Prelab

LED flashes with 2Hz and 75% duty cycle.

$T_{on} = 0.375s$ and $T_{off} = 0.125s$

PB5 to 1 : 0010 0000 00 = 0x

Q1.4

b)

$$Resolution = \frac{1}{\frac{2MHz}{256}} = 128\,\mu s$$

c)

$$Range = 128\,\mu s \times (2^8 - 1) = 32640$$

Q1.5

$T = 128\,\mu s$

$$\frac{10\,ms}{128\,\mu s} - 1 = 77.268 \approx 1001101$$

Q3.4

$$Max\ Range = \frac{Max\ count \times Prescaler}{F_{CPU}} = \frac{(2^{16}-1) \times 1024}{2 \times 10^6} = 33.55\,s$$

Q4.1

$$One\ clock\ cycle = \frac{64}{2M} = 32\,\mu s$$

$$Frequency = \frac{1}{32\,\mu s \times timer\ count \times 2}$$

Q4.2

$T_{tick} = \frac{256}{2M} = 128\,\mu s$ This is the half of period time so the full period take $32.768\,\mu s$

$f_{min} = \frac{1}{32.768\,ms} = 30.52\,Hz$