Exam 1: Rework

Q3. a) I mistakenly used the wrong conversion for gigahertz. Instead of 10^{-9}, I used 10^{6} and that's the reason I got incorrect answer

b) we have been given Instruction count (IC) = 4 million
$= 4 \times 10^{6}$

and clock frequency (f) = 2.5 GHz = 2.5×10^{9}
and average CPI = 2
we know that clock period = $\frac{1}{f}$

and we need to find User CPU Time = IC X CPI X $\frac{1}{f}$

$= 4 \times 10^{6} \times 2 \times \frac{1}{2.5 \times 10^{9}} = 3.2 \times 10^{-3} = 3200 \times 10^{-6} = 3200\,\mu s$

Q12.

a) I calculated the binary 0b0100 to B instead of 4

b) 0xFF836900 = 0b1111_1111_1000_0011_0110_1001_0000_0000

sll $t0, $t0, 6 shifts this binary number to the left by 6 digits and fills the extra digits on the right with 0.

⇒ after shifting,

$t0 = 0b1110_0000_1101_1010_0100_0000_0000_0000

= 0xE0DA4000

(instead of 0xE0DA8000)

Q11.

a) I only chose one of the correct answers instead of 2 because I didn't know it was multiple choices accepted

b) ble is also a pseudo-instruction which the assembler translates into 2 statement of slt and beq which checks if the first value is less than second value, and if so, branches.