is the number (5331) that is being moved to W1 in hexadecimal.

1: To indicate the number is being moved to W1

msloop:

dec WREG1 // address: 0x02E4

opcode: ED2002

ED: the instruction code for DEC

2: (0010) word operation for file register

002: The address for W1 in the memory

bra NZ, msloop // address: 0x02E6

opcode: 3AFFFE if the condition is not met

3A: is the instruction code for BRA NZ, Expr

FFFE: is -2 in decimal that goto msloop which is one line back according to $(PC + 2) + 2 * \text{Slit16} \rightarrow PC$

opcode: 3A0000 if the condition is met

0000: is 0 in decimal which = is the next line according to $(PC + 2) + 2 * \text{Slit16} \rightarrow PC$

Nop // address: 0x02E8

opcode: 000000

00xxxx: is the instruction code for NOP

pop w1 // address: 0x02EA

opcode: 7800CF

78: the instruction code for push/pop

00CF: returning the value of W1 from the memory by known offset register, source Address, and source register.

Return

5.

A.

T1CON = 0x8020 is setting the input clock prescale to 64 and make the clock start counting. The TRM would take to go from zero to when it overflows:

$$62.5 \text{ ns} * 64 * (93 + 1) = 376 \text{ } \mu\text{s}$$

B.

$$\text{Maximum delay} = 62.5 \text{ ns} * 256 * 65525 = 1.04856 \text{ s}$$

C.

$$\text{Resolution} = 62.5 \text{ ns} * 64 * 1 = 0.000004 \text{ s}$$