Assume that a computer can read or write one from 5 nsec internal memory. Also assume that when an interrupt occurs, all 32 CPU registers, plus the program counter and PSW, are pushed onto the stack. What is the maximum number of interrupts per second this machine can handle?

Step 1:

There are 2,941,176 interruptions every second.

Step 2: Explanation

34 words are required to push into the stack before the interrupt and 34 words are required to pop out of the stack after the interrupt has been handled.

As a result, 68 words in total are required for the Read and Write execution.

In order to determine how many interruptions, the computer can endure, we must first determine how long it takes to read and write 68 words:

= 68 x 5nsec

= 340nsec

= 340 x sec (changing it to seconds) (converting it to seconds)

The number of words = 1 PSW (program status word) + 1 PSW (program status word) CPU registers

= 34

The time taken to R/W a memory word = 5 nano seconds

maximum number of interrupts =1000,000,000/340

= 2,491,176 interrupts.